Development of Edutainment-Based Interactive E-Modules Physics in Class XII

Mokhammad Yusuf, Mustaji, A. Noor Fatir
PGRI Adi Buana University
dadabibi34@gmail.com

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Abstract
The development of technology affects the way students learn. Almost all students of SMA Negeri 1 Bluluk have used smart phones. Therefore, teachers can take advantage of using smartphones to increase student learning motivation, one of which is by choosing technology-based learning media. The purpose of this study was to develop an interactive E-Module Based on Edutainment in Class XII Physics at SMA Negeri 1 Bluluk Lamongan. This research was developed using the ADDIE model with the stages of analysis, design, development, implementation and evaluation. The data collection instrument used in this development was a questionnaire which was distributed to material experts, learning design experts, media experts, and respondents. The respondent for the peer-to-peer test was one of the Physics teachers at SMA Negeri 1 Bluluk Lamongan. Respondents for individual trials, small group trials, and large group trials were students of class XII SMA Negeri 1 Bluluk Lamongan. The results of the eligibility test of learning media from material experts got a percentage of 83%, learning design experts 93%, and media experts 91%. The results of the questionnaire data analysis from the peer trial obtained a percentage of 92%, from the individual trial by 93%, from the small group trial by 88%, and from the field trial validation results 90%. Based on the results of the validation, edutainment-based interactive e-Modules were declared feasible

Keyword: E-Module, Edutainment, Physics

Introduction

In this modern era, people are highly dependent on technology. This makes technology a basic need for everyone[1]. From parents to young people, experts to ordinary people use technology in various aspects of their lives. Today's technology has developed rapidly. The utilization of advances in the field of information technology poses a challenge to the world of education, especially in the teaching and learning process[2].

[1] Lydia Ari Widyarini, "Intention to Use Self-Service Technology Based on Basic Human Needs," *Matrik : Jurnal Manajemen, Strategi Bisnis dan Kewirausahaan* (2021); Dorian Peters, Rafael A. Calvo, and Richard M. Ryan, "Designing for Motivation, Engagement and Wellbeing in Digital Experience," *Frontiers in Psychology* (2018); Dwi Julianingsih et al., "Utilization of Gadget Technology as a Learning Media," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)* (2021).

[2] Juan Garzón, "An Overview of Twenty-Five Years of Augmented Reality in Education," *Multimodal Technologies and Interaction*, 2021; Rahmad Nursyahidin, Arif Rohman, and Novi Febriyanti, "Learning Innovation of Islamic Education in Covid-19 Pandemic," *Jurnal Pendidikan Agama Islam* (2021); Evelyn Uuemaa and Alexander Kmoch, "Teaching Geoinformatics: Challenges and Opportunities," *AGILE: GIScience Series*

The rapid development of information technology in the current era of globalization cannot be avoided, its influence on the world of education is inevitable. Global demands require the world of education to always and continuously adapt technological developments to efforts to improve the quality of education, especially adjustments to the use of information and communication technology for the world of education, especially in the learning process.

Today the technological developments that occur present innovations with various new features that can support the presentation of subject matter that is more interesting, not monotonous and makes it easier to deliver material when learning is carried out. The teacher becomes a facilitator to help students transform the potential that students have into abilities and skills which when developed will be beneficial to human life.

In the teaching and learning process, teachers are always required to provide new innovations so that students are able to gain new experiences in the teaching and learning process. This innovation is needed so that the learning process becomes fun and interesting. The learning process is essentially a teaching communication process. The presence of the media has a significant meaning. because in this activity the lack of clarity in the material presented can be helped by presenting the media as an intermediary. The complexity of the material to be conveyed to students can be simplified with the help of the media and also the media can represent the teacher's shortcomings in uttering certain words or sentences, even the abstractness of the material can be concretized with the presence of the media.

