
Feasibility of Using Conservation Education Learning Devices for Class X High School Students

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Abstract. The curriculum in Indonesia has not yet implemented the conservation education model in learning, so there are no learning devices with this model in Indonesian schools, therefore it is necessary to carry out research regarding the preparation of conservation learning devices. This study aims to determine the feasibility of learning devices for conservation education in class X SMA. The research method used is R&D using the ADDIE model which is limited to the development stage (analysis, design, development). The learning devices developed consisted of lesson plans, worksheets, power points, modules, and evaluation questions, then their feasibility was tested by being validated by five validators and analyzed using Aiken'S V to determine validity and intraclass correlation coefficient (ICC) was used to determine reliability. The research instrument used was a validation sheet. The results showed that the validity value of the lesson plan was 0.89, the worksheet was 0.86, the power point was 0.88, the module was 0.88, and the evaluation item was 0.88 and all were included in the category of very high content. The results of lesson plan reliability 0.933, LKPD 0.937, power point 0.898, module 0.973, and evaluation item were 0.939 and all included in the very good category. It can be concluded that the conservation education learning devices for class X SMA are appropriate to use.

Keywords: conservation education, feasibility, learning devices

Introduction

At present the environment is one problem faced by many countries. Environmental problems had a large impact which began to be felt in the 1950s, proving that environmental problems had existed since ancient times and the discussion was endless (Hardati, et al., 2015; Atmaja, et al., 2020; Wardani & Yuanita, 2020). There are various types of causes of environmental problems, based on data from the united nations framework convention on climate change (UNFCCC) global environmental problems can be caused by climate change, damage to the ozone layer, the greenhouse effect, and acid rain (Proistosescu, et al., 2018; Septiadi & Yasa, 2021).

The development of the globalization era is increasing and this condition has both positive and negative impacts on life (Díaz, et al., 2019; Nugraha, et al., 2021; Marcelina, et al., 2022). One of the negative impacts is that it can lead to human behavior that can damage the environment (Michael, et al., 2020; Sriyati, et al., 2022). Furthermore, dependence on the environment makes humans the main subject in

utilizing natural resources but sometimes makes humans forget, causing damage (Nugroho & Puspitasari, 2019; Nugraha, et al., 2021). This is in line with a study in the intergovernmental panel on climate change (IPCC) in 2007 explaining that human activity is one of the main causes of increasing concentrations of greenhouse gases in the earth's atmosphere which in turn can cause global warming and climate change (Fattah, 2013; Subiyanto et al., 2018).

One way to protect the environment is through environmental education because it is able to educate individuals so that they have attitudes and skills in protecting and maintaining the preservation of nature and can be rationally included in the curriculum (Widaningsih, 2010; Aripin, 2017). Success in forming human resources to implement the principles of sustainable development can run smoothly with environmental education because it is a factor that plays an active role in creating this success (Landriany, 2014). Based on data from the belgrade charter a global framework for environmental education, the aim is to increase awareness and concern, and creating a unified pattern of behavior (Bactiar, 2007; Sardjono, 2011).

Environmental education can be poured in the form of conservation in the school environment. This is because means preservation or preserved (Rahman, 2013) so that it can be used as a means to protect the environment. Meanwhile, education can be a place to build character so that it is in harmony with nature and society (Nurkholis, 2013). Conservation education in schools can awaken students to have concern for the environment (Türkoğlu, 2019; O'Malley & Pierce, 2022). Human action is always based on stimulation, therefore conservation attitudes need to be encouraged so that they can be carried out and affect the environment can have a positive impact, including stabilizing hydrological functions, protecting soil, conserving resources, and maintaining environmental quality (Sutarman, 2013; Wulandari, 2017; Sakurai & Uehara, 2020). Schools can organize several programs that support conservation education activities by involving the participation of school members and the school environment in the learning component in the classroom (Johnson-Pynn & Johnson, 2010; Aguilar-Jurado, et al., 2019).

Based on the results of interviews at the Adiwiyata school, namely SMAN 2 Mempawah, it is known that the school has a program designed to preserve the environment. Based on the results of interviews at the Adiwiyata school, SMAN 1 Mempawah, it is known that the school has extracurricular activities that are carried out to protect and care for the environment. For the two Adiwiyata schools, they do not yet have conservation education learning devices and only apply a little to learning materials. Based on the results of interviews at a non-adiwiyata school, namely SMAN 2 Pontianak, it is known that this school has a program implemented to preserve the environment called clean Friday but due to the Covid-19 pandemic this is no longer implemented. This school also does not have conservation education learning devices.

Conservation education is not material contained in the syllabus, but can be integrated into several subjects, one of which is environmental change material because learning that is oriented towards caring for the environment will restore awareness. It is also making a culture of loving the environment as character (Zuchdi & Darmiyati, 2011; Nardi & Narut, 2019; Spooner, et al., 2021). Conservation education has the goal of providing understanding and increasing environmental care attitudes so that they can solve problems that occur (Rachman, 2012; Göbel, 2022). The 2013 curriculum has not implemented conservation as a subject matter in learning. The 2013 curriculum that focuses on a balance of knowledge, character education and skills that can educate students (Husna, et al., 2020). Many students do not yet have the character of understanding environmental care (Hafida & Wahid, 2018; Türkoğlu, 2019). Conservation

is necessary for human survival (Ardoin, et al., 2019; Nugraha, et al., 2021). Learning about conservation can be implemented in environmental change material. This is in line with the results of Landriany (2014) and Aripin (2017) which states that the attitude of students' concern for the environment is still low, so conservation education needs to be taught to students, especially in class X because it is a transitional period from junior high school to senior high school so this attitude needs to be instilled in them because character building takes a long time (Nardi & Narut, 2019). The 21st century requires students to build character and critical thinking skills in order to be creative in solving problems and making decisions (Sriyati, et al., 2021).

In the delivery of learning about conservation education to students can be equipped with devices that support. Learning devices are a complement to the implementation of the process and can be arranged based on the applicable curriculum because can improve students' competence in the field of cognitive and communication skills (Masitah, 2018; Asmar & Suryadarma, 2021). The conservation education learning devices that have been prepared are implemented in the biology subject matter of environmental change in class X even semester. The purpose of this study was to determine the feasibility of conservation education learning devices for class X high school students.

Methods

This research uses the development method (research and development) referring to the ADDIE model which is limited to the analysis, design, and development stages (Dewi, 2018). The stages of this research included gap analysis of conservation education learning tools, preparation and development, validation, and revision based on suggestions from the five validators. The preparation stage is carried out by interviewing the school about the learning tools used. The next stage is analyzing the syllabus, determining basic competency (KD), indicators, and developing learning materials that include environmental changes. The preparation of learning tools is also done by determining the components of learning devices such as in the lesson plan (RPP), student worksheets (LKPD), power points, modules, and evaluation questions, as well as formats including letters, images, colors, layout, and margins. The next stage is the validation of learning devices, while the aspects assessed in the RPP include aspects of the formulation of learning objectives, material, language, and time. LKPD assessment includes three aspects, namely material, language, and presentation. Power point assessment includes material and appearance. The aspects assessed in the module are delivery technique, presentation feasibility, and graphic feasibility, while evaluation questions include clarity, content accuracy, relevance, content validity, no bias, and language accuracy. The sampling technique used was simple random sampling by selecting an expert as a validator to test the feasibility of the learning device with a total of five validators. The data collection technique was obtained from the learning device validation sheet. The data analysis technique used is the feasibility assessment of the learning device resulting from the five validators. The final stage is the analysis of the data from the results of the five validators. The validation results that have been obtained from the five validators are then analyzed to determine their validity using Aiken's V referring to Harmuni (2019). In

this study the results of the validation were also tested for reliability using the intraclass correlation coefficient (ICC) (Koo & Li, 2016).

