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## **Manajemen of Independent Curriculum Teaching Modules with Style Materials**

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**Abstract:** Educational achievement in Education for Sustainable Development (EfSD) requires fair and equitable education. Teachers must pay attention to various preparations through learning management as regulated in the curriculum. The research aims to examine the conditions for implementing EfSD in elementary schools through the management of learning modules. The research uses Research and Development (R&D) with the ADDIE model. The research begins with an analysis of the problem, curriculum needs, teachers and students. The design stage takes the form of resource management and management of material aspects through the development of independent curriculum teaching modules. At this stage, a validation test was carried out by material experts and practitioners which resulted in an average in the very good category. Then the trial implementation phase was limited to 10 students, extensive testing on 22 grade 4 students. The evaluation phase aims to determine the suitability of the independent curriculum teaching module product for use in schools. The results of student responses to the teaching module, both limited tests and extensive tests, show the very good category. It can be concluded that the development of teaching modules attracts students' interest in learning according to their characteristics, skills and interests.

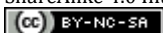
**Keywords:** Teaching Module, EfSD, Independent curriculum

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## INTRODUCTION

Education can be said to be one of the important elements in advancing a nation. The young generation as part of a nation can be formed to make the right decisions on every problem. This means that the formation of the attitude or character of the younger generation in solving a problem can be done through education as a foundation (Ruhaliah et al., 2020), (Susanti et al., 2023). Likewise, education is included in international ideals throughout the world which are organized into aspects of Education for Sustainable Development (EfSD) (UNESCO, 2017).

Educational achievements in the SDGs require equitable and just education. This means that the education of all individuals at various levels of society must be achieved as an indicator of the creation of fair education as an effort to educate society. Therefore, education plays an important role in the nation's progress and global competition (Merma-molina et al., 2023). This condition then gives rise to various preparations that must be considered by the government and teaching staff through program plans and strategies designed to achieve maximum educational quality as regulated in the curriculum (Amin et al., 2023). The curriculum is defined as a planning instrument and as a guide for teaching staff in carrying out teaching and learning activities that are used to achieve predetermined educational goals (Fakhrunnisa et al., 2003), (Dewi et al., 2023).

The school is currently implementing an independent curriculum. Where the independent curriculum is a curriculum that optimizes learning with various content intended to help students to strengthen competition and deepen learning concepts. Teachers have the opportunity to provide lessons through various strategies that are tailored to students' interests and learning needs (Zhurakovskaya et al., 2020). Students are also expected to have a Pancasila Student Profile (Novita & Muharawati, 2022). Therefore, the implementation of the independent learning curriculum can be an effort to realize fair and equitable education in ESD (Leal et al., 2024).

Education for Sustainable Development (EfSD) in Indonesia has been carried out by the Ministry of National Education in the United Indonesia Cabinet (2008-2009), but its implementation is not comprehensive. The results of a study in 2008 found that the implementation of EfSD had problems with regulations, human resources and the EfSD material itself, (Aprima & Sari, 2022). Apart from that, teachers do not understand how to integrate EfSD theory and practice in schools and there is a lack of learning materials related to EfSD (Nousheen et al., 2020), (UNESCO, 2017), and (Fekih et al., 2021). This problem is a challenge in achieving EfSD that will become more difficult. Achieving EfSD is not only the responsibility of the government and formal educational institutions. However, it also requires the involvement of elements of society such as figures, institutions and the family environment for its success. Therefore, it is necessary to manage management resources related to aspects of people, money, materials, methods, machines and markets. The aim of this research is to examine the conditions of ESD implementation in Bogor city cluster 1 elementary schools through the development of teaching modules in the independent curriculum.

This research is based on several previous researchers, including (Primasti, 2021) who analyzed the EfSD program with the finding that EfSD has been integrated into all learning activities, but the obstacle is that the teaching materials are not comprehensive in terms of the depth and breadth of the material. In line with this research, Nurdiansyah's research (Susilawati et al., 2023) found that the implementation of an EfSD-based curriculum can be realized in learning, but there needs to be a role from school administrators to make it happen. Furthermore, the research findings of (Nurwatin, 2022), (Dewi et al., 2023) put more emphasis on the impact of the independent curriculum on learning, meanwhile (Cipnal Muchlip, 2022) analyzed human resource management in relation to curriculum implementation with the finding that some schools do not yet have special units in managing human resources. Based on previous research which can be said to be the state of the art, the novelty of this research emerges, namely teaching modules as a resource management strategy through an independent curriculum.