The learning media used aims to provide a stimulus for students to foster interest, motivation and desire to learn and bring psychological influences on students[3]. The use of learning media also helps to increase understanding, display information, and help interpret the information received [4]. The media also helps present things that cannot be described verbally. The application of media makes learning physics becomes more alive, clear, and relevant to the lives of students who are oriented towards the present and the future.

The edutainment concept has a goal so that children/students can follow and experience the learning process in a fun, entertaining and educating atmosphere so as to improve learning outcomes[5]. In addition to the benefits of self-edutainment, most of the students at SMA Negeri 1 Bluluk already have smartphones. They are more interested in using smartphones than studying with books. Therefore, to increase student motivation, learning media that utilize smartphones are needed.

Direct Current Electricity is the material taught in XII Science students with limited time.

(2022).

[3] Nurhayati, Aurora Nandya Febriyanti, "Pengembangan Media Pembelajaran Sejarah Berbasis Komik Di Kelas XI IPS 1 SMA Negeri 10 Kota Jambi," *Istoria: Jurnal Ilmiah Pendidikan Sejarah Universitas Batanghari* (2018).

[4] Anni Holila Pulungan, "The Use of Interactive Learning Media for Teachers in Rural Areas," *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal* (2021); Rusdianto Muhamad, Melizubaida Mahmud, and Agil Bahsoan, "The Use Of Learning Media on Students' Learning Outcomes," *Journal of Economic and Business Education* (2023); Bokarewa Katona et al., "Use of Visual Learning Media to Increase Student Learning Motivation," *World Psychology* (2023).

[5] Wong Guo Hui, H. F. Neo, and C. C. Teo, "Novel Edutainment Learning Concept via Augmented Reality Approach," *International Journal of Information and Education Technology* (2022); Santoso Santoso, "Penerapan Konsep Edutainment Dalam Pembelajaran Di Pendidikan Anak Usia Dini (PAUD)," *INOPENDAS: Jurnal Ilmiah Kependidikan* (2018); Setyoadi Purwanto, "UNSUR PEMBELAJARAN EDUTAINMENT DALAM QUANTUM LEARNING," *Al-Fikri: Jurnal Studi dan Penelitian Pendidikan Islam* (2019).

This material is very important because it relates to real events in everyday life. Therefore, this study aims to develop learning media in the form of Edutainment-Based Interactive E-Modules in Class XII of Senior High School, particularly in Physics.

Methods

The type of this research is Research and Development (R&D). According to Sugiono[6] research and development methods are research methods that function to test, develop and create certain products. This research developed an interactive e-module based on edutainment in the physics subject of class XII SMA on Direct Current Electricy material.

The steps for developing the learning design model refer to the ADDIE model development design. The ADDIE model consists of five steps, namely: (1) Analysis, (2) Design, (3) Development, (4) Implementation and (5) Evaluation..

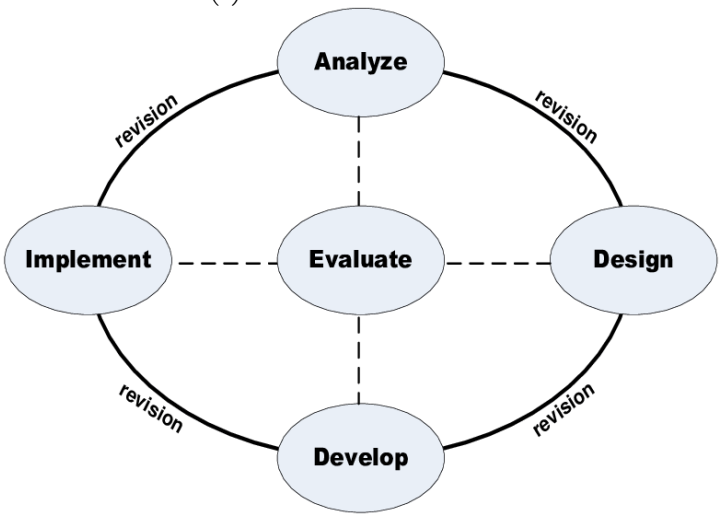


Figure 1: Product Development Steps with ADDIE

This research was conducted to develop an Edutainment-Based Interactive E-Modulein Class XII Physics Subject. Product trial design is carried out during development trials, namely Edutainment-Based Interactive E-Modules (finished products) used in Physics class of XII grade.

