Science Learning Videos Based on Contextual Approaches for Grade V Elementary Schools

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ABSTRAK

Penelitian pengembangan ini dilatarbelakangi oleh penggunaan media pembelajaran di sekolah dasar yang belum optimal dan guru masih menggunakan media konvensional, oleh karena itu dikembangkan video pembelajaran berbasis pendekatan kontekstual pada pembelajaran IPA untuk siswa kelas V. Penelitian ini bertujuan untuk mengembangkan video pembelajaran video scribe berbasis pendekatan kontekstual. Penelitian pengembangan ini dilakukan dengan menggunakan model ADDIE (Analyze, Design, Development, Implementation, Evaluation). Jenis penelitian ini adalah penelitian dan pengembangan. Subyek penelitian ini adalah ahli 3 orang, siswa 3 orang, dan siswa 6 orang. Metode pengumpulan data adalah observasi, wawancara, studi dokumen, tes, dan angket. Bentuk instrumennya adalah skala rating, dengan menggunakan teknik analisis data yaitu deskriptif kualitatif dan kuantitatif, statistik inferensial. Hasil penelitian ini menghasilkan desain video pembelajaran video scribe berbasis pendekatan kontekstual untuk meningkatkan minat belajar siswa dan meningkatkan hasil belajar siswa kelas V SD, skor rata-rata validitas media sebesar 95%, skor rata-rata validitas isi sebesar 92%, dan skor rata-rata validitas desain sebesar 95% dengan predikat sangat baik, dan video pembelajaran video scribe berbasis pendekatan kontekstual efektif meningkatkan kemampuan hasil belajar. Jadi dapat disimpulkan bahwa pengembangan video pembelajaran berbasis pendekatan kontekstual pada pembelajaran IPA untuk siswa kelas V SD layak, dan efektif untuk meningkatkan hasil belajar siswa kelas V pada materi siklus air untuk siswa kelas V SD.

ABSTRACT

This development research is motivated by the use of learning media in elementary schools that are not optimal, and teachers still use conventional media, therefore developing learning videos based on a contextual approach to science learning for fifth-grade students. This study aims to develop contextual approach-based video scribe learning videos. This development research used the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). This type of research is research and development. The subjects of this study were three experts, three students, and six students. Data collection methods are observation, interviews, document studies, tests, and questionnaires. The instrument is a rating scale using data analysis techniques, namely descriptive qualitative, quantitative, and inferential statistics. The results of this study are to produce a contextual approach-based video scribe learning video design to increase student interest in learning and to improve the learning outcomes of fifth-grade elementary school students. The average score of media validity is 95%, the average score of content validity is 92%, and the average score of design validity is 95% with a very good predicate, and video scribe learning videos based on a contextual approach is effective in improving the ability of learning outcomes. So, developing a learning video based on a contextual approach to science learning for grade V elementary school students is feasible and effective for improving the learning outcomes of grade V students on water cycle material for fifth-grade elementary school students.

1. INTRODUCTION

Education in the current era of globalization is necessary to determine a person's future. Going through a good education process is necessary for someone to adapt to the developments and demands of the times. The existence of education encourages every person to develop their qualities, especially with the increasingly rapid development of information and communication technology. The increasingly progressive development of information and communication technology has transformed many areas of life, including education (Muchtar et al., 2021; Mushfi & Iq, 2020).

Natural Sciences is a field of science concerned with describing concepts, principles, and procedures. At the basic education level, science is important in developing students' abilities to face various challenges in the global era (Antara et al., 2022; Maison et al., 2020). Therefore, science can be used to prepare students to have good competencies, be literate in science and technology, think critically, logically, and creatively, and communicate, collaborate, and argue well and correctly. The core

competencies expected in science learning, especially in elementary schools, are to provide students with the ability to understand the nature of science, communicate science (both orally and in writing), and apply scientific abilities to solve problems encountered (Imanuel, 2015; Putri et al., 2021). Science learning is one model of curriculum implementation that is recommended to be applied at the basic education level because science learning is a vehicle for equipping students with the knowledge, skills, and attitudes needed to understand and adapt to phenomena and changes in the environment around them (Agustina & Apko, 2021; Hadi & Novaliyosi, 2019). Through science learning, students can understand all scientific phenomena that occur in the natural environment.

