# How Effective is Learning Style Material with E-modules During The COVID-19 Pandemic?

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**ABSTRAK**

*Permasalahan yang melatarbelakangi penelitian ini adalah kurangnya sumber belajar bagi siswa pada mata pelajaran IPA sehingga hasil belajar kurang maksimal. Tujuan penelitian ini adalahpengembangan E-Modul pada mata pelajaran IPA materi gaya kelas IV. Penelitian ini merupakan penelitian pengembangan (research and devlopment). Subyek uji coba penelitian adalah siswa kelas IV. Instrumen pengumpulan data yang digunakan berupa lembar evaluasi (angket). Analisis data menggunakan analisis deskriptif kualitatif dan deskriptif kuantitatif. Hasil penilaian terhadap produk e-modul ini dilaksanakan berdasarkan enam aspek, yaitu: aspek isi bidang studi/ dengan persentase tingkat pencapaian 86.00% dengan predikat layak; ditinjau dari aspek desain pembelajaran dengan persentase tingkat pencapaian 87.60% predikat layak; ditinjau dari aspek media pembelajaran dengan persentase tingkat pencapaian 89.00% predikat layak; ditinjau dari aspek uji coba perorangan,dengan persentase tingkatpencapaian 92.50% pedikat sangat layak; uji coba kelompok kecil, dengan persentase tingkat pencapaian 94.50% predikat sangat layak;dan ditinjau dari aspek uji coba lapanga dengan persentase tingkat pencapaian 95.50% predikat sangat layak. Dengan demikian produk berupa e-modul ini memiliki tingkat validitas yang baik dan layak untuk digunakan dalam proses pembelajaran pada materi Gaya mata pelajaran IPA.*

**ABSTRACT**

The problem behind this research was the lack of learning resources for students in science subjects so that learning outcomes are less than optimal. This research was a research and development (research and development). The research trial subjects were fourth grade students. The data collection instrument used was in the form of an evaluation sheet (questionnaire). The data analysis used qualitative descriptive analysis and quantitative descriptive analysis. The results of the assessment of the e-module product were carried out based on six aspects, namely: content aspects of the field of study / with a percentage of achievement level of 86.00% with a predicate worthy; In terms of the learning design aspect, the percentage of achievement level is 87.60%, predicate worthy; In terms of the learning media aspect with the achievement level percentage of 89.00%, the predicate is feasible; in terms of the individual trial aspect, with the percentage level of achievement of 92.50% the predicate is very feasible; small group trial, with the percentage of achievement level of 94.50%, the predicate is very feasible, and in terms of the field trial aspect, the percentage of the achievement level is 95.50%, the predicate is very feasible. Thus the product in the form of e-module has a good level of validity and is suitable for use in the learning process on the subject force material of science subjects.

## 1. INTRODUCTION

The industrial revolution 4.0 is marked by very rapid technological advances throughout the world. This rapid technological progress is marked by almost all community activities using technology systems, including in the world of education. That learning and teaching around the world has gone through a transformation(Getuno et al., 2015; Leal Filho et al., 2018; Shahriar et al., 2021). This transformation can be seen through the presentation of current learning, that the presentation of conventional learning is now supported by teaching materials or materials that utilize technology, information and communication (Santosa et al., 2017). The development of information technology also

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has a very important role for the implementation of learning in schools (Coman et al., 2020; Ghavifekr & Rosdy, 2015). With this development, an educator is required to further hone, explore his abilities, and be able to take advantage of this information and communication technology, so that it is expected to support progress and change to a more positive aspect in the world of education (Shilpa & Sunita, 2016). Learning is a process of interaction that occurs between students and learning resources. Good learning is learning that provides opportunities for students to find and explore their own knowledge because by doing their own activities in the learning process students will get more experience that can be used in everyday life(Bressington et al., 2018; Kostiainen et al., 2018). During the current pandemic, educators are required to continue to carry out effective and efficient learning activities by designing their own learning and being able to utilize information technology-based learning media (Coman et al., 2020; Dewa, 2021) 2020). The use of information and communication technology in learning can not only be used at the upper secondary level but also at the elementary school level. This development requires an educator to become a facilitator for students during the learning process which is in line with the objectives of implementing the 2013 curriculum at the elementary school level (Cintang et al., 2017; Wahyudin, 2018). To fulfill obligations as facilitators, educators must be creative in finding media or teaching materials that can be used during learning (Usman, 2016). This is in order to stimulate students' curiosity so that students will be interested in exploring their own knowledge (Herayanti et al., 2017; Johnson, 2017).