## METHODS

### Research design & Participant

The research design uses a Research and Development or R&D approach, using the ADDIE model. This research was conducted at SDN 2 Panaragan, Bogor City, which was chosen to measure students' perceptions of aspects of EfSD or Education for Sustainable Development (EfSD). This research is categorized as development research which aims to improve resource management through an independent curriculum at SDN 2 Panaragan, Bogor City.

### Instrument and indicators

This open module in research and development uses instruments in the form of questions and indicators to see the suitability of the teaching module used. The following is table 1 regarding instruments in the form of questions and table 2 in the form of indicators for developing teaching modules.

### Procedur

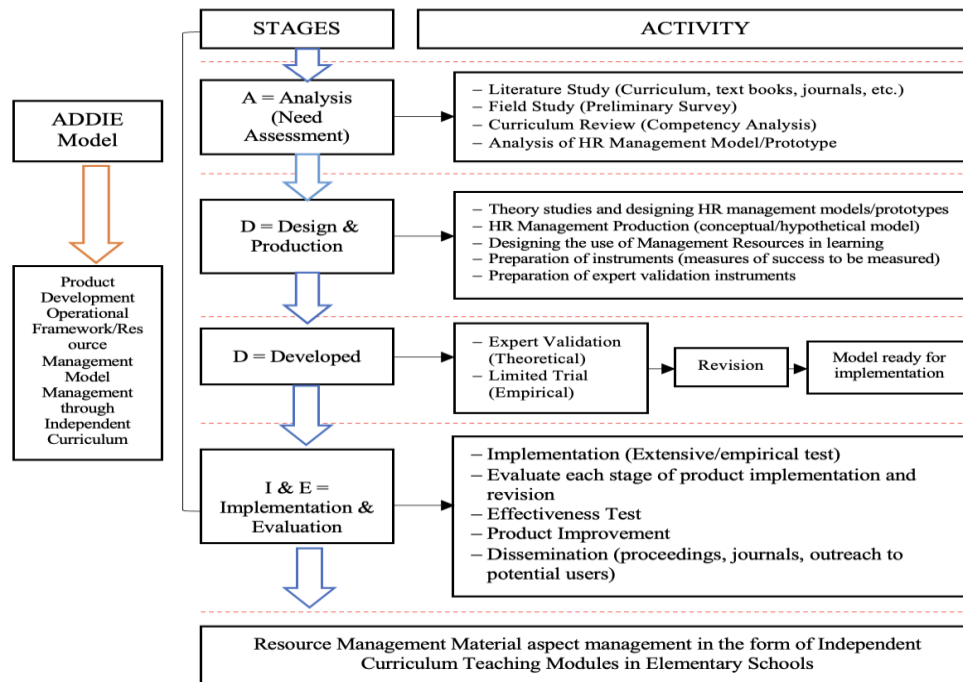
The research stages of the Research and Development approach to the ADDIE model. Needs analysis, which is a stage consisting of literature studies related to curriculum analysis, teaching materials or teaching tools used, articles related to the issues to be researched. At this stage a preliminary study is also carried out by conducting interviews with teachers, students, school principals and parents about the needs of students and the school. Design, is a stage that begins with reviewing theory as a basis for designing teaching modules, designing teaching modules according to independent needs and curriculum, designing learning models in accordance with independent curriculum-based management resources, designing instruments to measure the success of management products resource management for material aspects of the independent curriculum, and compiling instruments for expert validation. Development, is the stage of developing management resource management after there is a prototype design. Development was carried out by creating a resource management model for material aspects related to the implementation of the independent curriculum. After this stage is completed, a validation test is carried out by media and material experts and a limited trial is carried out on 10 students with the aim of finding out how students respond. After that, revisions are carried out and the teaching module product is ready to be implemented. Implementation, is the stage after product revision by conducting extensive trials on grade 4 students. Evaluation is the final stage after extensive testing to determine the advantages and disadvantages of the teaching module product. After that, product effectiveness and refinement tests are carried out, and it is disseminated in proceedings, journals, or product outreach to users. The stages of development research using the ADDIE model can be seen in Figure 1.