By introducing natural science to students from elementary school, students will be helped to understand nature well. Everything will be seen objectively and scientifically as an effort to provide direct experience in science learning. Hence, students need to be helped to develop several process skills, which include observing skills with all the senses, proposing hypotheses, using tools and materials correctly while always considering work safety, proposing, asking questions, classifying, interpreting data, and communicating various findings, exploring and sorting factual information that is relevant to testing ideas or solving everyday problems (Rahayu & Ismawati, 2019; Rima et al., 2023). So, science learning seeks to equip students with various abilities to know and do things that can help them understand their natural surroundings in depth. The natural knowledge obtained by elementary school students will encourage these students to practice it in real life. Natural science is not just rote memorization but a practice that must be applied in people's daily lives. This process can be achieved through formal education, namely school (Daulay et al., 2021; Luh et al., 2019). A teacher plays a very important role in learning inside and outside school. Learning in the classroom is optimal if the teacher can organize students and learning infrastructure and control them in a pleasant classroom atmosphere to achieve learning goals. Every teacher who enters the class, at that time the teacher must be ready with the material presented, such as lesson plans, media, methods, models, and learning techniques so that students can be interested in following the learning process (Abduh, 2015; Sari, 2017). Therefore, teachers are required to have innovative, creative, and productive abilities so that a teacher can always improve the quality of learning in the classroom.

The development of technology and information has had a major impact on humans. One of the consequences of the perceived development of technology and information is the developments that occur in the world of education. The development of technology and information in the world of education has caused changes in interactions between educators and students, which has also led to the digitization of teaching materials in the world of education (Hermansyah, 2021; Yana & Andy, 2019). Technological developments in education are also a collaborative means of obtaining information about teaching materials and learning activities. Current technological advances are expected to make the world of education easier regarding the learning process. Science learning in elementary schools prioritizes direct learning to develop potential so that students can explore and understand the natural surroundings scientifically. However, in science learning, students are only given material in the form of text explaining the material. Students' understanding of the studied concepts will be difficult and tend to be forgotten more quickly. One method of learning science that can create conditions for achieving scientific concepts and components of the scientific process (Aliyyah et al., 2021a; Fauzi et al., 2023). The lack of experimental/practicum materials is a difficulty experienced by teachers in implementing science learning in the classroom. This difficulty can be seen from the need for learning media to support science learning and the difficulty of providing learning media between the existing materials in science learning. Learning media is very important in the learning process. However, in its implementation, many learning media still could be more effective due to a lack of understanding and teachers' lack of skill in creating media fields(Kurniawan et al., 2019; Zain & Pratiwi, 2021). Most teachers do not use media but only blackboards to support their learning in class (Amaliyah, 2021; Suci Rahmadani, Mufarizuddin, 2023).

Similar problems are also found in the field; learning media is rarely used in the learning process. Teachers still apply conventional learning in the learning process where lecture and question-and-answer methods dominate classroom learning activities without any variations in other models. Teachers only use existing sources such as books or posters/pictures. This tends to result in students feeling bored when studying. In the learning process, students have yet to understand the material clearly because the teacher explains the material without being supported by learning media. Hence, the material received by students is still abstract. Lack of use of media that attracts students' interest in learning can influence the students' learning process (Melani et al., 2022; Rikarno et al., 2021). Apart from that, when the learning process takes place, teachers only rely on books, which makes students tend to get bored, and classroom conditions become chaotic, with a lack of innovation affecting student characteristics. This research aims to develop videoscribe learning videos to produce valid, practical, effective, and responsive media.

One digital media developed for this learning activity is video scribe technology. One digital media developed for this learning activity is video scribe technology. Videoscribe media is categorized as media with audio-visual elements. Audio media can only be heard with the sense of hearing, while visual media can only be displayed using static or moving image media. The typical appearance in Videoscribe is as if the teacher is writing on a blackboard using a writing aid and displaying the images in the video using his hands and pasting them, so it is unique and attracts students' attention. Teachers can innovate to develop video media into the Videoscribe application to explain or illustrate complex and abstract concepts in the science learning field (Permatasari et al., 2019; Zamil et al., 2021). Videoscribe can solve problems in making interesting learning videos and uses animation in various forms as well as sound or music in making these learning videos. It greatly influences the presentation of information in operating systems classes and the effectiveness of learning to deepen understanding of the material presented and increase student learning motivation. Based on previous research on science learning, using videoscribe media is said to be effective in improving student learning outcomes (Fransisca, 2018). It is also relevant to research which states that video scribe media influences critical thinking skills because this media can encourage students' curiosity, make students more active, and motivate students through video displays in the form of a combination of images, animation, and sound (Indayani & Wicaksono, 2021). The video scribe media used in this research has been designed in such a way as to enable interactive activities between students and the learning media. So this media is suitable for development.

