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The Development of Video Simulation of Project Based Learning (PjBL) Model to Increase Teacher Competence in Implementation 'Kurikulum Merdeka'

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Abstract: The purpose of this study is to examine the feasibility of a simulation film for Project-Based Learning (PjBL) model. PjBL model has become an important part of 'kurikulum merdeka'. This learning model is closely related to the concept of independent learning to provide flexibility to students, but currently there are still many teachers in vocational schools who do not know the details of implementing the PjBL model. The objective of this study is to develop instructional simulation film. The method study refers to Alessi& Trollip model which is conducted through 4 stages, they are: planning, design, development and evaluation. This product was validated by experts before applied. Three experts were involved to evaluate this model, they are: insrtuctional design expert, media expert and material expert. The average score from the instructional design expert is 85,63, media expert gained 83,75 and material expert gained 83,14. The avarage expert score gained 81,67 it showed that this film is valid. One-on-one evaluation was conducted on vocational school teachers and obtained an average score of 84.17. and it belong to good category. Small group evaluations were conducted with vocational school teachers as subjects and it belong to very good category. Over all, it showed that the simulation video is valid and good to be applied in understanding about Project Based Learning (PjBL) model. The results of the field test stated that the PjBL learning model simulation video can improve teacher abilities.

Keywords: Learning Model, Project Based Learning (PjBL), Instructional simulation, Instructional Film, Video Pembelajaran

Abstrak: *Tujuan dari penelitian ini adalah untuk menguji kelayakan dari film simulasi model pembelajaran Project Based Learning (PjBL). Model Pembelajaran Berbasis Project telah menjadi bagian penting dari kurikulum merdeka. Model pembelajaran ini terkait erat dengan konsep merdeka belajar untuk memberikan fleksibilitas kepada peserta didik, akan tetapi saat ini masih banyak guru-guru di SMK yang belum mengetahui bagaimana detail penerapan dari model PjBL. Tujuan dari penelitian ini adalah untuk mengembangkan film simulasi pembelajaran untuk dapat meningkatkan kompetensi mengajar guru SMK. Metode penelitian mengacu pada model Alessi & Trollip yang dilakukan melalui 4 tahap, yaitu: perencanaan, desain, pengembangan dan evaluasi. Produk ini divalidasi oleh para ahli sebelum diterapkan. Tiga orang ahli dilibatkan untuk mengevaluasi model ini, yaitu: ahli desain pembelajaran, ahli media dan ahli materi. Nilai rata-rata dari ahli desain pembelajaran adalah 82,63%, ahli media memperoleh 83,75 dan ahli materi memperoleh 83,14. Nilai rata-rata ahli memperoleh 81,67 yang menunjukkan bahwa film ini valid. Evaluasi satu-satu dilakukan kepada guru SMK dan memperoleh nilai rata-rata 84,17 dan termasuk dalam kategori baik. Evaluasi kelompok kecil dilakukan dengan subjek guru SMK dan memperoleh nilai rata-rata 91,17 dan termasuk dalam kategori sangat baik. Secara keseluruhan, hal ini menunjukkan bahwa video simulasi valid dan baik untuk diterapkan dalam memahami model Project Based Learning (PjBL). Hasil ujicoba lapangan menyatakan bahwa video simulasi model pembelajaran PjBL dapat meningkatkan kemampuan guru.*

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Kata Kunci: *Model Pembelajaran, Project Based Learning (PjBL), Film Pembelajaran, Video Pembelajaran*

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INTRODUCTION

'Kurikulum merdeka' provides educators a freedom to create quality learning which is appropriate with the students needs and environment. The implementation of instructional process in the kurikulum merdeka is expected to be student-centered learning (Evi Hasim, 2020; Ulum et al., 2023). One of the student-centered learning models that makes students active is the Project-Based Learning (PjBL)(Sanjaya, 2010; Susila & Qosim, 2022). This learning model trains students' skill in thinking and direct students to have high order thinking skills and also invites students to learn directly in real conditions or the real world (Trianto, 2007). Project Based Learning (PjBL) is a learning approach that provides students with the opportunity to develop problem-solving and investigation skills (Trianto, 2011). The characteristics of PjBL are training the ability to work together, think critically, interact with the real world and produce products or projects (Gunawan et al., 2017; Priansa, 2017). It is very important for teachers to participate in advancing the 'kurikulum merdeka' program, one form of participation is by implementing learning models that support the curriculum. PjBL model is recommended to be applied in learning application of 'kurikulum merdeka' (Junaidi Aris dkk, 2020). However, the results of a preliminary study stated that 65% of vocational school teachers haven't understand in detail the implementation of the PjBL learning model. This reality will become a problem if a solution is not found. Based on the problems above, the researcher attempted to provide a solution by developing a simulation video of the PjBL learning model.