Based on the results of observations made at SD Dwijendra, it was found that there were gaps in the learning process which resulted in the learning outcomes of many students who did not meet the minimum completeness criteria, especially in one of the integrated subjects, namely science subjects. There are several problems that occur such as the lack of initiative from the students themselves to explore their own knowledge so that students only accept the knowledge provided by the teacher. This can be caused by the lack of teaching materials that support the implementation of learning. Currently, the existing teaching materials have not been able to develop students' courage and skills in asking questions and opinions(Weriyanti et al., 2020). Currently, the learning process only uses teaching materials, namely student books, which need to be revised and added material according to student needs. Teachers mostly use teaching materials from textbooks which are also combined with general history reading books(Yerizon et al., 2020). If this condition is left unchecked, it will greatly affect the ability of students to understand the material being studied and this will certainly have an impact on learning outcomes. One solution that can be offered is to develop teaching materials based on local wisdom.

Teaching materials are a means that are considered capable of achieving the goals and objectives of the learning objectives (Asriani et al., 2017; Kuswanto, 2019; Martha & Andini, 2019). Teaching materials that contain an arrangement of learning devices and materials that can create an environment that allows students to learn. Thus, one of the goals of providing teaching materials is to facilitate the student learning process (Ajoke, 2017). Teaching materials can also help teachers in carrying out the process of teaching and learning activities in the classroom (Shabiralyani et al., 2015). Therefore, teachers must be able to choose appropriate teaching materials to be applied in the teaching and learning process to make it easier for students to understand learning materials (Dewa, 2021; Tsai et al., 2017), so that they can achieve the expected learning objectives. The importance of teaching materials in the learning process requires teachers to develop teaching materials that are in accordance with the needs of students, curriculum demands, not depending on textbooks and government aid packages, and according to the characteristics of students (Andani & Yulian, 2018; Cloonan & Fingeret, 2020; Weriyanti et al., 2020). Therefore, one of the teaching materials that can be used as a solution is the development of e-modules in science subjects.

Module teaching materials were developed so that students can learn independently (Hamid et al., 2017; Rusmanto & Rukun, 2020). Modules can be one form of teaching material developed because the module has five main characteristics which are its advantages, namely self-instructional (facilitating independent learning), self contained (loading all material), stand-alone (does not depend on other teaching materials), adaptive, and use friendly (Kimianti & Prasetyo, 2019). With the development of information technology, it has enabled the development of learning in changing the presentation of teaching materials, in this case the print module, into a module packaged in a digital format or known as an electronic module (E-Modul) (Wirayasa et al., 2020). E-Modul is also a web-based ICT teaching module, its advantages compared to the print module are its interactive nature which makes it easy to navigate, allows displaying/loading of images, audio, video and animation and is equipped with formative tests/quizzes that allow immediate automatic feedback (Pour et al., 2018). The advantage of the E-Modul in the learning process lies in the learning pattern that allows students to learn independently using the E-Modul and the teacher is no longer the only source of learning for students. The content contained in the E-Modul makes it easier for students to understand the explanation of the material, namely with its interactivity and mixing multimedia elements into E-Modules. The development of teaching materials in

the form of E-Modules will make it easier for students to understand learning materials. The use of e-modules in the implementation of learning can attract students to be more interested and find out the material provided. With this e-module, students can also access and whenever they want to learn because it can be accessed directly through their cellphone. The components of the e-module can also attract students' interest in learning because it contains pictures so that students don't get bored just looking at writing (H. D. Lestari & Parmiti, 2020).