**TABLE 1.** *Needs Analysis Instrument*

No.	Question	Number of Answers		Percentage (%)	
		Yes	No	Yes	No
1.	Students have difficulty learning the Science Project				
2.	Students have difficulty learning aspects of style				
3.	Students are confused about the Implementation of the Independent Curriculum for Science and Technology Subjects in style material				
4.	Students can channel their talents and interests in science lessons				

**TABLE 2.** *Teaching Module Development Indicators*

No	Aspect	Indicator
1	General information component	1) Identity 2) Initial competency 3) Pancasila student profile 4) Infrastructure 5) Target student 6) Learning model
2	Core component	1) Learning objectives 2) Meaningful understanding 3) Igniter question 4) Learning activities 5) Assessment 6) Remedial and enrichment
3	Attachment component	1) Student worksheet (LKPD) 2) Teaching material 3) Instructional media 4) Grid and evaluation 5) Glossary and bibliography



**FIGURE 1.** *Stages of the ADDIE Model Adapted to Research Needs*

**TABLE 3.** *Level of validity and product revision*

Percentage	Valid Criteria
76-100	Valid (no need for revision)
56-75	Valid enough (no need for revision)
40-55	Invalid (revised)
0-39	Invalid (revised)

## Data analysis

### *Analysis of validation questionnaire data*

Data from the assessment of the feasibility of teaching material development products mathematics is analyzed descriptively. Determination of the level of validity and revision products as in table 3. With the formula used as follows.

$$P = \frac{\sum X}{\sum X_i} \times 100\% \quad (1)$$

Information:

$P$  = The presentation you are looking for

$\sum X$  = Number of respondents' answers

$\sum X_i$  = Number of ideal values

### *Analysis of effectiveness and practicality*

In this study, researchers determined the following criteria for effectiveness and practicality. Learning completion of at least 75% of the total number of students has obtained marks in improving learning outcomes. Learning results show significant differences between the experimental class and the control class.

### *Class data analysis*

The analysis of class data is obtained from the results of the class tests given for the instrument class and control class, which are then analyzed using t-test analysis. However, before the t-test is carried out, it must be carried out first knowing that the two classes are homogeneous (do not differ in ability). Homogeneity test using the SPSS 23.0 program with criteria, if the level of significance  $\geq 0.05$ , then the variance is said to be homogeneous, and vice versa if the level of significance is  $< 0.05$ , then the variance is declared not homogeneous. T-test testing using SPSS 23.0. with criteria, if the significance level is  $\leq 0.05$ , then it is stated that both classes exist the difference in learning outcomes is significant, whereas if the results are at the level of significance  $> 0.05$ , then it is stated that the two classes have no differences significant in learning outcomes.

## RESULTS

This research produces learning tools in the form of Teaching Modules in the independent curriculum as one of the Educational for Sustainable Development (ESD) components for class IV students at SD Negeri Panaragan 2, Bogor City. This teaching module contains learning plans, student worksheets and assessments in them. This teaching module contains science material (science and social studies). Researchers created this teaching module by referring to the ADDIE development model according to Robert Marible Branch. The ADDIE development model includes five development procedures, namely analysis, design, development, implementation and evaluation.