The target of this development research is to produce Interactive E-Modules based on Edutainment in the physics subject on Direct Current Electricity material for class XII IPA students at SMA Negeri 1 Bluluk Lamongan. Small group trials were conducted on 6 students, while field trials were conducted on all 32 students in class XII IPA.

In this media development research which uses ADDIE-oriented Edutainment-Based Interactive E-Module learning in physics, 262 educational questionnaires were given during expert validation tests and development test. Questionnaire answers are arranged based on a Likert scale. The Likert scale used consists of five alternative choice categories which can be seen the table below.

[6] Metode Penelitian Kuantitatif Sugiono and Pendekatan Kuantitatif, "Kualitatif Dan R&D," *Bandung: Alfabeta* (2007).

Table 1 Rating Scale Criteria

Score	Category
5	Very good
4	Good
3	Pretty good
2	Not good
1	Not very good

Source: Sugiyono, 2017[7]

From the validation of material experts, learning design experts, media experts, and student responses, the sum of all question points was determined. The scores obtained from filling out the questionnaire are converted into percentages and explained qualitatively. The percentage calculation uses the following formula:

$$\boldsymbol{P = \frac{\sum x}{\sum x_i} \times 100\%}$$

Detail:

P : Validation percentage

$\sum x$: Total score obtained

$\sum x_i$: Total maximum score obtained

The percentage was stated descriptively to find out whether or not interactive learning media of *flipbook* needs some product development revision. The followings were the eligibility criteria for interactive learning media that were used.

Table 2 Eligibility Level Criteria

Percentage	Qualification	Information
90%-100%	Very feasible	No need to revise
75%-89%	Feasible	Revised
65%-74%	Quite feasible	Revised
55%-64%	Not quite feasible	Revised
0%-54%	Not feasible	Revised

Adapted from Arikunto[8]

Result and Discussion

The initial development design was to test for the validity and development. The validity test was carried out by three experts, namely material experts, learning design experts, and learning media experts. The development trial was carried out with one colleague, three teachers with a high level of ability in the IT field in an individual trial, six students in a small group trial, and 32 students in a field trial. On the presentation of the test result, collection of data from validity test activities for experts and development trials to class XII IPA students at SMA Negeri 1 Bluluk Lamongan would be shown.

The validity of the ADDIE-oriented Edutainment-Based Interactive E-Module in Physics subject Class XII of SMAN 1 Bluluk Lamongan in Senior High School developed was determined from the percentage of scores obtained from filling out a questionnaire with a Likert scale. Based on research data regarding Edutainment-Based Interactive E-Modules in Class XII Physics subjects

[7]Sugiono. 2017. Research and Development Methods. Bandung: Alphabet

[8] Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik* (Rineka Cipta, 1992).

in Senior High Schools that were developed, it can be analyzed as follows.

Material Expert Data Analysis

The results of the material expert validation can be seen in the following table:

Table 3 Questionnaire Results of Material Expert Assessment

Aspect	grain Evaluation	Score Acquisition
Learning Design	The suitability of the material with basic competence	5
	Compatibility of the material with learning education	4
	The suitability of the material with the learning objectives	5
	There is a relevance between learning objectives and materials	4
	There is a relevance between the use of media and material	4
	There is relevance between questions and learning objectives	4
	There is information about steps or instructions in using the media	5
	There are instructions regarding the steps in working on the problem	5
	There is a proportional combination of text, images, videos, simulations on the media	4
	The material in the learning media is given coherently	4
	The material in learning media is easy to understand	4
Content Material	The suitability of the material presented is with the truth of concepts and theories	4
	The suitability of the material presented with scientific developments in Mathematics and technology	4
	The clarity of the media in conveying the material is good	4
	The link between the material being taught and the real-world situation of students	4
	The ability to encourage students to make connections between the knowledge students have and its application in everyday life	4
Language and Communication	The use of language in the media complies with PUEBI	5
	The use of language can be understood	4
	The style of language used is clear and communicative	4
	The use of various sentences or questions does not lead to multiple interpretations	4
	Interesting color, background, pictures and animations	4
	Compatibility of images/graphics	4
	The choice of type and size of the font is easy to read	3