The advantages of using the videoscribe application are that the application of audio-visual media in learning is optimal because it can increase students' motivation and interest in learning and clarify the material presented. There are three objectives achieved in this research, namely: (1) To describe the design and development of video scribe learning videos based on a contextual approach on the topic of the water cycle for fifth-grade elementary school students, (2) To determine the validity of the results from the development of video scribe learning video media based on the approach contextual on the topic of the water cycle for fifth-grade elementary school students, and (3) To determine the effectiveness of contextual approach-based video script learning videos on the topic of the water cycle for fifth-grade elementary school students.

2. METHOD

This contextual approach-based video scribe learning video development research uses the ADDIE model. The media product development process in this research follows the ADDIE development model so that it has implications for the feasibility of the resulting product. The ADDIE development model has systematic stages and allows evaluation activities at each stage (Hendi et al., 2020). The ADDIE model also allows each stage of development to refer to the previous steps so that the resulting product is an effective and quality product (Bancin et al., 2019; Suryaningtyas et al., 2020). The ADDIE model comprises five related stages: analysis, design, development, implementation, and evaluation (Dwiqi et al., 2020; Sholeh, 2019). The ADDIE development model comprises five stages: analysis, design, development, implementation, and evaluation (Setiawan, H. R. et al., 2021). The ADDIE model produces creative, effective, and efficient products because the processes are systematic and easy to implement. The subjects of this research were three experts (1 media expert, one learning content expert, and one design expert), three students, and six students. The trial design used in this development research is a one-group pre-test and post-test design.

The data collection methods used in this development research are questionnaires and tests. The questionnaire method obtains data by compiling a list of questions for respondents and answering them in writing (Syarifuddin et al., 2021). This method is used in validity testing to grade learning video products developed based on experts' and practitioners' assessments. Test method: a test is used to assess students' understanding. Tests in the form of objectives or essays are usually used to assess a person's realm of knowledge (N. P. J. D. Wulan et al., 2019; Ni Putu Jati Dinar Wulan et al., 2019). The test method in this development research will be used to obtain trial data on the effectiveness of videoscribe learning videos based on a contextual approach to students' learning interests and learning outcomes in science learning. The data collection instrument used in this development research is a closed questionnaire using a rating scale and multiple choice test instrument. The instrument grid for testing media experts, material content experts, learning design experts, individual/small group instrument grids, and effectiveness testing instruments can be seen in Table 1, Table 2, Table 3, Table 4, and Table 5.

Table 1. Media Expert Validation Instrument

No.	Aspect	Indicator	Total Item
1	Accuracy	The media presents information about learning competencies.	
		The videos presented are based on student characteristics.	3
		The videos presented are based on the characteristics of the material.	
2	Clarity of Method	The language used is easy for students to understand.	
		The material in the video is explained effectively.	
		The material presented in the video is packaged coherently.	
		Media provides evaluations to measure students' understanding of lesson material.	8
		The material in the media is based on students' real-life situations.	
		The learning process in media can provide meaningful experiences.	
		The learning process on video media begins with asking questions.	
		The learning process using video media reflects students.	
3	Interest/Concern	Videos can motivate students to learn	
		Learning videos can increase students' interest in learning in class.	5
		Videos can increase students' attention to learning.	