Instructional is an activity that is planned in advance by education providers(Sudjana, 2013). In planning an instructional, there are several related aspects, such as educators, students, the environment and media. Media plays an important role in achieving learning goals. Video is one type of media that can depict a moving object (Apriatmo et al., 2021; Koumi, 2006) which combines elements of sound, movement, images, text, graphics (Firmansah & Firdaus, 2020). Simulation is a learning method to develop students' cognitive abilities and skills by imitating real situations (Helmiati, 2012; Rosal Yosma Oktapyanto, 2016). The advantage of this method is that it can be used as a provision for students in facing real situations in the future, both in community life and the world of work (Suryani, 2022).

Various studies on the Project Based Learning (PjBL) learning model have been conducted (Anggraini & Wulandari, 2020; Firmansah & Firdaus, 2020; Luh Made Indria Dewi & Ni Luh Rimpiati, 2016) which showed that this model is proven in improving thinking skills, activeness and improving the quality of learning (Nirmayani & Dewi, 2021). This learning model has also proven effective in improving student learning outcomes (Nirmayani & Dewi, 2021).

An analysis of the need of developing media to improve teacher competence has also been carried out (Israwaty, 2023; Nirmayani & Dewi, 2021), the conclusion stated that teachers need support to improve their competence in teaching. The use of video as a learning medium has been proven as an effective way in improving teacher competence. A research about educational video games to improve teacher learning motivation conducted at the Regional Ministry of Education of Castilla y León, Spain (Gordillo et al., 2021), video tutorials to improve the pedagogical competence of PAUD teachers (Lestari, 2019), inspirational videos to improve teacher competence in the independent curriculum (Hidayati et al., 2024), learning videos to improve the competence of high school teachers (Japar et al.,

2021) and interactive video media about subject matter (Wardani & Syofyan, 2018). From the various studies above, no studies have been found on simulation videos to improve the competence of vocational school teachers, especially simulation videos of the Project Based Learning (PjBL) learning model and this will be one of the new things in this research. This research is strengthened by the results of research conducted by Prakoso which stated that to improve teaching skills, teaching simulation videos are really needed (Prakoso et al., 2023). Several simulation of learning model videos can be accessed online, but the validity and feasibility of these simulation videos have not been tested. From the various studies above, what is different from this study is that the video that will be developed is specifically designed for vocational high school teachers with the theme of simulation of the application of the Project Based Learning (PjBL) learning model, which in the development process is carried out in-depth analysis and study first and then will be tested for validity and feasibility.

Based on the results of a preliminary study, the learning process applied in SMKN1 OKU predominantly used discussion, answer-question and speech methods in the classroom. An online survey also stated that 65% of teachers did not fully understand the steps and details of implementing the PjBL model. In an effort to improve teacher competence in teaching, it is necessary to design a special learning media to facilitate teachers, so that teachers can provide real learning experiences to students and produce graduates who are in accordance with the needs of the development of the times and the demands of the independent curriculum. The formulation of the problem in this study is how to develop a simulation video of the Project Based Learning (PjBL) learning model to improve the competence of vocational school teachers in teaching in 'Kurikulum Merdeka'. The purpose of this study is to develop the simulation video of the Project Based Learning (PjBL) which is tested and validated to prove the quality of the product.

RESEARCH METHODS

This research and development followed a procedure of Alessi and Trollip model. The development step consist of three stages, that is planning, design, and development (Alessi & Trollip, 2021). Planning stage contains an planning explanation of product/model to be developed. The design stage is the process of combining content, learning perspectives and interactivity. In this stage, research team should communicate with the colleagues and partner to find the right idea between planning and the project being developed. The development stage is the pouring of the design concept into a mature product and this stage is also the last stage developed by Allesi and Trollip.