### Analysis

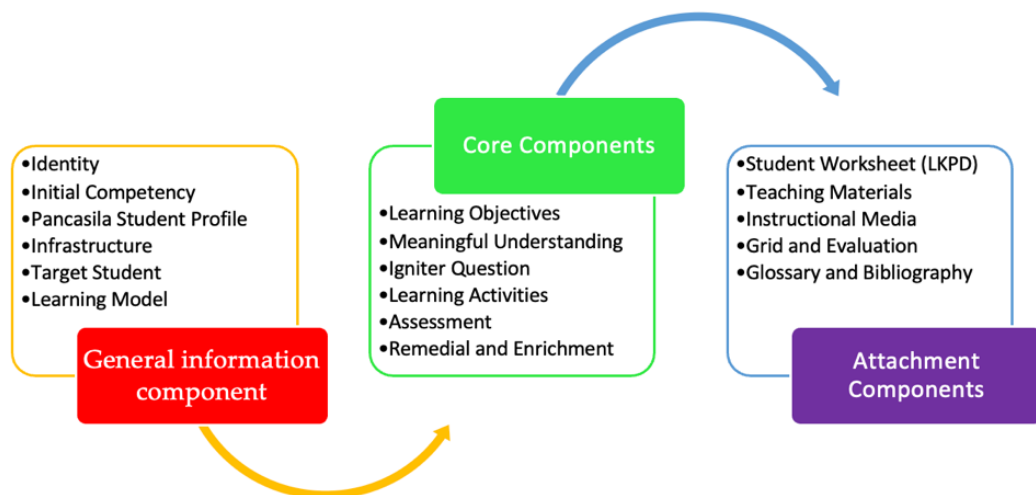
Problem analysis was carried out by gathering information from 22 students and class teachers through interviews and distributing problem questionnaires. This interview activity aims to identify the natural and social science learning process at SD Negeri Panaragan 2 in general. The results of the interviews showed that students had difficulty understanding the material, this was due to the material being too broad and the use of learning media not being optimal. Another cause is the lack of teacher innovation in implementing learning models and methods that are not yet varied. On the other hand, the media and learning resources used are very

limited to textbooks. This package book can only be held by students if the students borrow books from the school library. Usually students borrow books when learning the Science Project, after learning is finished, students return the school textbook. In this case, students do not have control over the ownership of the textbook. This makes learning less independent because student handbooks are only available in schools. Apart from interview activities, problem analysis was also carried out by distributing problem questionnaires to 22 students. This aims to find out the problems of learning sciences in terms of difficulties in learning the sciences project, implementing the independent curriculum, and understanding the sciences project material and its relation to the local wisdom of making batik according to the major. The problem analysis stage is carried out by distributing a problem questionnaire containing 12 questions. The percentage obtained from the problem analysis questionnaire results is presented in table below.

The table 4 shows the results that 90.90% of students think that learning science and science is difficult and 86.36% of students think that learning style is difficult. One of the TPs that students consider difficult is "Students can determine style. in everyday life". Apart from that, 77.27% of students felt confused about the implementation of the Independent Curriculum in Science Subjects. The thing that makes students confused is that there is no provision for achieving the material at each meeting. Teachers may combine different aspects of material in one meeting. So that the teacher can change the material at each meeting and this seems to free up the teacher to convey the lesson material. Then as many as 68.18% of students felt they had not received their rights in channeling their talents and interests in science lessons. Developing talents and interests in science and science subjects is a characteristic of the Merdeka curriculum. This is the difference between science and applied science subjects in the previous curriculum.

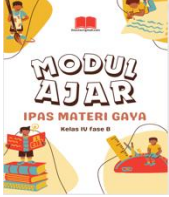

**TABLE 2.** Data from analysis questionnaire results

No.	Question	Number of Answers		Percentage (%)	
		Yes	No	Yes	No
1.	Students have difficulty learning the Science Project	20	2	90,90	9,10
2.	Students have difficulty learning aspects of style	19	3	86,36	13,63
3.	Students are confused about the Implementation of the Independent Curriculum for Science and Technology Subjects in style material	17	5	77,27	22,73
4.	Students can channel their talents and interests in science lessons	15	7	68,18	31,82