Table 2. Material Expert Validation Instrument

No.	Aspect	Indicator	Total Item
1	Clarity in language use	The language used in Videoscribe learning videos is based on a contextual approach using communicative language	
		The language used in videos Videoscribe learning based on a contextual approach is easy to understand.	3
		Accuracy of writing and language selection in learning video media	
2	The quality of the use of words and sentences	The sentences used in Powtoon-based learning videos are easy to understand.	
		Clarity of words and terms used in Videoscribe learning videos based on a contextual approach.	3
		The arrangement of words and sentences is by good and correct Indonesian language rules.	
3	Suitability of the material with the basic competencies to be achieved	The material's completeness is presented by the basic competencies to be achieved.	
		The material's depth is presented by the basic competencies to be achieved.	2
4	Compliance of the material with the indicators achieved	The completeness of the material presented is by the indicators to be achieved.	
		The material presented is by the indicators to be achieved.	2
5	Material suitability	The completeness of the material presented is to the learning objectives to be achieved.	2
6	Providing training	Suitability of material to practice questions.	
		The practice questions presented can train students' thinking skills.	3
		Practice questions in Powtoon-based video media can train students to solve problems in everyday life.	

Table 3. Learning Design Expert Instrument

No.	Aspect	Indicator	Total Item
1	Accuracy	The media presents information about learning competencies.	
		The videos presented are based on student characteristics.	3
		The videos presented are based on the characteristics of the material.	
2	Clarity of Method	The language used is easy for students to understand	
		The material in the video is explained effectively.	
		The material presented in the video is packaged coherently.	7
		Media provides evaluations to measure students' understanding of lesson material.	

No.	Aspect	Indicator	Total Item
		The material in the media is based on students' real-life situations.	
		The learning process in media can provide meaningful experiences.	
		The learning process using video media reflects students.	
3	Interest/Attention	Facilitating students' understanding of learning materials and videos can motivate and increase students' attention to learning.	
4	Video Design	The color of the image is comfortable to look at. Illustrations with the material explained are correct.	2

Table 4. Individual/Small Group Trial Instrument

No.	Aspect	Indicator	Item Number	Total Item
1	Media Presentation	Understanding of material	1, 2, 3	5
		Benefit	4, 5	
2	Media Quality	The quality of the material content in the media	6, 7, 8	3
		Total		**8**

Table 5. Effectiveness Test Instrument

No.	Basic Competencies		Indicators of Competence Achievement	Cognitive Level	Question Number	Number of Questions
3.8	Analyze the water cycle and its impact on Earth's events and living things' survival.	3.8.1	Analyze various factors that influence the water cycle.	C4	1,2	2
		3.8.2	Evaluate the consequences of polluted clean water.	C5	3,4	2
		3.8.3	Analyze the impact of the water cycle on life.	C4	5,6,7	3
		3.8.4	Compare groundwater with surface water	C5	8,9,10	3
		3.8.5	Analyzing the impact of human activities on events on Earth.	C4	11,12,13,14,15	5
			Total			**15**

For the instrument that has been designed to be said to be valid, a content validity test is required by judges who have competence in the variables being studied. Analysis of the content validity of the questionnaire instrument was tested using the Gregory formula. Meanwhile, the multiple-choice test instrument was tested for the validity of the instrument items using the point biserial correlation technique (γ_pbi). The reliability of multiple choice instruments uses the Kunder Richardson 20 (KR-20) formula. Apart from that, a different power test was carried out to determine the different power of each question item and the level of difficulty to determine the level of difficulty of each question item. After the instrument is suitable for use in data collection, the data that has been obtained is analyzed descriptively qualitatively and descriptively quantitatively. Qualitative data was obtained from reviews by experts. In contrast, quantitative data in this development research was obtained from media feasibility test data by experts, data from media practicality tests by teachers and students, and effectiveness test data.

3. RESULT AND DISCUSSION

Result

This development research was carried out to develop the development of videoscribe learning videos based on a contextual approach to elementary science learning to increase students' interest in learning and learning outcomes. This development research was carried out through five stages of the ADDIE development model: analysis, design, development, implementation, and evaluation. At the Analysis stage, it is hoped that you can see the basic needs needed to develop learning videos. The analysis shows the basic needs needed to develop the learning video. This analysis stage consists of needs analysis, carried out by analyzing the condition of teaching materials as the main information in learning. Curriculum analysis was carried out by paying attention to the characteristics of the curriculum being used in a school, and character analysis was carried out to see students' attitudes towards science learning. This stage is carried out to analyze the need to develop new learning models/methods and the feasibility and conditions for developing new learning models/methods.