Results and Discussion

Learning devices for conservation education are the result of the development and analysis of the syllabus for class X high school students on environmental change material. The learning devices developed in this study consisted of lesson plans, worksheets, power points, modules, and evaluation questions. The learning device developed is material for class X environmental change in accordance with the syllabus by implementing the concept and implementation of conservation in schools. It is proven that the attitude of concern for the environment is still low, therefore teachers can make students aware that they can have this through carried out both inside and outside the classroom, because student are important in learning (Landriany, 2014; Aripin, 2017). Some of the results of previous research indicate that to determine the feasibility of learning devices a validation process is carried out (Rahmatillah, et al., 2017; Setiawan, et al., 2021; Panjaitan, et al., 2022). The results of the validity of the lesson plan are presented in Table 1.

Table 1. The results of validity of the lesson plans for conservation education for class X high school students

Aspects	Indicator	Validator					Validity	Information
		1	2	3	4	5		
Formulation of learning objectives	1. Clarity of basic competence	3	3	4	4	4	0.93	Content validity very high
	2. Conformity between KD and learning objectives	3	4	4	4	4		
	3. Completeness of RPP components	4	4	4	4	4		
	4. Conformity of indicators with objectives	3	4	4	4	4		
	5. Appropriateness of indicators with students' abilities	3	3	4	4	4		
Theory	6. Appropriateness of indicators with students' abilities	3	4	4	4	3	0.89	Content validity very high
	7. The subject matter is in accordance with the learning objectives	3	4	4	4	3		
	8. Learning materials contain facts, concepts, procedures	3	4	4	4	4		
	9. Conformity with learning resources	3	4	4	4	4		
	10. The accuracy of the selection of learning media	3	4	4	4	3		
Language	11. Clarity of the arrangement of learning steps	3	4	4	4	3	0.87	Content validity very high
	12. Clarity of grammar	3	3	4	3	4		
	13. Communicative language	3	3	4	4	4		
Time	14. Simplicity of sentence structure	3	4	4	4	4	0.87	Content validity very high
	15. Appropriateness of the time allocation used	3	4	3	4	4		
Averages							0.89	Content validity very high

Formulation Aspects of Learning Objectives

The learning objective of this lesson plan is that students can cultivate an attitude of caring for the environment. RPP assessment on the formulation aspect of learning objectives obtained a value of 0.93 including the category of very high content validity. In the aspect of formulating, there are five indicators, namely clarity, suitability between KD and learning objectives, indicators with students' abilities, completeness of lesson plans components. The first is the clarity of learning objectives. Based on the results of the validator's assessment, the learning objectives in the lesson plan are clear and in accordance with the syllabus. According to Budiastuti, et al. (2021) and Marianti, et al. (2022), a quality lesson plan is that it contains learning objectives according to the learning concept so that it can increase one's willingness to learn. The second is the suitability between KD and learning objectives. Based on the KD validator assessment contained in the lesson plan already has conformity with the learning objectives based on the even semester class X biology syllabus (Figure 1). According to Indaryanti, et al. (2019) and Saputri, et al. (2023), in developing learning objectives must be aligned with KD so that students can increase knowledge according to their abilities. The third is the completeness of the RPP components. RPP components based on the validator's assessment are complete and clear. The lesson plan components in this study refer to the Minister of Education and Culture Regulation No. 22 of 2016 which consists of 13 components, namely: (1) school identity, (2) subject identity, (3) class/semester, (4) subject matter, (5) time allocation, (6) learning objectives, (7) KD and GPA, (8) learning materials, (9) learning methods, (10) learning media, (11) learning resources, (12) learning steps, (13) assessment of learning outcomes. Fourth is the suitability of indicators with objectives.

RENCANA PELAKSANAAN PEMBELAJARAN (PERTEMUAN PERTAMA)		E. Metode Pembelajaran	
Sekolah	: Sekolah Menengah Atas	1. Pendekatan	: Saintifik
Pelajaran	: Biologi	2. Model pembelajaran	: <i>Discovery Learning</i>
Kelas/Semester	: X/Genap	3. Metode	: Diskusi kelompok, tanya jawab, pengisian
Materi Pokok	: Perubahan Lingkungan/Iklim dan Daur Ulang Limbah	F. Media dan Sumber Belajar	
Alokasi Waktu	: 2 x 45 menit	1. Media	
A. Kompetensi Inti		a. LKPD	
KI 1 : Menghayati dan mengamalkan ajaran agama yang dianutnya		b. Gambar yang berhubungan dengan kerusakan lingkungan, ketidakseimbangan lingkungan.	
KI 2 : Menghayati dan mengamalkan perilaku jujur, disiplin, peduli (toleransi, gotong royong), santun, percaya diri, tanggungjawab, responsif dan proaktif dalam berinteraksi secara efektif sesuai dengan perkembangan anak di lingkungan, keluarga, sekolah, masyarakat dan lingkungan alam sekitar, bangsa, negara, kawasan regional, dan kawasan internasional.		c. <i>Slide Power Point</i>	
KI 3 : Memahami, menerapkan, dan menganalisis pengetahuan faktual, konseptual, prosedural, metakognitif berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni budaya, dan humaniora dengan wawasan kemamisiaan, kebangsaan, kenegaraan, dan peradaban terkait penyebab fenomena atau kejadian, serta menerapkan pengetahuan prosedural pada bidang kajian yang spesifik sesuai bakat dan minatnya untuk memecahkan masalah.		2. Sumber belajar	
		a. Modul pendidikan konservasi	
		b. Buku yang berhubungan dengan materi lingkungan, serta pendidikan konservasi	
		c. Website (e-jurnal, ebook, dan sumber lain yang dapat dipertanggung jawabkan)	
		G. Langkah-Langkah Pembelajaran	
		1. Pertemuan Ke-1 (2 x 45 menit)	Waktu
		Kegiatan Pendahuluan	15 menit
		Guru : Orientasi (Menunjukkan sikap disiplin sebelum memulai proses pembelajaran, menghayati dan mengamalkan ajaran agama yang dianut (Karakter) serta membiasakan membaca dan memaknai (Literasi). ❖ Melakukan pembukaan dengan salam pembuka dan berdoa untuk memulai pembelajaran (PPK: Religius)	

(a) RPP identity

(b) Method, resources, and steps in RPP

Figure 1. Formulation of core competencies, basic competencies, indicators, and learning objectives (in Bahasa)

Based on the assessment of the validator, the indicators and objectives made are appropriate and contain conservation and do not release the subject matter of environmental change according to the syllabus. Indicators are key in learning, so the formulation of indicators must be clear and in accordance with the objectives so that learning activities become more effective (Indaryanti, et al., 2019; Asmar & Suryadarma, 2021). Fifth is the suitability of indicators with students' abilities. Indicators as the key to learning must be adapted to students' abilities so that in implementing student learning it is easy to follow them (Febrian & Fera, 2019; Nugraha, et al, 2021).