**FIGURE 2.** Teaching module design with three components

**TABLE 2** *Teaching module design or story board*

Part	Information	Picture																																				
Cover	Front view of the teaching module																																					
General information	Contains: 1) Module Identity; 2) Initial Competency; 3) Pancasila Student Profile; 4) Infrastructure; 5) Target Students; 6) Learning Model	<table border="1"> <thead> <tr> <th colspan="2">A. Identitas Modul</th> </tr> </thead> <tbody> <tr><td>Nama Penyusun</td><td></td></tr> <tr><td>NIP</td><td></td></tr> <tr><td>Satuan Pendidikan</td><td></td></tr> <tr><td>Mata Pelajaran</td><td></td></tr> <tr><td>Fase/Kelas</td><td></td></tr> <tr><td>Alokasi Waktu</td><td></td></tr> <tr><td>Jumlah Pertemuan</td><td></td></tr> <tr><td>Jumlah Peserta Didik</td><td></td></tr> <tr><th colspan="2">B. Kompetensi Awal</th></tr> <tr><th colspan="2">C. Profil Pelajar Pancasila</th></tr> <tr><th colspan="2">D. Sarana Prasarana</th></tr> <tr><th colspan="2">E. Target Peserta Didik</th></tr> <tr><th colspan="2">F. Model Pembelajaran</th></tr> <tr><th colspan="2">G. Metode</th></tr> <tr><th colspan="2">H. Asesmen</th></tr> <tr><th colspan="2">I. Domain Konten</th></tr> <tr><th colspan="2">J. Sumber Bacaan</th></tr> </tbody> </table>	A. Identitas Modul		Nama Penyusun		NIP		Satuan Pendidikan		Mata Pelajaran		Fase/Kelas		Alokasi Waktu		Jumlah Pertemuan		Jumlah Peserta Didik		B. Kompetensi Awal		C. Profil Pelajar Pancasila		D. Sarana Prasarana		E. Target Peserta Didik		F. Model Pembelajaran		G. Metode		H. Asesmen		I. Domain Konten		J. Sumber Bacaan	
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Attachment Components	Contains: 1) Student Worksheet (LKPD); 2) Reading Material; 3) Learning Media; 4) Glossary, 5) Bibliography																																					

## Design

The next stage in this research is to design management resources through teaching module aspects. The general design is described in figure 2. The design stage is limited to material aspects, in this case the teaching modules in the independent curriculum. The design stage includes several plans for developing teaching modules by designing several of them, such as designing Teaching Module components, preparing teaching module materials, and designing instruments. The design stage means determining the components of the teaching module that will be developed. The initial stage is determining the cover. After the cover page is the foreword page. Next, the general information section contains the module identity, Pancasila Student Profile and things that need to be prepared in class. Furthermore, the core components include learning objectives, learning scenarios and their syntax, trigger questions, etc. and the last part of the teaching module is the attachment component. This component contains student worksheets, reading materials and a bibliography.

So that the prototype results at this design stage produce an initial design of the independent curriculum-based teaching module components on substance material and its changes, namely: (1) Cover, (2) Foreword, (3) general information, (4) core components, (5) Attachment Components. The results of the independent curriculum teaching module design are contained in table 2.

## Development

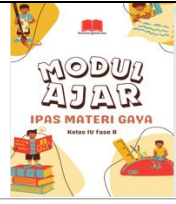
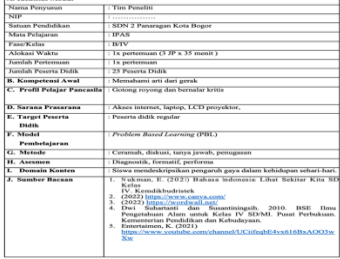
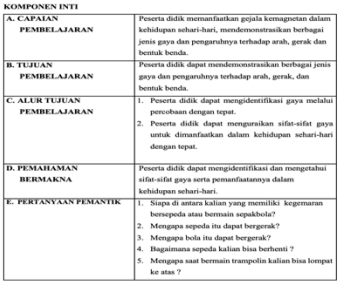

The development stage will focus on material aspect management resources, in this case the teaching modules in the independent curriculum. The teaching modules created are based on the Learning Objectives Flow, the flow is based on Learning Achievements. The essence of this stage is developing material, the same as developing material in the learning implementation plan (RPP). Development is based on three components, namely information components, core components, and attachment components. The development results list the parts that will be filled in from the three components shown in the table 3.

The development stage consists of the process of printing teaching modules that have been designed and are ready to be tested in the classroom. This stage begins with arranging the appearance of the teaching module's front page, cover image, name of the teaching module compiler. At this stage, the research conducted a product assessment with expert validators to determine the level of validity of the teaching module. Expert validation tests were carried out to determine the validity of the teaching module before testing student responses. This validation was carried out on 2 expert validators consisting of 1 material expert validator and 1 teacher as a practitioner. The determination of validators is based on the competence of each validator. The material expert validator is a Pakuan University Science Learning Lecturer with Basic Education Competencies and the practitioner expert is a class IV teacher at Panaragan 2 Public Elementary School.