Evaluation steps conducted by doing the formative evalution, there are four step in formative evaluation: 1) experts validation; 2) one to one evaluation; 3) small group evaluation; 4) field test. Expert validation is conducted by three experts, they are material expert, multimedia expert and instructional design expert. Expert validation is carried out with the aim of knowing the weaknesses of the developed model. Besidets, it is used to determine the validity of this learning model. . The data collection in expert validation by spreading questionnaire and interview. The interview results, comments and suggestions from the validators determine whether will revise the instructional model or not. The product is valid if the validator suggested it tested feasible. One to one evaluation is to test the learning model on small group students who fill the criterion of moderate, low and high ability. In this study, nine respondens were chosen to represent each criterion. While in the field test, a larger group of about 30 respondens tested the product. It calculated using the gain score to know the improvement of learning outcomes. In the field test, the researchers distributed questionnaires to find out teachers' respons of this learning video. The method used to gain information about teacher respons in apllying this video is qualitative descriptive. Data collection techniques used in this study are questionnaire and

interview. Questionnaire to determine the needs analysis before developing the simulation of instructional model and find out teachers' respons. Interviews to get information about the weaknesses and advantages of this learning video.

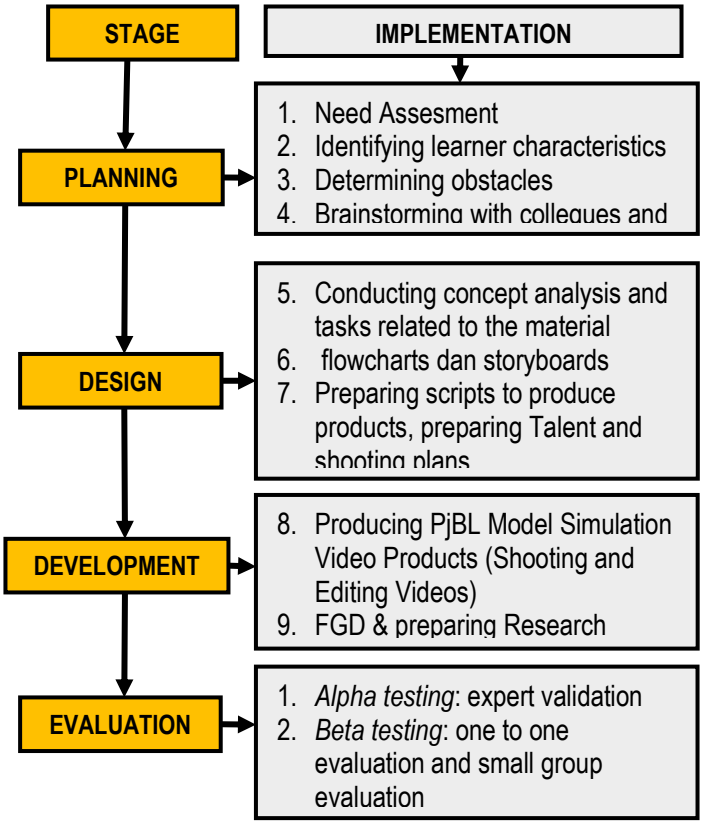

Figure 1. Step of Reasearch and Development in refer to Alessi & Trollip

RESULTS AND DISCUSSION

In the planning stage, the researchers started from conducting a needs analysis by interviewing some teachers and spread online questionnaire. The result obtained that 65% of teachers did not fully understand the steps and details of implementing the PjBL model. The teachers' skill in operating computers also varied, but generally assumed they have been able to operate a computer. They find difficulties to take part in training outside the city.

In the design stage, researchers designed the flowcharts, storyboards and scripted the film of instructional simulation video. Researchers collected the information by interviewing and searching via internet. Brainstorming activity with vocational school teachers and coordinate with experts to prepare a film script that is in accordance with the implementation of project-based learning steps. In developing stage, researchers prepared some elements needed such as tallent, material, logistic and other stuff to produce the film. Researchers organize the proces of film producing and cooperate with other parties in producing the film.