Theory Aspects

The validator's assessment of the material aspect obtained a value of 0.89 including the category of very high content validity. In the material aspect, there are six indicators, namely suitability between KD and materials, subject matter in accordance with objectives, contain facts, concepts, and procedures, compatibility with resources, accuracy in choosing media, and clarity of the arrangement of learning steps. The first is the suitability between KD and learning materials. Based on the KD validator's assessment and the material in the lesson plan it is clear that it is in accordance with the syllabus. According to Anggraeni & Akbar (2018) the material in lesson plans must be appropriate and aligned with KD so that can be achieved and create active learning. The second is the subject matter according to the learning objectives. Based on the validator's assessment of the subject matter contained in the RPP, it is in accordance with the learning objectives and contains the concept and application of conservation in schools. Third, the material contains facts, concepts, and procedures. Based on the assessment of the material validator in the RPP, there are facts, concepts, and procedures that are appropriate and clear and contain based on the main material in the syllabus (Figure 1b). Facts, concepts, and procedures that are appropriate to the material will facilitate learning (Widoretno, et al., 2016) the material used in RPP is environmental change. Fourth is suitability with learning resources. Based on the assessment of the RPP validator, it contains clear and appropriate learning resources. Using appropriate learning resources will support the learning process (Kamil, 2018; Nugroho & Puspitasari, 2019). Fifth is the accuracy of media selection. Media as a support in the learning process will assist in delivering material in learning (Kamil, 2018; Habibati, et al., 2019). Sixth is the clarity of the arrangement of steps in learning. Based on the validator's assessment, the learning steps in the lesson plan are appropriate and in accordance with the learning model used.

Language Aspects

The validator's assessment of the language aspect obtained a value of 0.87 in the category of very high content validity. In the aspect of language there are three indicators. The first indicator is the clarity of grammar. Based on the validator's assessment, the language used was clear and appropriate, but there was a slight improvement in the writing because there were some writing errors (Figure 2). The second indicator is the language used communicatively. Communicative language will make it easier to read every sentence (Panjaitan, et al., 2021). The third indicator is the simplicity of sentence structure. Based on the validator's assessment, the sentence structure used is simple and easy to understand. With regard to language, some researchers stated that clear language will make it easier for readers to understand a text (Anggraeni & Akbar, 2018; Linda, et al., 2021).

E. Metode Pembelajaran

1. Pendekatan : Saintifik
2. Model pembelajaran : *Discovery Learning*
3. Metode : Diskusi kelompok, tanya jawab, penugasan

F. Media dan Sumber Belajar

1. Media
 - a. LKPD
 - b. Gambar yang berhubungan dengan kerusakan lingkungan, ketidakseimbangan lingkungan.
 - c. Slide Power Point

(a) Method and learning resources

2. Sumber belajar

- a. Modul pendidikan konservasi
- b. Buku yang berhubungan dengan materi lingkungan, serta pendidikan konservasi
- c. Website (e-jurnal, ebook, dan sumber lain yang dapat dipertanggung jawabkan)

G. Langkah-Langkah Pembelajaran

1. Pertemuan Ke-1 (2 x 45 menit)	Waktu
Kegiatan Pendahuluan Guru : Orientasi (<i>Menunjukkan sikap disiplin sebelum memulai proses pembelajaran, menghayati dan mengamalkan ajaran agama yang dianut (Karakter) serta membiasakan membaca dan memaknai (Literasi).</i>) ❖ Melakukan pembukaan dengan salam pembuka dan berdoa untuk memulai pembelajaran(<i>PPK: Religius</i>)	15 menit

(b) Learning steps

Figure 2. Presentation of language in RPP (in Bahasa)

Aspects of Time

The validator's assessment of the time aspect obtained a value of 0.87 including the category of very high content validity. In the time aspect, there is only one indicator, namely the suitability of the time allocation used (Figure 3). Based on the validator's assessment, the time allocation used was in accordance with the time in the syllabus namely with two hours of lessons and four meetings. A good lesson plan if the implementation is according to the time in the syllabus (Nur, et al., 2020).

RENCANA PELAKSANAAN PEMBELAJARAN

(PERTEMUAN PERTAMA)

Sekolah	: Sekolah Menengah Atas
Pelajaran	: Biologi
Kelas/Semester	: X/Genap
Materi Pokok	: Perubahan Lingkungan/Iklim dan Daur Ulang Limbah
Alokasi Waktu	: 2 x 45 menit

Figure 3. Allocation of time in RPP (in Bahasa)

This research also developed conservation education worksheets. In the following, the results of the validity of the conservation education worksheets for class X students are presented based on the assessment of the five validators in Table 2.

Table 2. Results of the validity of the conservation education worksheets for class X students

Aspects	Indicator	Validator					Validity	Information
		1	2	3	4	5		
Theory	1. The accuracy of the title of the LKPD with the contents of the material	3	4	4	4	4	0.90	Content validity very high
	2. The truth of the content of the material	3	3	4	4	4		
	3. Truth by method	3	3	4	4	4		
	4. Compatibility with KD	3	4	4	4	3		
	5. Appropriateness of the material with the ability of students	3	3	4	4	4		
	6. Clarity of material distribution	3	4	4	4	4		
Language	7. Grammatical correctness	3	3	4	3	4	0.84	Content validity very high
	8. Sentences do not contain double meaning	3	3	4	4	4		
	9. Clarity of instructions and directions	3	3	4	4	4		
Presentation	10. Image Quality	3	3	4	4	4	0.84	Content validity very high
	11. Attractive display design	3	3	3	4	4		
	12. Clarity of writing	3	3	3	4	4		
	13. Appropriate font type and size	3	4	3	4	4		
	14. The accuracy of the placement of the picture table or chart on each question	3	4	4	4	3		
Average							0.86	Content Validity Very High

Aspects of Theory

The LKPD assessment on the material aspect obtained a value of 0.90 including the category of very high content validity. In this aspect there are six indicators. The first indicator is the accuracy of the LKPD title with the content of the material. Based on the validator's assessment of the title on the LKPD it is in accordance with the contents of the LKPD. Choosing the right title will describe the content of the reading and attract readers' interest (Wardani & Yuanita, 2020). The second indicator is the truth of the content of the material. Based on the assessment of the material validator in the LKPD it is clear and there are instructions that can be carried out by students. The material used in LKPD is environmental change and in LKPD there are learning steps according to the model used. The right content makes students understand and understand what is being learned (Rahmatillah, et al., 2017; Laksono & Wibowo, 2022). The third indicator is truth with method. Based on the assessment of the developed LKPD validator it is in accordance with the learning method used. The fourth indicator is suitability with KD. The developed LKPD contains KD based on the syllabus that has been analyzed (Figure 4). According to Anggraeni & Akbar (2018) material must be appropriate and aligned with KD so that learning objectives can be achieved and create active learning. The fifth indicator is the suitability of the material with the students' abilities. Based on the assessment of the

LKPD validator, it has been made in accordance with students' abilities and uncovers problems that exist in the environment around students (Fauziah, et al., 2022). Learning that links problems around the environment where students live will help students understand more quickly, increase thinking power and make learning more meaningful (Diella, et al., 2019; Marianti, et al., 2022). The sixth indicator is the clarity of material distribution. The division of material must be made clear, sequentially systematic, and contain material based on the syllabus (Anggraeni & Akbar, 2018).