The calculation results showed that material expert validation was 96.3% with a very valid category, namely the material was relevant to the competencies that students had to master, the description of the material was sufficient to meet the demands of the curriculum, the material was presented coherently and was easy for students to understand and the language used in the teaching module was easy understood by students. Meanwhile, the percentage of teacher validation results is 92.66% with a very valid category, namely the material is relevant to the competencies that students must master, the material description is sufficient to meet learning outcomes, the language used in the teaching module is easy for students to understand, it presents learning objectives that must be mastered. students, suitability of the teaching module cover design with the material. The average percentage of validation results from 2 validators is 94.48%. These results indicate that this teaching module is very valid without revision. The product validation graph from experts is presented in Figure 5.



TABLE 3. Teaching module design or story board

Part	Information	Picture
Cover	Front view of the teaching module	
General information	Contains: 1) Module Identity; 2) Initial Competency; 3) Pancasila Student Profile; 4) Infrastructure; 5) Target Students; 6) Learning Model	
Core Components	Contains: 1) Learning Objectives; 2) Meaningful Understanding; 3) Igniter Questions; 4) Learning Activities; 5) Assessment	
Attachment Components	Contains: 1) Student Worksheet (LKPD); 2) Reading Material; 3) Learning Media; 4) Glossary, 5) Bibliography	

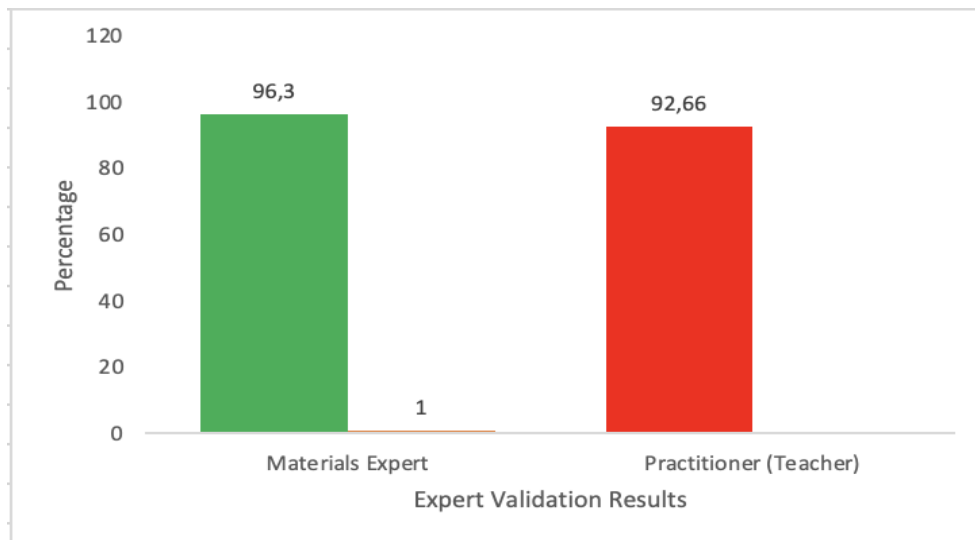


FIGURE 2. Graph of validation results by experts

**TABLE 5.** *Results of small scale response questionnaire*

No	Assessment Aspects	Amount	Total Percentage (%)	Criteria
1.	Cover View	82	91.11	Very interesting
2.	Module Contents Display	182	86.77	Very interesting
3.	Ease of Learning	103	85.83	Very interesting
	<b>Total</b>	<b>367</b>	<b>87.87</b>	Very interesting

**TABLE 6.** *Large scale response questionnaire results*

No	Assessment Aspects	Amount	Total Percentage (%)	Criteria
1.	Cover View	470	94.95	Very interesting
2.	Module Contents Display	1070	92.66	Very interesting
3.	Ease of Learning	608	92.12	Very interesting
	<b>Total</b>	<b>2148</b>	<b>93.24</b>	Very interesting

## Implementation

The implementation phase began with a small-scale student response test carried out on 10 fourth grade students at SD Negeri Panaragan 2, Bogor City. This stage is carried out by giving questionnaires to students to be given an assessment of the teaching module. Aspects that need to be seen from student responses are the appearance of the cover, the appearance of the contents and ease of learning. Apart from filling out questionnaires, students can also provide suggestions and comments on the teaching module. The percentage of small-scale student response test results carried out on 10 students was 87.87%, namely the cover on the teaching module made students interested in learning, the pictures were clearly visible, the pictures on the teaching module could explain the material being presented, the teaching module being delivered was visible. clear, the illustrations displayed on the LKPD help understand the material, the teaching module can help understand the concept of the material well, the writing and font size in the teaching module can be read clearly, the sentences in the teaching module are easy to understand, the teaching module makes learning fun, the module teaching is easy to operate, more interested in science and science learning, especially the style material in the form of teaching modules, teaching modules make students enthusiastic about learning, learning activities using teaching modules are not boring. These results show that this teaching module is very interesting and can be continued at the large-scale response test stage. Apart from that, students also commented that this teaching module was very good and very helpful in understanding the material well. The results of the small scale response are presented in the table 5.