There are several studies related to this research. Research that states the learning media in the form of e-modules developed in Integrated Science Class VIII was feasible to be used in learning by teachers and students Based on several stages of testing, the interactive module is categorized as valid with a feasibility level of 82% with good criteria so that the e-module is feasible to use (Kuswanto, 2019; Nursuhud et al., 2019). Research that states that after the e-module media test was carried out the results obtained had very good criteria so that this e-module was feasible to use (Hastari et al., 2019). Research that states that expert assessment and limited trials, problem-based learning-based science e-modules and scientific literacy questions were feasible to be used in science learning to improve scientific literacy skills(Kimianti & Prasetyo, 2019). Research on teaching materials that have been developed states that teaching materials based on local content/local wisdom can make participants more enthusiastic in participating in learning both at the primary and higher education levels(Hutama, 2016; Kormasela et al., 2020; Nurafni et al., 2020). The development of local script-based teaching materials can improve students' writing skills(Owon, 2017), hone students' language skills (Kimianti & Prasetyo, 2019)(Saidah & Damariswara, 2019), be motivated to learn more actively (Lestariningsih & Suardiman, 2017) . Based on the explanation above, the purpose and focus of this research was the Development of E-Modules on Materials Force in Science Subjects Grade IV SD Dwijendra. The purpose of the study was made to focus researchers on the problems to be tested so that the objectives can be achieved optimally.

## 2. METHOD

This research used the type of research and development (Research and Development). The subjects of this research were media experts, material experts, learning experts, students and teachers. The research used was quantitative and qualitative data types. The collection of data instruments in this research was of interest based on e-module validators of media experts, material experts, and learning experts. As well as teacher and student questionnaires to test the use of e-modules. This development research was a qualitative descriptive data analysis technique using a qualitative assessment, then the quantitative data was calculated the average score. The development model used was the ADDIE model, consisting of the analysis, design, development, implementation and evaluation stages (Tegeh, 2014). This research develops teaching materials used to assist in Hindu religious education courses using teaching materials in the form of e-modules in science subjects. The development of the ADDIE model can be seen in the following chart. The data analysis technique used was qualitative descriptive analysis technique and quantitative descriptive data analysis. Qualitative descriptive analysis techniques were used to process data from the review of content experts in the field of study or subjects, learning product design experts, learning media experts and the results of student trials. The results of this analysis were then used to revise the product developed. While quantitative descriptive analysis was used to process the data obtained through a questionnaire in the form of scores. The results of the data analysis were seen from the results of the high and low percentage of needs desired by the subject who is the target of this research.
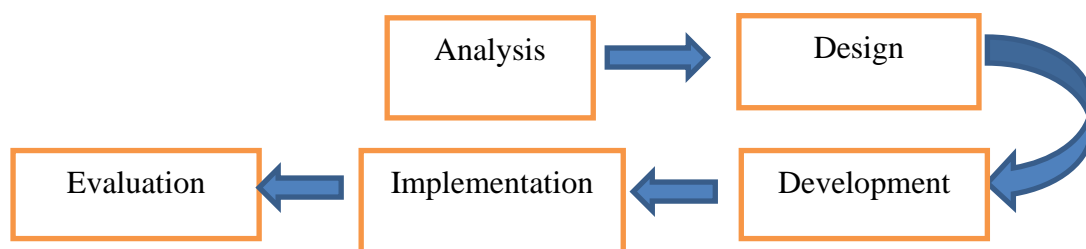


**Figure 1.** Model Pengembangan ADDIE

### 3. RESULT AND DISCUSSION

**Result**

        In the development of this E-Module, each stage uses the ADDIE development model by Januszewski and Molenda. The stages in the development model used will be described as follows. The first stage is the Analysis stage (analysis). The initial step taken by the developer in making this E-Module is to make direct observations to SD Dwijendra, which is located in Denpasar City. During the observation activity, the developer tries to dig up information. At this stage the developer can analyze and find out the problems that occur. This is done by giving some questions to the teacher related to the process of implementing learning. After collecting various data and information that can be used as material to strengthen and develop certain products that can be used as solutions to overcome these problems.

        The second stage in this development model is design. In general, when making a product, the steps taken are to make a design of the product, in this case, the design made is the design of the e-module. In this stage, the preparation of reference books is carried out first which will be used to support the material in the created e-module, then prepare a concept map, prepare module designs and develop assessment instrument designs. The third stage is development. At this stage the developer has started to develop its product in the form of an e-module based on the design that has been made at the design/design stage. The stages in the development of this product are the media production stage, media validation, and media testing. This research was only carried out until the media trial stage. The calculation of the percentage results from the feasibility test of the developed e-module product shown in Table 1.