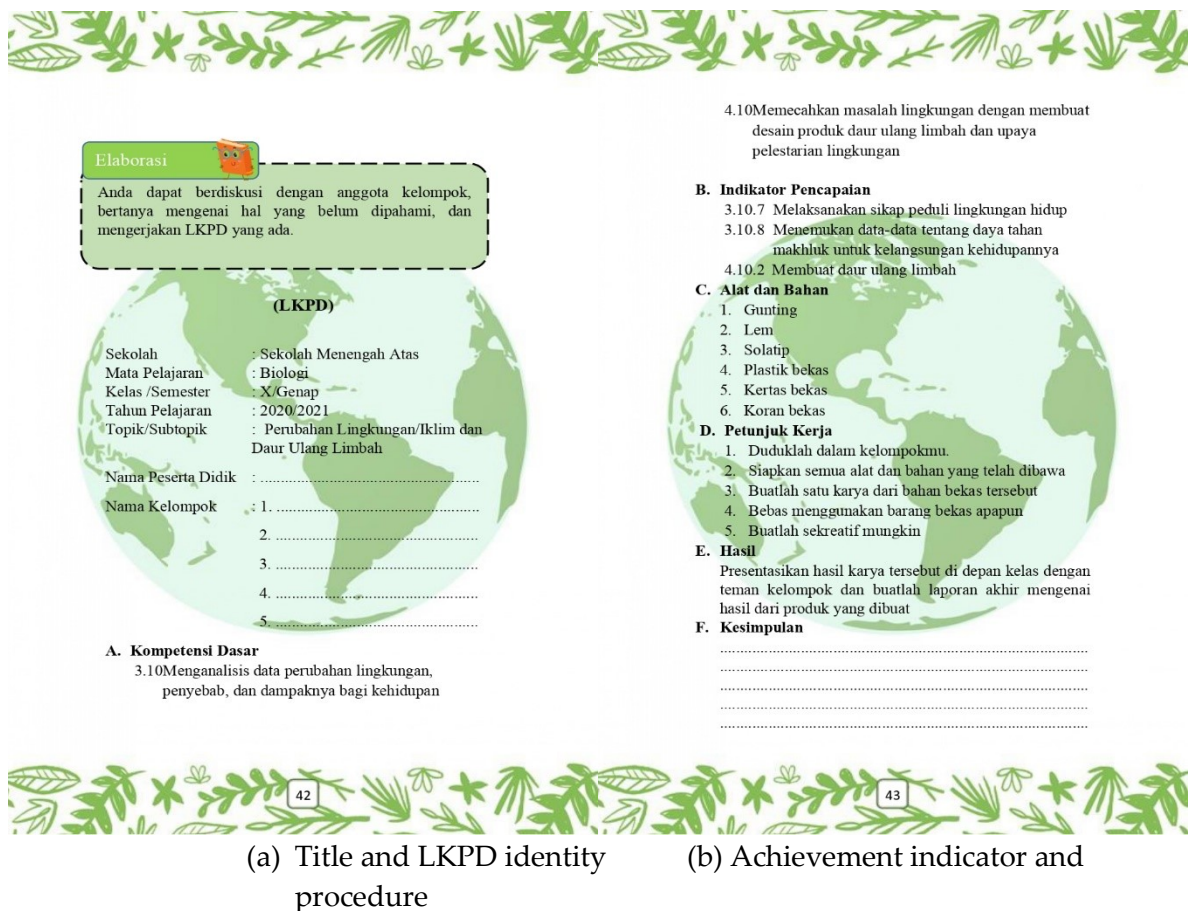


Figure 4. Display of titles, KD, indicators, and work instructions on LKPD (in Bahasa)

Aspects of Language

The LKPD assessment on the language aspect obtained a value of 0.84 in the category of very high content validity. The language aspect consists of three indicators. The first indicator is grammatical correctness. Based on the validator's assessment, the clarity of the grammar is appropriate, communicative, and easy to understand. Systematic and clear language will help the reader to understand the meaning of the reading (Linda, et al., 2021). The second indicator is that the sentence does not contain multiple meanings. Based on the validator's assessment, there are no sentences with double meaning in the LKPD (Figure 5). Double meaning in sentences will make it difficult

for readers to understand reading (Linda, et al., 2021; Panjaitan, et al., 2021). The third indicator is the clarity of instructions and directions. Based on the validator's assessment, the instructions for working on the LKPD are clear and contained in the LKPD. Clear instructions can help students carry out learning (Masitah, 2018).



Figure 5. Language display in LKPD (in Bahasa)

Aspects of Presentation

The LKPD assessment on the presentation aspect obtained a value of 0.84 in the category of very high content validity. The presentation aspect of the LKPD consists of five indicators. The first indicator is image quality. Based on the assessment of the image validator, it should be made more attractive so that students become interested. The second indicator is the attractiveness of the display design. Based on the assessment from the validator, the LKPD display can be made more attractive so that students become interested in LKPD. An attractive appearance will create an attraction for readers (Lestari, et al., 2018). The third indicator is the clarity of writing. The writing on the LKPD is clear and easy to understand both from the instructions, indicators, and the questions in it are clear and do not contain double meanings. The fourth indicator is the appropriate font type and size. Based on the validator's assessment, the type and size of the letters used are appropriate (Figure 4). The LKPD developed uses times new roman 12 font type and size. The fifth indicator is the accuracy of the placement of tables, pictures or parts of each question. Based on the validator's assessment, the placement of tables in the LKPD is neat and clear so that the meaning is easy to understand. LKPD is good and correct if the presentation is systematic, sequential, and has clear components (Rahmatillah, et al., 2017; Masitah, 2018).

In this study also developed a conservation education power point. In the following, the results of the power point validity of class X students' conservation education are presented based on the assessment of the five validators in Table 3.