In the evaluation stage we carry out formative evaluation. Formative evaluation is the assessment of strengths and weaknesses of instruction in its development stage for the purpose of revision (Tessmer, 1998). Formative evaluation consist of self evaluation, expert validation, one-to-one evaluatiion, small group and field test. Expert validation step gave a lot of inputs in improving PjBL film simulation. We did some revisions based on the experts suggestion. Validation process had started when scripting film. All these revisions were done to ensure that the media is valid to be used. We had three experts in this study, they are material expert, instructional design expert and media expert. Some suggestions from experts are summarized in the following table

Table 1. Expert Suggestion for Video Simulation of PjBL

No	Experts	Revision
1	Instructional Design Expert	it's better if adding one scene about students activity in step four (in film script) which is showing students' act when searching material about bullying adding subtittle to enforce some syntax in PjBL
2	Material Expert	It's better if stimulus in opening not only using question, it can use picture or video. Replace the design of subtittle using simple and clear design
3	Media Expert	All elements in video should be balanced and consistent Make sure QR code in youtube link can work properly

Beside giving some suggestion, expert also fill out questionnaires for PjBL simulation videos. The avarage score of these questionnaires gained 83,96 which is belong to very good category. The result of expert validation can be checked in the following picture.

Figure 2. Result of expert validation

The next test is one-to one evaluation, from this evaluation we have some good inputs, such as; they need more similar video for other learning model, because it is easier to learn the application of steps in learning using film of simulation video. The average score is 4,21 which is belong to good category.

Table 2. *Score of one to one evaluation*

No	ID	Score	Category
1.	DBS	87	Very practical
2.	MH	83	Very practical
3.	RS	81	Very practical
Average		4,21	Practical

The next step is small group evaluation. We chose 9 respondens to gain information about their respons to this media. We distributed the questionnaire, there are four aspects we want to obtain information; (1) clarity of the simulation film; (2) the benefits of simulation film; (3) the appeal of simulation film; (4) facilitate understanding of PjBL; and (5) impact after using media. Some comments said that video simulation is so helpful in understanding the steps in learning model, then it need to produce more video simulation. Generally they like to learn using film of learning simulaation.

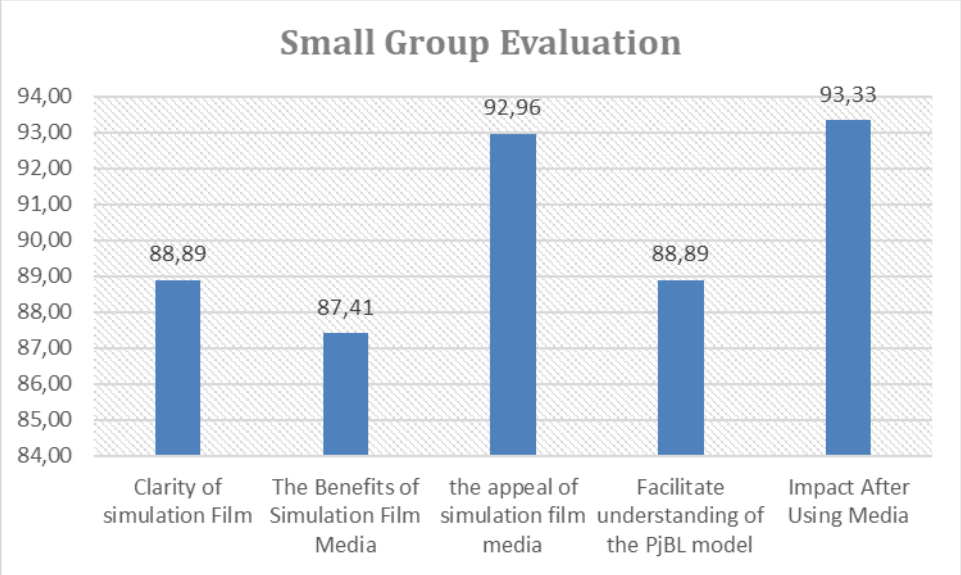

Figure 3. Result of Small Group Evaluation

Field test were conducted as the last test of formative evaluation. The effectiveness of this simulation video would be measured by comparing the results of the pre-test and post-test. Pre-tests were given before the class to measure respondens' prior knowledge. Post-tests were given to measure respondens' abilities after learning using simulation video. Questionnaires were distributed to get information of respondens' improvement in learning. Pre-test score got 68,30 then post-test score 79,07 This showed that there is an increase of the pre-test and post-test score.