**Table 1.** Instrument Trial Results

| Trial Subject | Validity Results (%) | Description |
| --- | --- | --- |
| Subject content expert | 86,00 | Good/ Worthy |
| Learning design expert test | 87,60 | Good/ Worthy |
| Teaching materials expert test | 89,00 | Good/ Worthy |
| Individual trial | 91,50 | Very good/ Very worthy |
| Small Group Trial | 94,65 | Very good/ Very worthy |

        Of the five percentages according to the category of very good. So it can be concluded that the E-Module media in science subjects, the subject matter of Style developed, is feasible for learning. The next stage is the implementation stage. At the implementation stage, the activity carried out was to assess whether the e-module media developed was to determine the level of effectiveness when used in learning for fourth grade students in Science Subjects for Force Subjects at SD Dwijendra, namely by conducting field trials. This was done by using one class as a test class with a percentage of 95.5 in the very good/very worthy category. The last stage is evaluation. At this stage, what is done is to evaluate the media that has been tested and its feasibility is known. Evaluation and revision can be done simultaneously. Because the feasibility test obtained very good results, this product does not need to be revised and is feasible to use.

        The development of a product using the ADDIE development model is deemed capable of meeting standards and product categories that are appropriate to be used to meet teaching materials in the implementation of learning (Cheung, 2016). This can be seen in the elaboration of the results of the feasibility test. In the first stage, namely the Subject Content Expert Test, this product has been tested and assessed by a subject content expert using a questionnaire/questionnaire instrument. After being converted to the benchmark reference assessment conversion table, the level of achievement on a scale of 5, the percentage of the achievement level is 86.00% with good/decent qualifications/predicate so that this product does not need to be revised. These results are obtained because the content of the material contained in the e-module is in accordance with the basic competencies and indicators that have been determined.

        The second stage is the Learning Design Expert Test. After going through the subject expert test then the product developed is tested on the learning design expert to get assessments, comments, and suggestions on the product in terms of learning design. This teaching material was tested on a learning design expert. After being converted to the Pap conversion table, the level of achievement on a scale of 5, the percentage of the achievement level is 87.60% with good/decent qualifications/predicates and does not need to be revised. This teaching material is in accordance with the indicators and learning objectives that have been determined, and the presentation of the material presented is simpler to produce teaching materials that are easy to understand and more interesting to learn. In the third stage, the expert test was carried out after the trial of subject content experts and learning design experts. The product in the form of an e-module was tested on a learning media expert. After being converted to a benchmark reference

assessment conversion table, the level of achievement on a scale of 5, the percentage of the achievement level was 89.00% with good/decent qualifications/predicate due to the quality of the writing, as well as the pictures on the e-module. -The module is very good and interesting so that the students themselves will also be more interested in learning because they don't only see the writing so that according to the media expert test, this media does not need to be revised.

The fourth stage is a trial for individuals. The subjects used as the subjects of this research were the fourth grade students of SD Dwijendra, totaling 5 students. After being converted to the benchmark reference assessment conversion table, the level of achievement on a scale of 5, the percentage of the level of achievement is 91.50% with very good/very worthy qualifications/predicates. This is because the elements that support the teaching materials are appropriate, such as the completeness of the material presented, the selection of simpler words so that they are easier to understand, the selection of subject matter so that the material to be conveyed can be conveyed properly, not boring and can motivate students in learning. and the teaching materials no longer need to be revised. The fifth stage is the Small Group Trial. This trial was carried out after going through the individual trial phase involving 20 respondents or students. The assessment carried out by 20 people is still focused on the material aspect. After being converted to the Pap conversion table, the level of achievement on a scale of 5, the percentage of the level of achievement is 94.56% with qualifications/predicates very good/very decent according to the material with the indicators or objectives to be achieved. So this media does not need to be revised.

The last stage is the Field Trial. This field trial was carried out after going through the individual trials and small group trials involving twenty students as respondents. The assessment carried out remains focused on the overall material and media aspects, both physical and non-physical, as well as from the technical aspect of operation. After being converted to the benchmark reference assessment conversion table, the level of achievement on a scale of 5, the percentage of the achievement level is 95.5% with very good/very worthy qualifications/predicates. So this media does not need to be revised. Based on the stages of the development model that have been carried out, when viewed from the category based on the percentage value that this product is of high quality and feasible to be used in the implementation of learning. But the expert tests provide some notes that can be used as a reference to make a little revision so that the resulting product is better and more effective when used. So that the resulting product is very feasible to use in order to support the effectiveness of the implementation of learning.