Table 3. The results of the power point validity of conservation education

Aspects	Indicator	Validator					Validity	Information
		1	2	3	4	5		
Theory	1. The accuracy of the material with the competency standards contained in the curriculum	3	4	4	4	4	0.89	Content validity very high
	2. The suitability of the material with the basic competencies contained in the curriculum	4	4	4	4	3		
	3. Conformity of the description of the material contained in multimedia products with scientific concepts	3	3	4	4	4		
	4. Clarity of media product assignment targets	3	3	4	4	4		
	5. Adequacy of material descriptions in explaining scientific concepts	3	4	3	4	4		
	6. Sufficient examples are given for explanation	3	4	3	4	4		
Presentation	7. Text and writing can be read	3	3	3	4	4	0.88	Content validity very high
	8. Color combinations	4	3	4	4	4		
	9. Consistency of button placement	3	4	4	4	3		
	10. Image display quality	3	4	4	4	4		
	11. Text and image layout	3	4	4	4	4		
	12. Screen display quality	3	4	4	4	4		
Averages							0.88	Content Validity very high

Aspect of Theory

Assessment of material aspects on power point obtained a value of 0.89 in the category of very high content validity. In the material aspect, there are six indicators. The first indicator is the accuracy of the material with the competency standards contained in the curriculum. Based on the validator's assessment of the competency standards in the power point, it is in accordance with the material discussed. The second indicator is the suitability of the material with the basic competencies contained in the curriculum. Based on the validator's assessment, the material contained in power point is in accordance with the basic competencies in the syllabus (Figure 6). The scope of material contained in learning media cannot be separated from the syllabus (Indaryanti, et al., 2019). The third indicator is the suitability of the sequence of material contained in multimedia products with scientific concepts. Based on the validator's assessment, the order of the material contained in the power point is appropriate and sequential. The appropriate sequence of material will make it easier to understand the material (Nurseto, 2011). The fourth indicator is the clarity of targets for the use of media products. Based on the validator's assessment of the target use of the media it is clear that it is used for teachers and students. The teacher as a facilitator will help students understand the material through learning media (Kamil, 2018; Habibati, et al., 2019; Nugroho & Puspitasari, 2019). The fifth indicator is the adequacy of material descriptions in explaining concepts. The sixth indicator is the adequacy of examples given for explanation. Based on the validator's assessment, the example is clear enough, equipped

with pictures so that it can increase student understanding. Clear and relevant examples will make it easier to understand the material (Nurrita, 2018; Linda, et al., 2021).



(a) Home page

(b) Environmental education

Figure 6. Presentation of material in PPT (in Bahasa)

Aspects of Display

In the power point display aspect, a value of 0.88 was obtained in the category of very high content validity. In the display aspect, there are six indicators. The first indicator is text and writing can be read. Based on the validator's assessment, the writing in power point is clear and readable. The second indicator is the color combination. Based on the validator's assessment, the color combinations used in PowerPoint are quite interesting and appropriate to the material presented (Figure 7). Interesting color combinations can foster reader interest in using learning media so that learning can run effectively (Habibati, et al., 2019; Panjaitan, et al., 2022). The third indicator is the consistency of button placement. Based on the validator's assessment, the placement of buttons in power point is consistent and does not change. The fourth indicator is the quality of the image display. Based on the assessment of the quality of the image display is quite good and the size of the image can be enlarged. The fifth indicator is the layout of text and images. Based on the validator's assessment, the layout of the text and images is clear and appropriate so that the intent of the images can be understood easily. Easy-to-understand learning will make it easier for students to achieve learning goals (Rahmatillah, et al., 2017; Budiastuti, et al., 2021; Marianti, et al., 2022). The sixth indicator is the quality of the screen display. Based on the validation results of the five display validators used in power point, it can be made more contrast with the right color and background selection. The choice of power point as a learning medium is because can display presentations in the form of images, videos, sounds and interesting animations, designed to run on its own according to the duration made, easy to manufacture and use. This is also evidenced by Kamil's opinion, (2018) that power point has advantages, namely: (1) practical and can be used for all classes, (2) provides the possibility of face-to-face meetings and observing student responses, (3) has an interesting variety of presentation techniques and not boring, (4) can present various combinations of clipart, picture, color, animation, and sound so as to make students more interested, (5) can be used repeatedly.



Figure 7. Display content in PPT (in Bahasa)

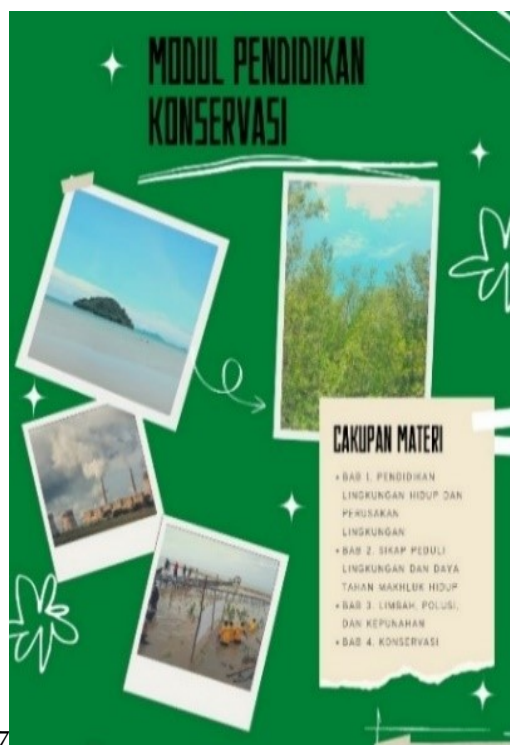
In this study also developed a conservation education module. In the following, the results of the validity of the conservation education module for class X students are presented based on the assessment of the five validators in Table 4.

Table 4. The results of the validity of the conservation education module

Aspects	Indicator	Validator					Validity	Information
		1	2	3	4	5		
Presentation technique	1. Systematic presentation	3	3	4	4	4	0.87	Content validity very high
	2. Confused presentation	3	3	4	4	4		
Presentation eligibility	3. Introductory section	3	4	4	4	4	0.91	Content validity very high
	4. Content section	3	4	4	4	4		
	5. Concluding part	3	4	4	4	3		
Graphical eligibility	6. Conformance of size with ISO standards	3	4	4	4	4	0.88	Content validity very high
	7. Layout	3	3	4	4	4		
	8. Layout composition and size	3	3	4	4	4		
	9. Letters	3	4	4	4	4		
	10. Reflection of content	3	3	4	4	4		
	11. Layout harmony	3	3	4	4	4		
	12. Complete layout	3	3	4	4	4		
Averages							0.88	Content validity very high

Aspects of Presentation Technique

The evaluation of the module on the presentation technique aspect obtained a value of 0.87 including the category of very high content validity. In the technical aspect of the presentation consists of two indicators. The first indicator is systematic presentation. Based on the validator's assessment, the presentation of the module is systematic and easy to understand. Systematic presentation of modules can facilitate their use (Husna, et al., 2020). The second indicator is the coherence of the presentation. Based on the assessment of the validator, the presentation of the module is sequential and in accordance with the module components (Figure 8). In this study the module components used refer to Prastowo (2015), namely: (1) title, (2) preface, (3) table of contents, (4) background (5) brief description, (6) competency standards, (7) concept maps, (8) benefits, (9) learning objectives, (10) instructions for using modules, (11) basic competencies, (12) subject matter, (13) material descriptions, (14) headings, (15) summary, (16) exercises or assignments, (17) self-test, (18) post-test, (19) follow-up, (20) expectations, (21) glossary, (22) bibliography, (23) answer key.