	The components in the media can be put to good use	4
	The features listed support the delivery of material	4
Total Score		104

It was discovered that the total score of the validation results of material experts was 104 out of a maximum score of 125, and the percentage was 83%. After being converted with a level of validity, the ADDIE-oriented Edutainment-Based Interactive E-Module in the Class XII Physics subject at SMAN 1 Bluluk Lamongan is included in the proper qualifications. Some comments and suggestions were given by material experts for the perfection of this learning media. Comments and suggestions given by material experts on Edutainment-Based Interactive E-Modules in the Class XII Physics subject at SMAN 1 Bluluk Lamongan were:

1. Font selection needs to be adjusted.
2. Cover color needs to be adjusted.
3. Prerequisite knowledge not yet in sight.
4. Some of the pictures are not in accordance with the material

Design Expert Data Analysis

The results of the design expert validation can be seen in the following table:

Table 4 Results of the Learning Design Expert Assessment Questionnaire

Aspect	**grain Evaluation**	**Score Acquisition**
Learning Design	The suitability of the material with basic competence	5
	Compatibility of the material with265 earning education	5
	The suitability of the material with the learning objectives	5
	There is a relevance between learning objectives and materials	5
	There is a relevance between the use of media and material	5
	There is relevance between questions and learning objectives	5
	There is information about the steps or instructions in using the media	4
	There are instructions regarding the steps in working on the problem	4
	There is a proportional combination of text, images, videos, simulations on the media	5
	The material in the learning media is given coherently	5
	The material in learning media is easy to understand	4
Content Material	The suitability of the material presented is with the truth of concepts and theories	5

	The suitability of the material presented with scientific developments in Mathematics and technology	5
	The clarity of the media in conveying the material is good	5
	The link between the material being taught and the real-world situation of students	5
	The ability to encourage students to make connections between the knowledge students have and its application in everyday life	4
	There is an analysis component	5
	There is a design component	5
	There is a development component	5
	There is an implementation component	5
	There is an evaluation component	5
Language and Communication	The use of the media complies with PUEBI	4
	The use of language can be understood	4
	The language style used is clear and communicative	4
	The use of various sentences or questions does not lead to multiple interpretations	4
	Interesting color, background,	3
	pictures and animations	4
	Compatibility of images/graphics	5
	The choice of type and size of the font is easy to read	5
	The components in the media can be put to good use	5
Total Score		139

Based on the presentation of the results of the design expert's assessment, the total score of the design expert's validation results was 139 out of a maximum score of 150, after the calculation was carried out, the percentage was 93%. After being converted with a validity level, this ADDIE-oriented Edutainment-Based Interactive E-Module is included in the proper qualification
Comments and suggestions given by design experts on E-modules based on Edutainment Based Interactive E-Modules were about layout and color

Media Expert Data Analysis

The results of media expert validation can be seen in the following table:

Table 5 Results of the Media Expert Assessment Questionnaire

Aspect	**grain Evaluation**	**Score Acquisition**
Portability	ADDIE-oriented Edutainment-Based Interactive Learning E-Modules are easy to access	5
	The ADDIE-oriented Edutainment-Based Interactive Learning E-Module is easy to operate	5
usability	The menus contained in the ADDIE-oriented Edutainment-	4