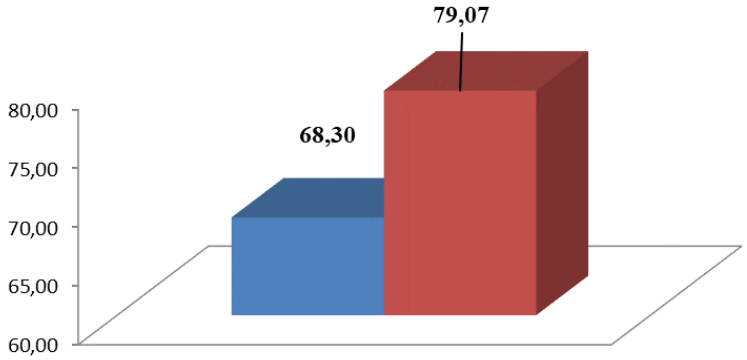

Figure 4. Result of T-test

Based on the results of the analysis, the film of learning simulation of Project Based Learning showed a significant increase with an N-gain of 0.33. According to Hake, if the N-gain value is between 0.7 > (N-Gain) 0.3, it is classified as moderate.

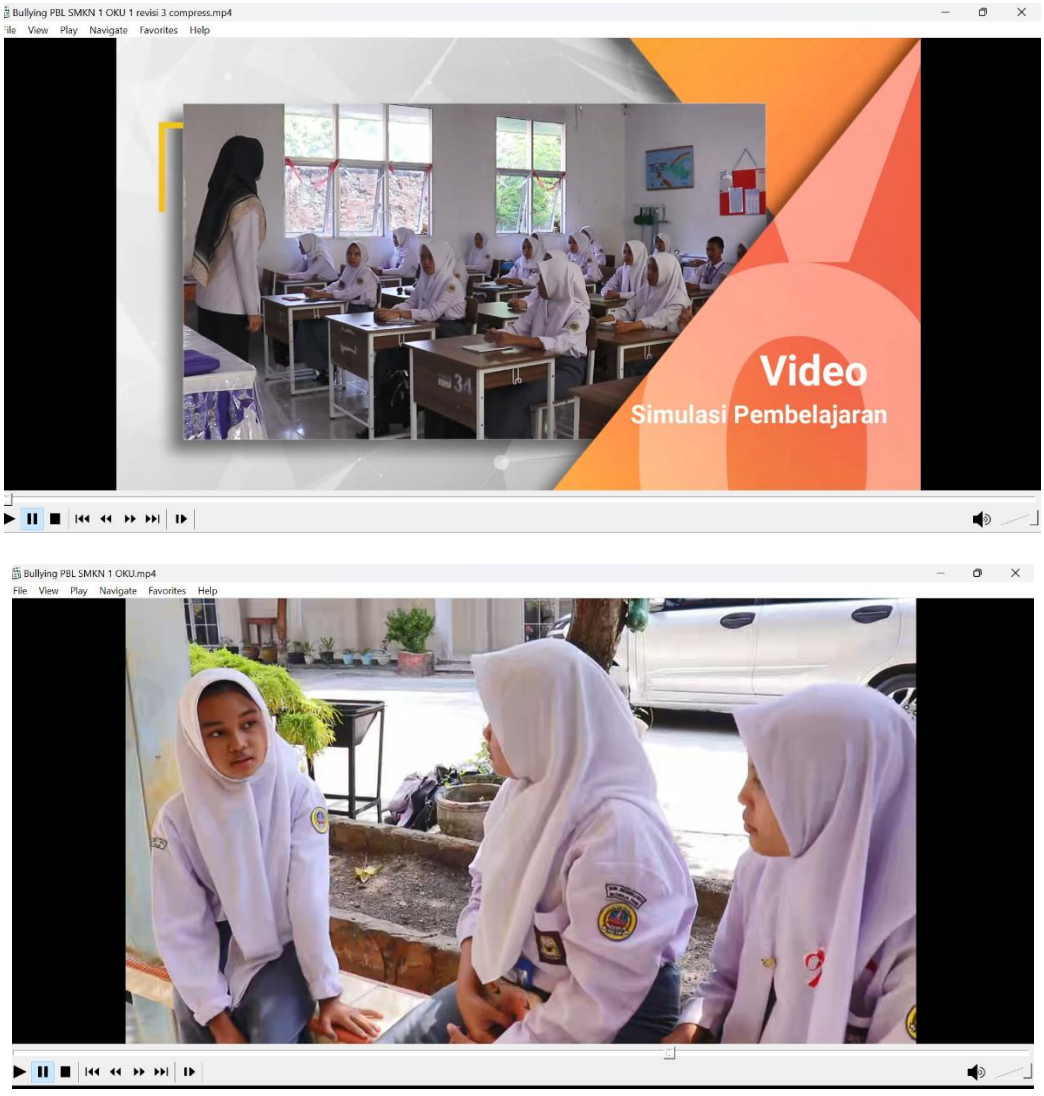

Figure 5. Scene of Simulation Video of PjBL Model

The product of this research & development is a simulation video of project based learning model which is specially designed for vocational school teacher. Results of the study stated that the PjBL learning model is feasible and valid to be used as media in instructional process. This result is reinforced by several respondents' opinions stating that this learning video can help improving teacher competence. Aspects that obtained the highest score was the impact after using the simulation video, it gained 93,33. One of the indicator of this aspect stated that responden could clearly understand about the application of each step in project based learning model. The simulation video also increasing the learners' motivation. This result strengthen a study that explores students' perception of simulation video which stated the same result (Bravo et al., 2011). A study that explores students' perceptions of simulations also found an increase in student motivation by applying the simulated learning process (Rochmawati et al., 2021). Another interesting thing in learning using simulation video is clarifying in deliver messages so it's not to be too verbal, this opinion is in line with research conducted by Saputra (2018). From the various opinions above, it can be concluded that learning using simulation videos can help improving the quality of learning, supporting this opinion a study of simulation video stated that deeper understanding can improve the quality of learning (Iin, 2022).

This simulation video supports its users to learn independently and learn at their own pace. Learning materials packaged as a video enable user to learn faster or slower according to their respective abilities. Gafur (2022) also stated in his study that students who do not understand the teacher's explanation in class can repeat and review lessons by learning independently from home. This media is indeed very appropriate to support the independent learning process. In fact, teachers really need media for independent learning to support them in improving their teaching skills and competencies. This need mainly concerns teachers' very limited time to learn something new. Teachers are indeed required