7

(a) Before Revision

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(b) After Revision

Figure 8. View of the presentation of the conservation education module (in Bahasa)

Aspects of Presentation Feasibility

The module assessment on the presentation feasibility aspect obtained a value of 0.91 including the very high content validity category. In the feasibility aspect of the presentation consists of three indicators. The first indicator is the introduction. Based on the validator's assessment in the introductory section it is complete and in accordance with the module components used. The introductory section contains the background of the module (Figure 9). An appropriate introduction will describe the contents of the teaching materials (Kurniasih & Rahayu, 2017; Nugroho & Puspitasari, 2019). The second indicator is the content section. Based on the validator's assessment, the content section is complete in sequence and contains material that is in accordance with the biology syllabus for class X. The material used in this module is environmental change. The suitability of the material contained in the module makes it easier for students to carry out learning according to the instructions in the module (Magdalena, et al., 2020; Apriani, et al., 2021; Lewar & Suhartini, 2023). The third indicator is the cover. Based on the validator's assessment, the closing section is clear and equipped with exercises, follow-up, and expectations for students. The existence of training and follow-up can measure the level of understanding of students (Aripin, 2017; Magdalena, et al., 2020; Marianti, et al., 2022).

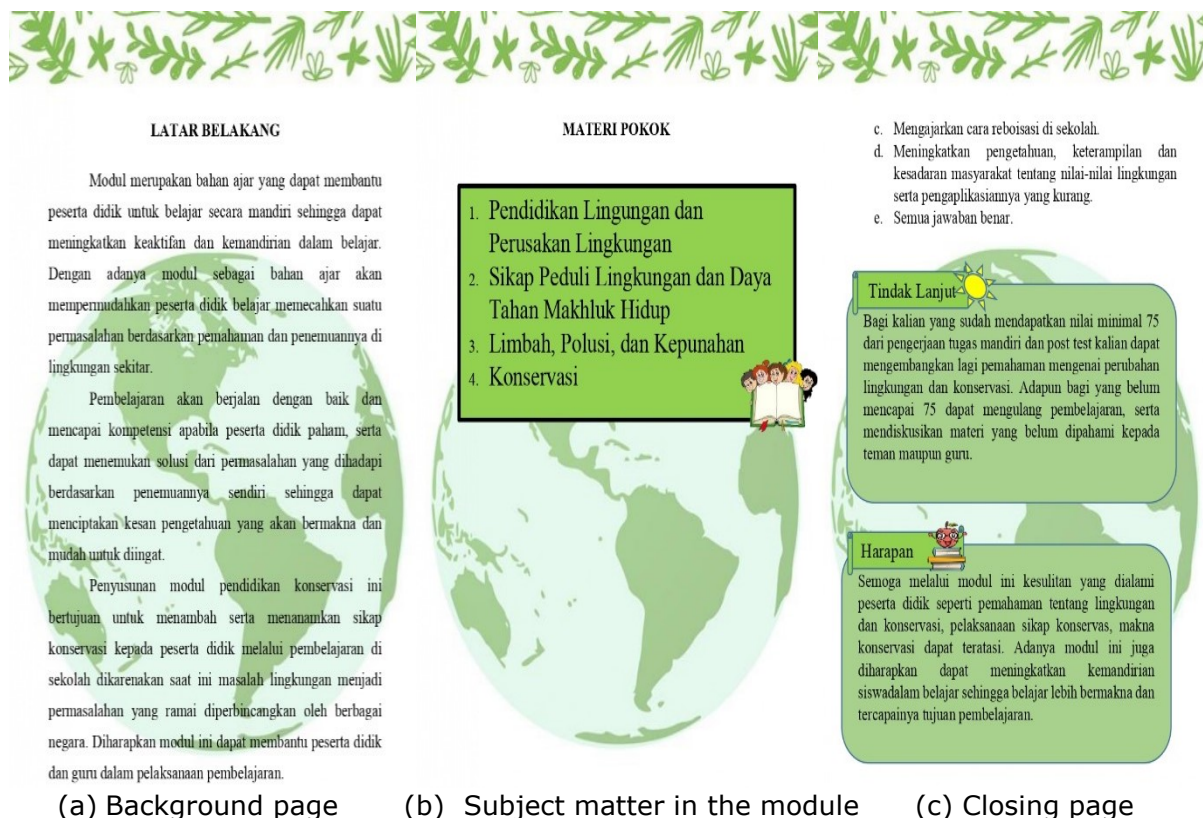


Figure 9. Display the introduction, body, and closing sections (in Bahasa)

Graphic Feasibility Aspects

Module assessment on the aspect of graphic feasibility obtained a value of 0.88 including the category of very high content validity. In the aspect of graphic feasibility, it consists of eight indicators. The first indicator is conformity in size with ISO standards. Based on the assessment of the module size validator according to ISO size, namely using sizes based on international standards according to UNESCO, namely measuring 15.5 x 23 cm. The second indicator is layout (Permana, et al., 2018). Based on the validator's assessment, the layout in the module is correct and neat. Layout accuracy can affect the contents of the module, correct layout accuracy will make it easier to use the module (Husna, 2020; Laksono & Wibowo, 2022). The third indicator is layout composition and size. Based on the validator's assessment, the composition and layout of the module is complete and in accordance with the module components. Appropriate module components will assist students in learning using modules (Laksono & Wibowo, 2022). The fourth indicator is letters. In this module, the font type times new roman size 12 is declared appropriate. The suitability of the font size will affect the readability of the module (Setiyaningsih & Syamsudin, 2019). The fifth indicator is content reflection. Reflection of the content in the module according to the material discussed and made based on the syllabus. Appropriate content will facilitate understanding (Indaryanti, et al., (2019). The sixth indicator is layout harmony. Based on the validator's assessment, harmony and layout are precise and clear. Good layout harmony affects the appearance of the module so it will help the reader in understand what is read (Budiastuti, et al., 2021; Linda, et al., 2021). The seventh indicator is the completeness of the layout. Based

on the validator's assessment, the layout in the module already has good completeness based on the module components used (Figure 10). The eighth indicator is content typography. Based on the validator's assessment there are still some typography in the contents of the module, there are a few errors in writing words. Accuracy in writing letters and words can affect readers in understanding the meaning of the reading (Setiyaningsih & Syamsudin, 2019; Linda, et al., 2021).