	Based Interactive Learning E-Module are easy to understand	
	The fonts used on the media are legible and easy to understand	4
	The menu sensitivity selected by the user is able to work optimally and can display pages quickly	4
	The name of the developed ADDIE-oriented Edutainment-Based Interactive Learning E-Module is easy to remember and interesting	5
	The content in the media contains comprehensive facts, concepts and theories of physics	4
Visual Communication and Interactivity	Use of language in the media complies with PUEBI	5
	The media display design is simple and easy to understand	5
	The selection of menu colors or navigation in the media is appropriate	4
	The selection of the layout of the navigation menu in the media is appropriate	4
Total Score		50

Based on the presentation of the results of the assessment of media experts, it was known that the total score of the validation results of the design experts was 50 out of a maximum score of 55, and the percentage was 91%. After being converted with the feasibility level mentioned in Table 3.6, this ADDIE-oriented Edutainment-Based Interactive E-Module-Based Learning Media is included in the proper qualification with revision. Comments and suggestions given by design experts on this Edutainment-Based Interactive E-Module are innovative media and were suitable for use without revision.

Peer Trial Data Analysis

The results of peer testing can be seen in the following table:

Table 6 Results of the Peer Test Questionnaire

Aspect	**grain Evaluation**	**Score Acquisition**
Appearance	Text or writing on this media is easy to read	5
	The images presented are clear or not blurry	5
	The images presented are appropriate (not too much and not too little)	4
	There is a description (source) for each image presented in this media	4
	The pictures presented are interesting	5
	The images presented are in accordance with the material	5
Material	The material in this media can be understood easily	5

Presentation	The material presented in this media is coherent	5
	Can follow the learning activities step by step easily	4
	Sentences used in this media can be understood easily	4
	There are no sentences with double meanings in this medium	4
	Can understand the terms used in this media	5
	The questions used in this media are in accordance with the material	5
Benefit	Learning is easier by using this media	5
	This medium is very interesting to use	5
	By using this media more interested in learning	5
	Be more diligent in learning by using this media	4
	This media provides more motivation to learn	4
Total Score		83

Based on the results of the questionnaire, the percentage of learning media achievement can be calculated. It was found out that the total average score in the peer trial was 83 out of a maximum total score of 90, and the percentage was 92%. After being converted to a feasibility level, this ADDIE-oriented Edutainment-based Interactive E-Module-Based Learning media is included in the very proper qualification.

Even though this ADDIE-oriented Edutainment-oriented Interactive E-Module-Based Learning Media is included in the very proper qualifications, there were comments and suggestions that need attention for improving learning media. Comments and suggestions given by colleagues are for the future, hopefully there will be other technology-based learning media so that there are choices of various media that are useful and support the educational world,

Individual Trial Data Analysis

The results of individual trials can be seen in the following table:

Table 7 Individual Trial Questionnaire Results

Aspect	**grain**	**Gain Score**		
	Evaluation	**P1**	**P2**	**P3**
Appearance	Text or writing on this media is easy to read	5	5	5
	The images presented are clear or not blurry	4	5	5
	The images presented are appropriate (not too much and not too little)	4	5	4
	There is a description (source) for each image presented in this media	5	5	5
	The pictures presented are interesting	4	5	5
	The images presented are in accordance with the material	4	5	5
Material	The material in this media can be understood	5	4	4

Presentation	easily			
	The material presented in this media is coherent	5	5	5
	Can follow the learning activities step by step easily	5	4	4
	Sentences used in this media can be understood easily	5	4	5
	There are no sentences with double meanings in this medium	5	5	5
	Can understand the terms used in this media	4	5	5
	The questions used in this media are in accordance with the material	4	4	5
Benefit	Learning is easier by using this media	4	5	5
	This medium is very interesting to use	5	5	4
	By using this media more interested in learning	5	4	4
	Be more diligent in learning by using this media	5	5	4
	This media provides more motivation to learn	4	5	5
Total Score		82	85	84
Average Total Score		84		

Based on the results of the questionnaire, the percentage of the achievement level of learning media can be calculated. The average score in individual trials was 84 out of a maximum score of 90, and the percentage was 93%. According to the feasibility level, the ADDIE-oriented Edutainment-Based Interactive E-Module-Based Learning media is included in the very proper qualification, so it can be concluded that learning media is suitable for use in classroom learning. Some comments and suggestions needed attention for improving learning media. The followings were comments and suggestions given by students in individual trials:

1. The content of the media is good and interesting so that it makes it easier for students to receive and understand the material.
2. The images contained in the learning media are very interesting but the color selection needs to be improved.
3. Image captions make it easier for students to learn.