A large-scale student response test was carried out on 22 class IV students at SD Negeri Panaragan 2, Bogor City. A large-scale student response test was carried out to see the response of final stage students to the use of teaching modules in class. The results of this large-scale response test become the final assessment of the teaching module developed. As with small-scale student response tests, data collection at this stage is by providing response questionnaires for students to fill out. The aspects seen from student responses are the appearance of the cover, the appearance of the contents, and ease of learning. Apart from filling out questionnaires, students can also provide suggestions and comments on teaching modules. The results of the large-scale student response test were 93.24%. These results show that this teaching module is very interesting. Comments and suggestions from students say that the teaching module is 1) interesting and easy to understand 2) the writing and image size in the teaching module can be read clearly 3) they are more interested in learning. The results of the large-scale response are presented in table 6.

## Evaluation

The final stage of the ADDIE development model is the evaluation stage. The results of this

stage will be an analysis of research data obtained from an analysis of the validity of the science and science teaching modules in the independent curriculum in class IV elementary schools, from validators (experts/experts) by lecturers and teachers/practitioners. Then, the practical analysis is seen from the questionnaire responses from class IV students at SD Negeri Panaragan 2, Bogor City. Teaching modules are teaching materials that have been developed by researchers using the independent curriculum. This research and development model for teaching materials refers to Robert Marible Branch's ADDIE model. The ADDIE model has five stages, but researchers limit it to four stages, namely Analysis, Design, Development, and Implementation. Meanwhile, the final stage, namely Evaluation, was not used due to limitations in terms of finances, energy and time. Researchers chose to use the ADDIE model, because the ADDIE model presents systematic steps from analyzing student needs to applying the product to students, making it possible to produce science and technology learning modules that are in accordance with the Merdeka Curriculum. Independent curriculum is one of the components contained in Educational for Sustainable Development (EfSD).

## DISCUSSION

Based on the results of the needs and problem analysis, information was obtained that the problem with science and technology learning was that students were less interested in learning. Apart from that, in studying force material, students also experience difficulties when studying force material, the properties of force, and the influence of force on objects. The teaching materials used at this school are textbooks which students do not fully own, because they have to borrow them from the library. So far there are no supporting teaching materials or teaching modules that help students to better understand the science material and can support students' competencies, especially in improving 21st Century skills or known as 4C. The problems experienced by these students became the basis for developing the teaching module for science and technology subject matter. The selection of class IV science subjects is in accordance with the syllabus in the independent curriculum. This is in line with Indriaturrahmi and Sudiyatno's research. The use of STEM-based science and science teaching modules for class STEM. The validation results from material experts show that the feasibility aspect of the content gets a very good score because the Learning Objectives (TP) in the module have been developed to the point that the ATP is in line with the Learning Outcomes (CP), the material included in the teaching module is accurate, and the learning material supports it. The product being developed can make the material more interesting, so it can motivate students to discover further knowledge. This is in accordance with Kinanti and Sudirman's research which states that the teaching materials used by students should include material that is in line with the learning concept and can develop students' abilities, so that students are able to understand the material and competencies more easily and can support learning activities.

The percentage of validation results from material experts regarding aspects of the appropriateness of the content and components of the teaching module was 96.3%. This aspect contains an assessment regarding the suitability of the TP with the material in the teaching module. With these results the product developed is included in the "Very Valid" category.