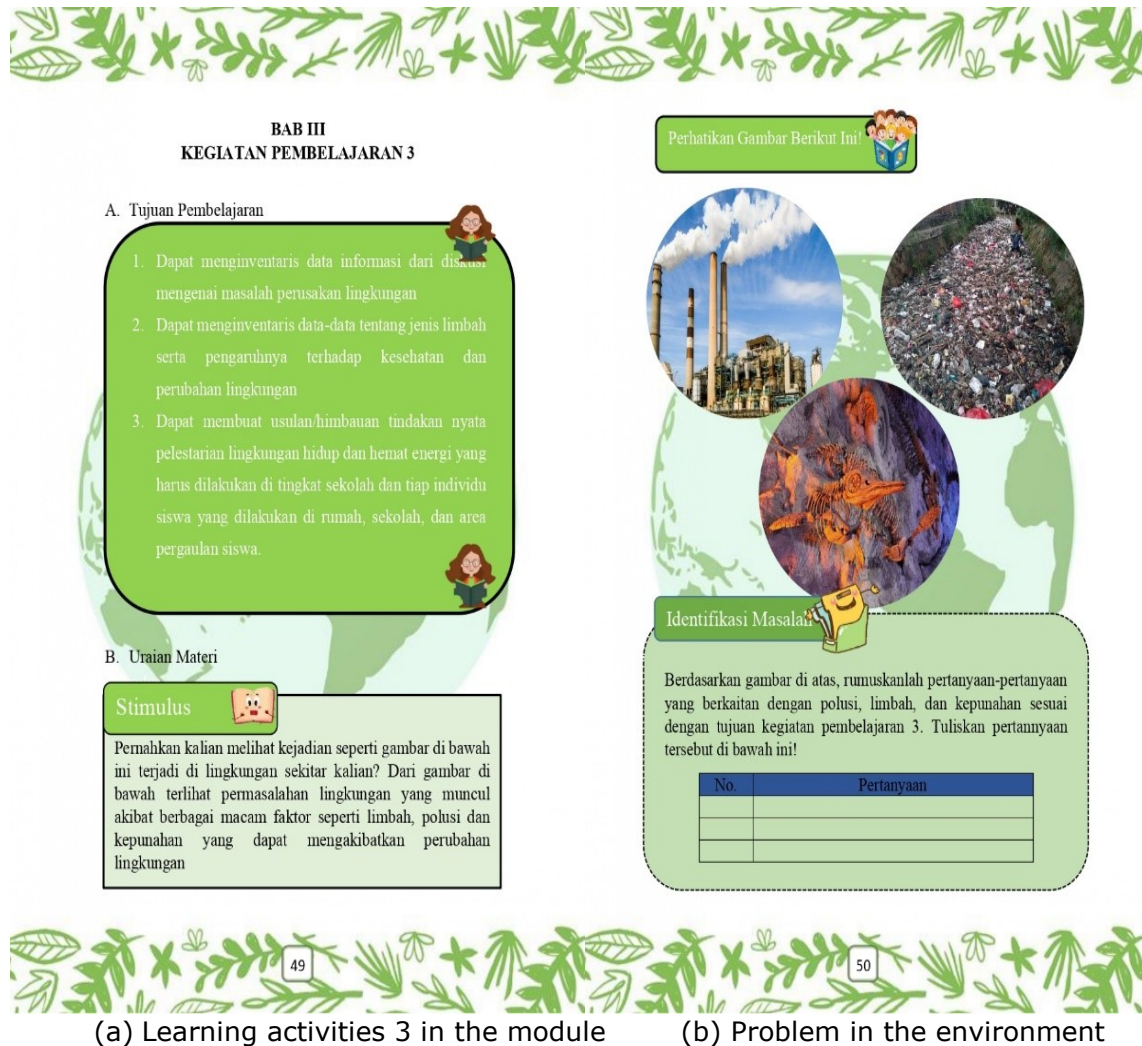


Figure 10. Graphic display on the module (in Bahasa)

This research also develops conservation education evaluation questions. In the following, the results of the validity of the conservation education evaluation questions for class X students are presented based on the assessment of the five validators in Table 5.

Table 5. Results of the validity of the evaluation questions

Aspects	Indicator	Validator					Validity	Information
		1	2	3	4	5		
Clarity	1. Clarity of each item	3	3	4	4	4	0.87	Content validity very high
	2. Clarity of instructions for filling in questions	3	3	4	4	4		
Content accuracy	3. Language accuracy	3	3	4	4	4	0.87	Content validity very high
	4. The accuracy of the question form	3	4	4	3	3		
Relevance	5. Items related to the material	3	4	4	4	4	0.93	Content validity very high
Content validity	6. The level of grain truth	3	3	4	4	4	0.87	Content validity very high
No bias	7. The item contains a complete idea	3	3	4	4	4	0.90	Content validity very high
	8. The words used do not have a double meaning	3	4	4	4	4		
Language accuracy	9. The language used is easy to understand	3	4	4	4	3	0.89	Content validity very high
	10. The language used is effective	3	3	4	4	4		
	11. Language according to EYD	3	4	4	4	4		
Averages							0.88	Content validity very high

Aspect of Clarity

Assessment on the aspect of clarity obtained a value of 0.87 including the category of very high content validity. The aspect of clarity consists of two indicators. The first indicator is the clarity of each item. Based on the assessment of the item validator, the items already have appropriate clarity and are easy to understand. The suitability of the item items will help students understand the intent of the question so that it makes it easier to work on (Magdalena, et al., 2020; Ramadhani, et al., 2021). The second indicator is the clarity of the instructions for filling in the questions. Based on the assessment the module validator already has clear instructions for filling in the questions so that students can find out the work of the questions (Figure 11). Instructions will help in giving directions on what to do (Wardani & Yuanita, 2020).

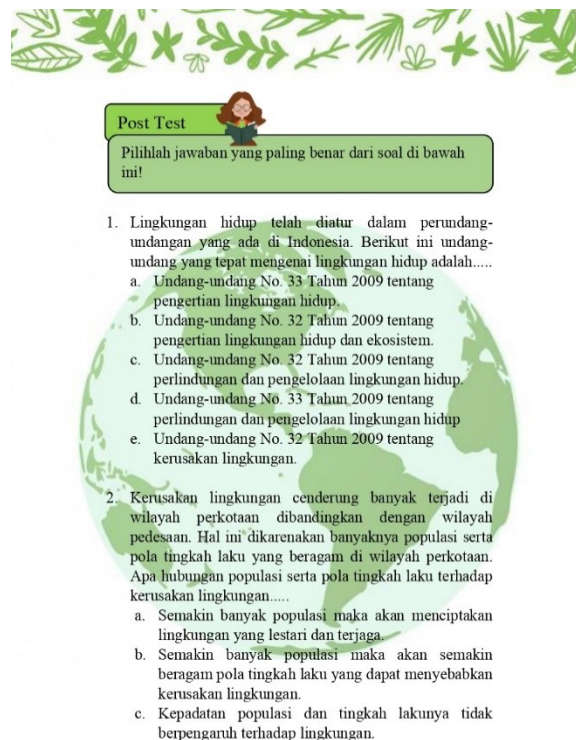


Figure 11. Display of grain clarity and workmanship instructions (in Bahasa)

Aspects of Content Accuracy

Assessment on the aspect of content accuracy obtained a value of 0.87 including the category of very high content validity. In the aspect of accuracy of the content consists of two indicators. The first indicator is the accuracy of the language. Based on the assessment of the language validator used in the questions, it is clear and precise. Using the right language will help readers understand (Linda, et al., 2021; Panjaitan, et al., 2021). The second indicator is the accuracy of the question form. Based on the assessment the validator asks to add multiple choice questions to the evaluation questions (Figure 12). The existence of practice questions can measure the extent to which students understand and increase student knowledge (Aripin, 2017; Magdalena, et al., 2020; Ramadhani, et al., 2021).