to always improve their skills and competence in teaching in line with developments of technology and era. Supporting this opinion, Nuryanto stated that students' learning can increase due to the support of good teacher teaching skills to support the maximum achievement of learning outcomes (Nuryanto & Ramadani, 2022). One of the advantage of this research is producing a product, that is a simulation video of the PjBL learning model that has been tested for its feasibility. This research greatly contributes to the field of education because it makes easier for teachers to learn the PjBL learning model, indirectly it will have an impact on the teachers' competency in teaching and the output produced.

CONCLUSIONS AND RECOMMENDATIONS

The results of this research showed that most of respondents gave positive feedback related simulation film. Respondents are very excited to use this simulation video to improve their understanding about step of Project Based Learning (PjBL). Video of simulation learning model provides real experiences for learners to be able understanding the material entirety. This research had been done refers to four stages: planning,design, development and evaluation. Formative evaluation is series of tests aimed to improve the developed model. They are expert validation, one to one evaluation, small group evaluation and fieldtest. Expert validation result showed that simulation film is suitable to be applied in improving teachers' competence in teaching. One to one evaluation and small group evaluation result showed that respondenst are interested in learning use this film. The effectiveness of this model was measured by doing pre-test and post-test. The result showed that this learning model help respondents in reaching the instructional goal. This study is also seen to give initiative to learners in diversifying their learning methods.

This study can also provide an initiative for teachers in diversifying learning models. This is also could be an initiative for teachers to update teaching and learning techniques in the classroom. The results of this study can also help teachers to be more creative and proactive, in planning learning by using the right tools to ensure student involvement in the learning process in line with the government's desire to encourage students to be more active and have capability in high order thinking skills. Researcher suggested that film simulation of PjBL model could be used as a reference tool learning for educators, especially applying learning in 'kurikulum merdeka'.

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