At the design stage, a storyboard is created. In this activity, design planning (storyboard) and preparation of media assessment instruments are carried out. The learning videos developed have variations in writing, color, and animation. The resulting media is in the form of files that are stored on a computer or laptop and can also be uploaded to YouTube or other social media. Once uploaded, the media in the form of learning videos can be downloaded for studying in class or outside of class as material for independent study. The learning video developed has the following structure: title, basic competencies, indicators of competency achievement, learning objectives, information about the material being taught, and practice questions.

At the development stage, the design of a product is realized based on the design created previously, as well as input and suggestions from the supervisor. This video scribe learning video is 5 minutes long. In video scribe learning videos based on a contextual approach, there is material from the water cycle related to daily life. It will make it easier for students to understand the material when viewing the content of the video. Several examples of media displays that have been created can be seen in Figure 1.

Figure 1. Videoscribe Learning Video Display

After creating the video scribe learning video, it will be tested for validity. This validity test involved three experts: one media expert, a material expert, and a design expert. After obtaining assessments from the three experts, the data were analyzed using an average formula to obtain a validity index and qualifications. In summary, the average analysis of the videoscript learning video validity test by media experts, material content experts, and learning design experts can be seen in Table 6, Table 7, and Table 8.

Table 6. Validity Test Results by Experts

Expert	Item	Evaluator	V	Description
Media	Item 1-15	60	95%	Very Good
Material	Item 1-15	75	92%	Very Good
Design	Item 1-14	60	95%	Very Good

Table 7. Results of Individual Trials

Practitioner	Score	Percentage	Average Percentage	Category
First Student	49.67	50%		
Second Student	49.67	50%	99.34%	Very Good
Third Student	49.67	50%		

Table 8. Results of Small Group Trials

Practitioner	Score	Percentage	Average Percentage	Category
First Student	47.7	50%		
Second Student	47.7	50%	95.4%	**Category**
Third Student	47.7	50%		
Fourth Student	47.7	50%		
Fifth Student	47.7	50%		
Sixth Student	47.7	50%		

At this implementation stage, Videoscribe learning videos will be tested in target schools for this development research to determine the effectiveness of contextually based Videoscribe learning videos on students' science learning outcomes. In testing the effectiveness of learning video media through pre-

experimentation with a one-shot case study design, one group pre-test post-test. At this stage, the researcher made final revisions to the learning video media, which was developed based on input from the response questionnaire or field notes on the observation sheet. It aims to ensure that the learning video media developed is appropriate and can be used by schools.

Before that, prerequisite tests were carried out, namely the data distribution normality and homogeneity tests. In the data normality test, it was found that the p-value for pre-test and post-test data was 0.122 and 0.177, respectively; this p-value was greater than the significance level of 0.05. The normality assumption is met, meaning the data is normally distributed. Meanwhile, the data homogeneity test used Levene's Test statistical technique. Firstly, the pre-test p-value is 0.414, greater than the significance level of 0.05.

This means that the pre-test data and post-test data have homogeneous data variance. After the normality prerequisite test is met, hypothesis testing can be carried out. Hypothesis testing uses the independent sample t-test. Based on the results of the t-test data in the table above, it is known that there was an increase in the average level of knowledge before and after being given education. Apart from that, the p-value is 0.00, smaller than the significance level of 0.05. It means that H0 is rejected or there is a significant difference between students' science learning outcomes before and after using videoscribe learning video media with a contextual approach.

Discussion

Based on the results of development research, it shows that (1) the average media validity score by media experts reached 95%, then the response from material experts/content experts reached 92%, and the response from design experts reached 95%, which was rated very good, (2) video Videoscribe learning based on an effective contextual approach to improve student learning outcomes in science learning material on the water cycle for class V elementary school. Below are several reasons why Videoscribe learning videos based on a contextual approach have received very good ratings.