Like this teaching material, it is not in accordance with the development steps taken. The analysis stage provides an overview of how the teaching materials are needed in the learning process. From the results of the analysis of the desired teaching materials are teaching materials consisting of interesting images and in accordance with the material. Teaching materials that have interesting pictures will make students interested and interested in reading (Afifah et al., 2016). In addition, from the results of the needs analysis, it was also found that what students currently need are teaching materials that make it easier for students to understand the material being studied as well as teaching materials found by students in everyday life because that is why. The importance of teaching materials in the learning process requires teachers to be able to develop teaching materials that are in accordance with the needs of students, implementing the curriculum, not depending on texts and government aid packages, and in accordance with the characteristics of students(Andani & Yulian, 2018; Cloonan & Fingeret, 2020; Mayarnimar & Taufina, 2017; Weriyanti et al., 2020). With the existence of teaching materials in accordance with the curriculum, needs and characteristics will be able to increase student motivation and students can obtain learning in accordance with the development of science and technology(Suzuki et al., 2020). So, the presence of quality teaching materials will be able to have an impact on motivation, interest, creativity which results in student learning outcomes. Developing materials through teaching materials is the most relevant solution considering the diversity of competencies, creativity, and teaching patterns of teachers in various schools(Suzuki et al., 2020)(Prihandoko et al., 2017).

The e-module created is one of the digital teaching materials that is booming in the world of education today. Teaching materials are all forms of teaching materials used to assist teachers in carrying out the learning process in the classroom which contains a set of materials that are systematically arranged, both written and unwritten, so as to create an environment or atmosphere that allows students to learn in digital form so that they can be accessed. whenever and wherever(Arsanti, 2018; S. Lestari, 2018). Teaching materials that are included in the digital type are good and easy to use because they are more accessible, easy to carry, durable, and easy to obtain for free via the internet (Alperi, 2020). This e-module is considered very suitable to be given to students on material about the style of science subjects. This is because e-modules can be accessed anytime, anywhere students want to learn. During the current pandemic, distance learning is very unlikely for students to get supporting books other than student books. The development of e-modules certainly has a tremendous impact because e-modules have several advantages. These advantages are, among others, because the e-module is structured in the form of

teaching materials that utilize information technology, so this e-module can save on paper and stationery usage. E-Modules can be arranged with multimedia applications because they can combine various media in the form of text, images, graphics, music, animation, video, and interactions into digital files, and are used to convey messages to users, besides that the amount of teaching time can be reduced and the learning process can be done anywhere and anytime by students independently with e-modules (Artiniasih, et al, 2019).

There are several studies related to this research. Research that states the learning media in the form of e-modules developed in Integrated Science Class VIII was feasible to be used in learning by teachers and students Based on several stages of testing, the interactive module is categorized as valid with a feasibility level of 82% with good criteria so that the e-module is feasible to use (Kuswanto, 2019; Nursuhud et al., 2019). Research that states that after the e-module media test was carried out the results obtained had very good criteria so that this e-module was feasible to use (Hastari et al., 2019). Research that states that  expert assessment and limited trials, problem-based learning-based science e-modules and scientific literacy questions were feasible to be used in science learning to improve scientific literacy skills(Kimianti & Prasetyo, 2019). Research on teaching materials that have been developed states that teaching materials based on local content/local wisdom can make participants more enthusiastic in participating in learning both at the primary and higher education levels(Hutama, 2016; Kormasela et al., 2020; Nurafni et al., 2020). The development of local script-based teaching materials can improve students' writing skills(Owon, 2017), hone students' language skills (Kimianti & Prasetyo, 2019)(Saidah & Damariswara, 2019), be motivated to learn more actively (Lestariningsih & Suardiman, 2017)This research makes a major contribution to the implementation of learning in schools, especially in science subjects. Based on testing, the developed e-module is feasible to use so that it is ready to be used during learning so that this research has a positive impact on the implementation of learning and can increase students' motivation to learn so that later it will affect student learning outcomes.

## 4. CONCLUSION

This development research resulted in a product in the form of an e-module. The quality of the e-module developed is very good/very worthy. Based on the results of the feasibility test, it can be concluded that the developed e-module is included in the very good criteria. Thus the learning product in the form of an e-module has a good level of validity and is suitable for use in the learning process in science subjects. This e-module will support the student learning process because it can be accessed independently anytime and anywhere.

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