Small Group Experiment Data Analysis

Small group trials were conducted on 6 Bluluk 1 Public High School students with the following results:

Table 8 Results of the Small Group Trial Questionnaire

Aspect	**Grain Evaluation**	**Gain Score**					
		K1	**K2**	**K3**	**K4**	**K5**	**K6**
Appearan	Text or writing on this media is easy	5	4	5	5	5	4

ce	to read						
	The images presented are clear or not blurry	5	4	5	5	5	4
	The images presented are appropriate (not too much and not too little)	5	4	5	4	4	4
	There is a description (source) for each image presented in this media	5	4	4	5	4	5
	The pictures presented are interesting	4	5	5	5	4	5
	The images presented are in accordance with the material	4	5	4	4	5	4
Material Presentation	The material in this media can be understood easily	4	4	3	4	5	4
	The material presented in this media is coherent	4	4	4	5	4	4
	Can follow the learning activities step by step easily	4	5	3	5	4	4
	Sentences used in this media can be understood easily	5	4	4	4	4	5
	There are no sentences with double meanings in this medium	5	4	5	4	5	4
	Can understand the terms used in this media	5	4	5	4	5	4
	The questions used in this media are in accordance with the material	5	4	5	5	5	4
Benefit	Learning is easier by using this media	4	5	4	5	5	5
	This medium is very interesting to use	5	5	4	5	5	5
	By using this media more interested in learning	4	5	5	4	5	5
	Be more diligent in learning by using this media	4	5	5	4	4	4
	This media provides more motivation to learn	4	5	5	4	4	4
Total Score		81	80	80	81	82	78
Average Total Score		80					

Based on the results of the questionnaire the percentage level of achievement of learning media were calculated. It was known that the total average score in the small group trial was 80 out of a maximum score of 90, and the percentage was 88%. After being converted to a feasibility level,

the ADDIE-oriented Edutainment-Based Interactive E-Module-Based Learning media is included in the proper qualifications, so it can be concluded that learning media is suitable for use in classroom learning.

This ADDIE-oriented Edutainment-oriented Interactive E-Module-Based Learning Media is included in the proper qualification with revision. There were several comments and suggestions that need attention for improving learning media. The following are comments and suggestions given by students in small group trials:

1. The learning media that is made is very good and very clear for learning.
2. This learning media is good, equipped with explanatory videos and questions.

Large Group Trial Data Analysis

The results of the analysis of the large group trial data with 32 respondents, in each aspect are contained in the following diagram:

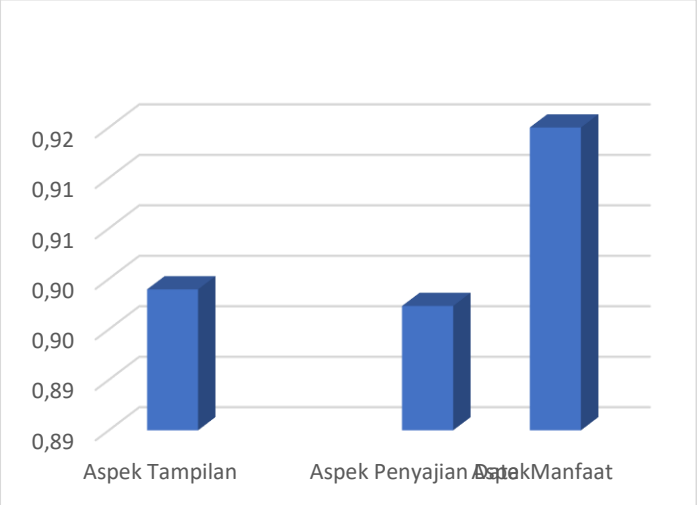


Figure 2 Diagram of Large-Scale Trial Results

Based on the data table above, it can be seen that the percentage of display aspect acquisition is 90%, the data presentation aspect is 90% and the benefit aspect is 92%. Then the average acquisition of large-scale trials is 90%. After being converted to a level of validity, this Edutainment-Based Interactive E-Module-Based Learning Media is included in the very proper qualification, so it can be concluded that learning media is suitable for use in class learning and does not need to be revised. In general, comments and suggestions in this learning media that learning media were interesting to use in learning.

In the following, the overall trial results are presented starting from the validation of material experts to field trials.

Table 9 Results of Validation and Trial of Edutainment Based Interactive E-Module Learning Media

Trial Step	Subject Try	Percentage (%)	Product Feasibility Level Qualification
Material Expert Test	1 senior teacher	83	Feasible
Learning Design Expert	1 lecturer	93	Very Feasible

Test			
Media Expert Test	1 lecturer	91	Very Feasible
Peer Trial	1 teacher	92	Very Feasible
Individual Trial	3 Master	93	Very Feasible
Small Group Trial	6 students	88	Feasible
Field Trials	32 students	90	Very Feasible

Product Revision

Product development revisions are conclusions drawn from the results of data analysis from material experts, learning design experts, and media experts, as well as respondents about media that is validated as a reference in making revisions. There are two revisions, namely revision I which was carried out after analyzing the results of the expert test validation and revision II which was carried out after analyzing the results of the development trial responses.

Prerequisite knowledge is not provided yet. some pictures are not in accordance with the material

Table 10 Material Expert Revision

Material Expert Notes	Before Validation	Revision
Font selection needs to be adjusted	too many different fonts	The font has been adjusted 
Cover color needs to be adjusted	The cover color is too animated 	The color of the cover has been adjusted 
Prerequisite knowledge not yet in sight	No prerequisite knowledge information	Addition of prerequisite knowledge information in the product 

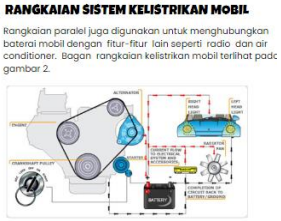
Material Expert Notes	Before Validation	Revision
Some of the pictures are not in accordance with the material	Too many animated images 	Image reduced and in accordance with the material delivered 

Table 11 Revision of Development Products by Learning Design Experts

Learning Design Expert Notes	Before Validation	Revision
Added logo on the cover	There is no logo on UNIPA yet	The addition of the UNIPA logo 
Adjusted to the requirements of the standard material book.	Material books are still not up to standard	The material book is in accordance with the guidance of the Supervisor 

Improvements were made according to expert suggestions and comments regarding the selection of font size and type so that users could read them. This revision is included in the revision stage I. Comments and suggestions from material experts regarding learning media are followed up by revising learning media according to the comments and suggestions. The revision of draft I for the development of instructional media is presented as follows.

Drafts II is the final result of revision I based on comments and suggestions from material experts, learning designs, and media related to learning media. Then the first development trial was carried out, namely by colleagues. This revision is included in the revision stage II. The following revisions are based on comments and suggestions from colleagues.

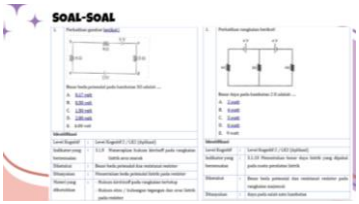
Table 12 Revision of Product Development by Colleagues

Peer Notes	Before Trial	Revision

*Fonts*more attention if necessary standard and easy to read	*Fonts*varies greatly 	Change the font so that it is easy to read 

This revision is included in the revision stage II. based on individual trials, it is included in the very good category without the need for revision, but there are a number of comments and suggestions that need attention for improving learning media. The following revisions are based on student comments and suggestions in individual trials.