MODUL PENDIDIKAN KONSERVASI

Soal Tes Uraian

1. Apa yang dimaksud dengan kerusakan lingkungan? Jelaskan!
2. Sebutkan dan jelaskan faktor penyebab kerusakan lingkungan!
3. Apa yang dimaksud dengan ketidakseimbangan lingkungan? Jelaskan!
4. Sebutkan dan jelaskan faktor penyebab ketidakseimbangan lingkungan!
5. Jelaskan menurut pendapat anda apa yang dimaksud dengan ketidakseimbangan lingkungan!
6. Apakah sikap peduli lingkungan hidup berpengaruh terhadap keseimbangan lingkungan? Bagaimana hal itu bisa terjadi, jelaskan!

Jawab:

1.
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(a) Before Revision

Post Test

Pilihlah jawaban yang paling benar dari soal di bawah ini!

1. Lingkungan hidup telah diatur dalam perundang-undangan yang ada di Indonesia. Berikut ini undang-undang yang tepat mengenai lingkungan hidup adalah....
 - a. Undang-undang No. 33 Tahun 2009 tentang pengertian lingkungan hidup.
 - b. Undang-undang No. 32 Tahun 2009 tentang pengertian lingkungan hidup dan ekosistem.
 - c. Undang-undang No. 32 Tahun 2009 tentang perlindungan dan pengelolaan lingkungan hidup.
 - d. Undang-undang No. 33 Tahun 2009 tentang perlindungan dan pengelolaan lingkungan hidup
 - e. Undang-undang No. 32 Tahun 2009 tentang kerusakan lingkungan.
2. Kerusakan lingkungan cenderung banyak terjadi di wilayah perkotaan dibandingkan dengan wilayah pedesaan. Hal ini dikarenakan banyaknya populasi serta pola tingkah laku yang beragam di wilayah perkotaan. Apa hubungan populasi serta pola tingkah laku terhadap kerusakan lingkungan....
 - a. Semakin banyak populasi maka akan menciptakan lingkungan yang lestari dan terjaga.
 - b. Semakin banyak populasi maka akan semakin beragam pola tingkah laku yang dapat menyebabkan kerusakan lingkungan.
 - c. Kepadatan populasi dan tingkah lakunya tidak berpengaruh terhadap lingkungan.

Ringkasan:

1. Konservasi mempunyai arti pelestarian yaitu melestarikan/mengawetkan daya dukung, mutu, fungsi, dan kemampuan lingkungan secara seimbang.
2. Konservasi terbagi menjadi 2 jenis yaitu konservasi *insitu* dan *exsitu*.
3. Tujuan pendidikan konservasi yaitu Mengubah perilaku dan sikap yang dilakukan oleh berbagai pihak atau elemen masyarakat yang bertujuan untuk meningkatkan pengetahuan, keterampilan dan kesadaran masyarakat.
4. Pendidikan konservasi dan lingkungan berbagai pengetahuan yang meningkat tentang pengembangan dan implementasi program pendidikan yang memiliki berbagai hasil dalam skala temporal dan spasial.

Tes Mandiri

A. Soal Uraian

1. Apa yang dimaksud dengan pelestarian lingkungan? Bagaimana upaya/cara pelestarian lingkungan?
2. Apa yang dimaksud dengan hemat energi? Bagaimana upaya melakukan hemat energi?
3. Konservasi merupakan suatu usaha menjaga dan merawat lingkungan beserta keanekaragaman hayati yang ada di dalamnya. Konservasi perlu dilakukan pada saat ini mengingat banyaknya terjadi kerusakan lingkungan. Berdasarkan data dari IUCN bumi akan

(b) After Revision

Figure 12. Display the contents of evaluation questions (in Bahasa)

Aspect of Relevance

Assessment on the aspect of relevance obtained a value of 0.93 including the category of very high content validity. The relevance aspect consists of one indicator, namely the items related to the material. Based on the assessment of the item validator in accordance with the material discussed, namely environmental change and conservation by raising problems that exist around students, because problems that exist around students and are experienced directly will be easy to understand and remember

(Kurniasari & Rahayu, 2017). This is same with Erlindawati & Habibati, (2020); Nugraha, et al., (2021); Sriyati, et al (2022) stating that problems associated with the environment, especially where students live will increase students' environmental literacy. The suitability between the items and the material will make it easier for students to work on the questions (Febrian & Fera, 2019).

Aspect of Content Validity

Assessment on the aspect of content validity obtained a value of 0.87 including the category of very high content validity. The aspect of content validity consists of one indicator, namely the level of item truth. Based on the assessment of the content validator, the questions have been made according to the students' abilities. The suitability of learning with students' abilities and problems will make learning effective (Nurseto, 2011; Indaryanti, et al., 2019; Marianti, et al., 2022; Nurdyanti, et al., 2022).

Aspect of No Bias

The assessment on the unbiased aspect obtained a value of 0.90 including the category of very high content validity. The no bias aspect consists of two indicators. The first indicator is a question item containing a complete idea. Completeness of ideas makes it easier to understand the purpose of the problem. Understanding the questions makes it easier for students to work on questions (Maulida, et al., 2019; Ramadhani, et al., 2021). The second indicator is the words used do not have a double meaning. Based on the validator's assessment, the evaluation questions were clear and did not contain double meanings, according to the material and complete with answer keys.

Aspect of Language Accuracy

Assessment on the aspect of language accuracy obtained a value of 0.89 including the category of very high content validity. In the aspect of language accuracy consists of three indicators. The first indicator is the language used is easy to understand. Based on the assessment of the language validator used in the questions are simple and easily understood by students (Figure 11). The simplicity of language will help students work on questions so that no mistakes occur in the process (Linda, et al., 2021; Mayasari & Habeahan, 2021). The second indicator is the language used effectively. Based on the assessment of the language validator used, it is effective, easy to understand and does not have double meaning. The effectiveness of a sentence will affect its readability (Linda, et al., 2021; Panjaitan, et al., 2022). The third indicator is writing according to the EYD. The conformity of the EYD rules needs to be considered in writing so that sentences do not contain double meanings so they are easy to understand. According to Anggraeni & Akbar (2018) and Linda, et al. (2021) that clear language will make it easier for readers to understand a text.

Apart from seeing the level of validity, the learning devices developed in this study are also seen for the level of reliability by using the ICC formula (Koo & Li, 2016). The results of the study obtained the average value of the reliability of the learning devices developed, namely lesson plans of 0.933, worksheets of 0.937, power points of 0.898, modules of 0.973, evaluation questions of 0.939 included in the good category based on the average range of index ≥ 0.75 (Koo & Li, 2016). This shows agreement among raters in declaring that the developed learning tool is valid and feasible to use.

Conclusion

The results showed that the validity value of the lesson plan was 0.89, the LKPD was 0.86, the power point was 0.88, the module 0.88, and the evaluation item was 0.88 and all were included in the category of very high content. The results of lesson plan reliability were 0.933, LKPD 0.937, power point 0.898, module 0.973, and evaluation item 0.939 and all included in the very good category. It can be concluded that the conservation education learning devices for class X SMA are appropriate to use.

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