Material experts also provide assessments regarding the advantages and disadvantages of the IPAS teaching module. The advantage of this teaching module is that "the learning module is applicable and in accordance with the needs of students in the class. Apart from that, as the material expert said regarding the shortcomings of this teaching module, "The material about the influence of forces in everyday life needs to be improved." Suggestions for improving the teaching module include adding material on the influence of style related to the culture of students in their daily lives. This statement is in line with research conducted by (Nasrul, 2018), (Vedianty & Samsul Arif, 2023) that the teaching materials used in learning greatly influence students' interest and motivation to learn. So the teaching materials used should contain the integrity of the material content as well as supporting features that can foster students' understanding of the material. This finding is also in line with Kusuma's research which states that good teaching materials will have a high level of clarity and be easy for

students to understand (Eko Agustinova et al., 2022), (Joynes, 2019), (Rahayu T, 2018), (Fadilah et al., 2021), and (Rahmawati et al., 2017).

The results of the response test showed that the cover design in the module was attractive, the color display of the teaching module was attractive and clear and the selection of images was in accordance with the content of the material, and the delivery of the material in the teaching module encouraged active students. The large-scale response test obtained a percentage of 93.24%, this result meets the very interesting category. The data from the first response test showed a result of 87.87%, while the second response test showed a result of 93.24%. There was a relative increase in percentage and did not cause many significant changes. These two percentages can be said to mean that the product developed meets the Very Attractive category with the product development criteria set by (Akbar & Ayun, 2019). The Science and Technology teaching module in style material is very valid and can be used as supporting teaching material for students as a learning process. Apart from that, the results of previous research by (Maghfiroh et al., 2023), who has developed interactive learning content in science and science subjects, material on energy sources based on Problem Based Learning, regarding the creation of teaching modules for fourth grade elementary school students. Apart from that, the results of previous research by (Munawaroh et al., 2017), (Fanani, 2018), (Kwangmuang et al., 2021), who developed the science module, showed that the use of the science module received an appropriate score to meet the requirements for the Very Valid category and the module can also be used as teaching material that can support learning and is practically used to improve learning outcomes.

The development of this teaching module has also attracted the attention of other researchers such as (Merma-molina et al., 2023), (Komalasari et al., 2018), (Abdullah et al., 2013), (Rondeau & Rondeau, 2017), (Watkins et al., 2021), (Maghfiroh et al., 2023) with the finding that the teaching module developed has had an impact on improving student learning outcomes. Apart from that, aspects of students' skills and attitudes in learning increase their activity, cooperation and tolerance. However, what is different from the research findings is the subjects studied by students and the teaching modules developed. However, it can be concluded that the teaching module developed has a positive influence on students in classroom learning. Meanwhile the journal article (Bahtiar et al., 2023) and (Novita et al., 2020) examines digital capabilities that have an impact on learning outcomes. The results of previous research provide an illustration that development can be carried out not only on open modules or learning tools, but there are also other tools and teachers need to have skills in using digital technology.

## CONCLUSION

Development of Independent Curriculum Teaching Modules as part of the Educational for Sustainable Development (EfSD) class IV phase B of Panaragan 2 State Elementary School, Bogor City. This design uses the ADDIE development model which was developed by Robert Smaldino. Validators are needed to validate the Teaching Module in the independent curriculum towards Education for Sustainable Development (EfSD) that has been developed. The results of the research stated that the science and science teaching module in the independent curriculum was included in the category of Very Valid and Very Interesting in learning science in Style material. The material expert validation obtained a score of 96.3% and the practitioner (class IV teacher) result was 92.66%, so the average validator result was 94.48%. This figure shows that it is in the Very Valid category and worthy of implementation. Students' responses to the development of independent curriculum teaching modules towards Education for Sustainable Development (EfSD) in the style material aspect in class IV of SD Negeri Panaragan 2, Bogor City were included in the Very Interesting category due to getting results of 87.87% for small-scale trials and 93.246 % for large scale trials. Based on the description above, it is stated that the development of the Science and Technology Teaching Module in the independent curriculum towards Education for Sustainable Development (EfSD) in a very interesting style material and suitable for reuse as teaching material in the classroom.

Research on managing learning through teaching modules is interesting to research, there are still many components that can be studied by future researchers. Therefore,

suggestions are aimed at future researchers to be able to research other aspects that have not been touched upon in this research. Aspects of Education for Sustainable Development and aspects of learning tools. Other suggestions are also aimed at schools to provide more facilities and support for teachers to take part in training so that learning can adapt to current conditions. For teachers to continue to explore their potential or abilities to become adaptive, innovative and creative teachers.

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