Table 13 Revision of Development Products by Individual Trials

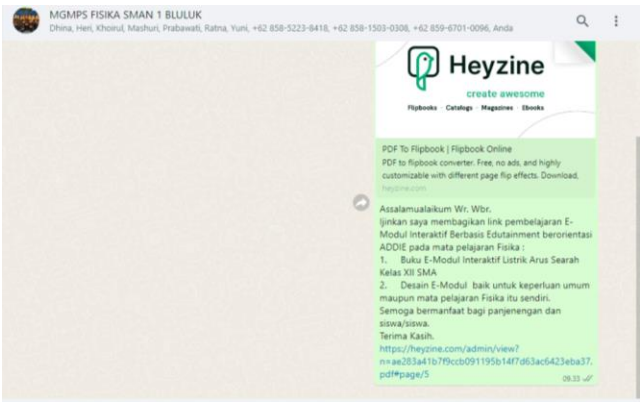
Student Notes	Before Trial	Revision
Formula writing clarified again	The formula is not clear	Writing physics formulas that are clearer to read 

This revision is included in the third revision stage. based on small group trials, it is included in the very good category without the need for revision, but there were a number of comments and suggestions that need attention for improving learning media. The following revisions are based on student comments and suggestions in small group trials

Table 4.13 Revision of Development Products by Small Group Trials

Student Notes	Before Trial	Revision
Real image media is still limited	Too many animations	The addition of real images from existing explanations 

This revision is included in the third revision stage. Based on field trials, learning media is included in the very good category and does not need revision. After going through revision II, a development product was formed that was suitable for dissemination. The deployment process is the final stage of development. At this stage, the use of ADDIE-oriented Edutainment-Based Interactive Learning E-Modules that have been developed is distributed on a wider scale. The following is the distribution via WhatsApp.



The dissemination and application of this learning media is by providing a link to ADDIE-oriented Interactive E-Module-Based Interactive Learning Media to Physics teachers in schools as practitioners. Further dissemination was carried out by sharing the ADDIE-oriented Edutainment-Based Interactive E-Module Learning Media link on the WhatsApp group MGMPS Physics SMAN 1 Bluluk Lamongan
https://heyzine.com/flip-book/fcf146fed2.html

Conclusion

Learning Media Interactive E-Module Based on Edutainment for Class XIIn in Physics at SMAN 1 Bluluk Lamongan is suitable for use in learning Physics for class XII. This can be shown from the validation results of material experts by 83% which means proper qualifications, the validation results by learning design experts by 96% which classified as feasible, and the results of media expert validation by 91% which includes in very feasible qualifications. The results of questionnaire data analysis from peer trials obtained a percentage of 92% converted which means very feasible, from individual trials of 93% converted into very feasible qualifications, from small group trials of 88% converted into feasible qualifications, and from field trials, the validation results were 90% converted into very feasible qualifications.

Suggestions for Utilizing Interactive E-Module Learning Media Based on Edutainment oriented ADDIE Physics Class XII Subject of SMAN 1 Bluluk Lamongan which has been developed can be utilized optimally by paying attention to a number of things including, The use of templates and elements in Canva for Education as media should be utilized optimally, as a substitute for media used face-to-face, so that teachers can use media in a variety of ways. Students are expected to study other relevant articles related to Canva for Education materials and flipbooks so that students have a broader knowledge base. This ADDIE-oriented Edutainment-Based Interactive E-Module Learning Media is applied to other schools, so that this media can be utilized optimally and is broader and focuses on direct current electricity material, for further development it can be done by adding alternating current electricity material. In addition to adding material related to the application of Direct Current Electricity in everyday life, it is necessary to add other material to class XII Science especially in physics so that the complete learning media covers all the material in one school year. In collecting information from experts and testing for revision purposes, it is necessary to ask questions that are more specific and not general in nature.

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