First, regarding the content aspect of science learning, this learning video has a very good title. It is worth implementing in the learning process because the curriculum and learning materials applicable in schools have developed the media. Conformity of material with the curriculum reduces the occurrence of deviations in delivery and makes it easier for students to receive the material packaged in learning videos precisely and accurately. Therefore, learning media supports the explanations given by the teacher, attracts and directs students' attention to follow the learning, and increases students' interest and motivation in learning (Trust & Pektas, 2018; Utami & Abdulah, 2020). One component that needs attention in learning planning is selecting appropriate and suitable media for the material being taught and attracting students' interest in learning (Moto, 2019; Wedayanti & Wiarta, 2022). Learning videos are one of the audio-visual media that can improve student learning outcomes; through video shows, students can be stimulated both from a visual perspective through the displays presented and from an audio perspective through accompanying sound. Learning video media is a set of components or media that is capable of displaying images and sound at the same time. The use of learning video media is interesting media because it displays various images and is accompanied by sound, so it is hoped that it can improve student learning outcomes (Aliyyah et al., 2021a; Apriyanti et al., 2020)

Second, viewed from the learning media aspect, Videoscribe learning videos based on a contextual approach have very good qualifications and are worthy of being implemented in the learning process. The presentation of material, choice of font, layout, and color composition in this media is by the rules of learning media development. It is in line with the results of previous research, which states that a media that is suitable for application in learning should follow the basic rules/principles of media development, which include dimensions of material presentation, choice of typeface, layout, color composition, and others (Antara et al., 2022; Saputri et al., 2023). Accuracy in visual presentation will positively influence students' motivation and interest in learning. Regularity of layout, the correct choice of typeface, and good color composition can support students' learning conditions and change the learning atmosphere for the better (Novitama & Simamora, 2022; Xie et al., 2023).

As non-print teaching materials, videos are rich in information to inform the learning process because learning can reach students directly. Apart from that, videos add a new dimension to learning. Students not only see images from printed teaching materials and sound from audio programs, but in videos, students can get both, namely moving images and accompanying sound. The role of video in the context of increasing children's knowledge requires more in-depth observation, especially about the influences it causes, considering the advantages of video, overcoming limitations of distance and time, being able to describe past events in a short time, the message conveyed quickly and easily. short, develop students' thoughts and opinions, develop students' imagination (Aliyyah et al., 2021b; Busyaeri, A., Udin, T., & Zaenuddin, 2016). Learning videos are appropriate for science learning, especially in the water cycle

material, because teachers cannot describe the process. Therefore, teachers need media or tools to describe it to students so they can easily understand the digestive process. However, this is still rarely considered by teachers, considering that the use of learning videos requires other tools such as laptops and projectors, which is an obstacle, both from the school, which does not have these tools and from the teacher's ability to make videos and search on the internet and operate them to be given to students.

Several previous research findings reveal that learning videos based on a contextual approach can make it easier for students to understand science learning concepts, thereby improving student learning outcomes so that learning videos based on a contextual approach are suitable for the learning process (Jundu et al., 2020). Other findings also state that learning video media based on a contextual approach to mathematics subjects is suitable for use, and this media can increase students' interest in learning, thereby improving student learning outcomes (Octavyanti & Wulandari, 2021).

The advantages of videoscribe learning videos based on the contextual approach that are developed are different from other learning video media because this learning video specifically discusses the water cycle material for fifth-grade elementary school students. It can increase student motivation and learning outcomes because the learning video is presented. in the form of interesting cartoon animations and practice questions that stimulate students to think critically. This learning video was also created based on an analysis of needs in the field so that problems related to the use of media that are still less effective can be resolved, and teachers no longer focus too much on whiteboard media as a learning support tool. This research implies that this learning video media can help students and teachers learn in class, especially in the water cycle material for fifth-grade elementary school. With video scribe learning videos based on a contextual approach, students become more motivated and enthusiastic in the learning process in class. Learning can be effective if the teacher can understand students' characteristics. Limitations in this research lie in the scope of the material, level, and content of learning developed in the media and the number of subjects used in testing product effectiveness. The material developed for this research in media products is limited to science learning and water cycle material for fifth-grade elementary schools. Meanwhile, the number of subjects involved in effectiveness testing was only 1 class (30 people) using the One Group Pre-Test Post-Test research design.

4. CONCLUSION

Based on the research results, it was found that video scribe learning videos based on a contextual approach received a very good response, so they were declared suitable for use in the learning process and were effective in improving student learning outcomes on the water cycle material based on the results of expert tests, individual tests, and group tests, as well as the results product effectiveness test analysis. So, Videoscribe learning videos based on a contextual approach to elementary science learning on water cycle material can be used in the learning process. They have benefits that can increase students' interest in learning and make it easier to understand the material well.

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