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Content Study Of 7th-Grade Science Textbooks Using An Esd Viewpoint On Living Things And Their Surroundings

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Abstract: Textbooks function as one the useful teaching materials in the curriculum. The purpose of the study was to identify the content of Education for Sustainable Development (ESD) in science textbooks for grade 7 junior high school semester 2 particularly the subject of living things and their environment consisting of socio-cultural, environmental, and economic aspects that met the textbook evaluation criteria. Data were collected by analyzing seven junior high school textbooks used in Jambi. The research instrument is a text analysis check sheet based on ESD indicators containing socio-cultural, environmental, and economic perspectives. The study discovered that teachers learn from textbooks that promote an ESD viewpoint on each subject that takes into account socio-cultural, environmental, and economic factors. The examination of the seven teaching resources revealed that the integration of the information in the teaching resources from the ESD perspective has to be revised to address the growing environmental issues. The second semester of the 2013 curriculum saw the introduction of the ESD perspective on scientific teaching materials in the form of textbooks for the 7th grade SMP. These textbooks included elements of ESD but still kept them distinct from one another. The environmental dimension is the most prominent feature of ESD in the scientific textbooks for the second semester of the 7th- grade curriculum in 2013.

Abstrak: *Buku teks berfungsi sebagai salah satu bahan ajar yang bermanfaat dalam kurikulum. Tujuan penelitian untuk mengidentifikasi muatan Education for Sustainable Development (ESD) pada buku teks IPA untuk SMP kelas 7 semester 2* pada *pokok bahasan mahluk hidup dengan lingkungannya yang terdiri dari aspek sosial budaya, lingkungan, dan ekonomi memenuhi kriteria evaluasi buku teks. Data dikumpulkan dengan cara menganalisis tujuh buku teks SMP yang digunakan di Jambi. Instrument penelitian berupa lembar cek analisis teks berdasarkan indikator ESD berisi perspektif sosial budaya, lingkungan, dan ekonomi . Peneliti menemukan bahwa buku teks yang dipakai oleh guru dalam pembelajaran memunculkan*

perspektif ESD untuk setiap bahan ajar yang meliputi aspek sosial budaya, lingkungan, dan ekonomi. Dari hasil analisis ketujuh bahan ajar tersebut menunjukkan bahwa integrasi materi dengan perspektif ESD dalam bahan ajar perlu dtingkatkan lagi dalam upaya pemecahan masalah lingkungan yang terjadi. Kemunculan perspektif ESD pada bahan ajar IPA berupa buku pelajaran kelas 7 SMP semester 2 kurikulum 2013 memuat aspek ESD namun masih terpisah antara satu aspek dengan aspek lainnya. Aspek ESD yang paling tinggi kemunculannya pada buku pelajaran IPA kelas 7 semester 2 kurikulum 2013 adalah aspek lingkungan.

Keywords : Content analysis; textbook; Education for Sustainable Development; environment

INTRODUCTION

Student books are one of the teaching materials used. In the 2013 curriculum, the classroom learning process is expected to be active, creative, and challenging to facilitate the learning process of the students. to promote critical thinking among students based on moral principles. Textbooks for students are also one of the teaching materials which play a very important role in the learning process. Teaching materials have an effective effect on increasing student activity and learning outcomes and facilitating the achievement of desired learning goals (Arsih, 2016; Fitria & Idriyeni, 2017; Risma et al., 2019).

Student books are one of the teaching materials used in learning that shape education and have guiding features that can later provide students with skills such as knowledge, valuable skills and attitudes (Bano & Hina, 2021). Educational materials are learning materials that are routinely organized and used by teachers and students in the learning process (Sadjati, 2012). If the teaching materials used are of good quality, effective and efficient learning can be achieved. In other words, good educational materials can contribute to the success of the learning process. (Rusilowatil et al., 2021).

Textbook is a mandatory reference and student learning resource in any education system, so it is necessary to analyze this learning resource. Content analysis is an important type of analysis for authors, curriculum planners, and curriculum decision-makers to develop good textbooks that meet the needs of students at various stages of learning(Fitriani et al., 2019; Kusumaningrum et al., 2017; Setiawan & Setiawan, 2021). Content analysis helps in the scientific and practical examination of the concepts, needs, reasons, attitudes and all parts covered by the content (Rusli et al., 2021; Salsabella & Juanengsih, 2021; Sharma, 2018; Suryana et al., 2021).

Several previous studies have conducted research on instructional materials using content analysis methods with the aim of: testing and identifying features of inquiry contained in instructional materials (Lewis, 2012); research on technology use in education (Kiliç-Çakmak et al., 2013); Exploring natural hazards in textbooks for mentally handicapped children (Seddighi et al., 2021); Analyzes values that can be developed in students (Sharma, 2018); To determine the suitability of the syllabus and science material with the curriculum objectives (Ardiansyah et al., 2018); Analysis of HOT content in 2013 curriculum student books (Suci et al., 2021; A. Widodo et al., 2020); Analyzes the content of scientific process skills of students who experience scientific independence-oriented learning (Ekawati et al., 2018; Patonah et al., 2018); Analysis of Science and Engineering Practices (SEPs) in the K-5 Curriculum

(Cellitti et al., 2018); To determine the presentation of basic science process skills and integrated science process skills items in science textbooks for class VII SMP on temperature and its changes (Aliyah & Erman, 2021); know the distribution pattern and illustration character of various types of diagrams in science books (Y. Liu & Khine, 2016); and analyzing aspects of science literacy in integrated science textbooks Class VIII term I (Risma et al., 2019) Some results of this content analysis show that the content analysis method is very suitable for determining the content of the teaching materials used (Jalil et al., 2021; Ramadhani et al., 2018).

Textbook also address values and priorities for society, so examining the content of teaching materials will ensure a high quality curriculum in education (Jimenez et al., 2017). A variety of teaching materials are available, ranging from behavior in culture or context to environmental issues, technology, health, animals and more (Mohammadnia & Moghadam, 2019). Accordingly, it can be concluded that the teaching materials cover many problems or issues related to daily life problems. Therefore, it is important to embed the topics in the teaching materials. One of the problems faced and the focus of attention of the world is the environmental problem, where the environmental quality is deteriorating globally. Human concern for the environment is at an alarming stage, human concern for the environment needs to be increased. For this reason, it is necessary to have the role of education in order to instill the character of being sensitive to the environment (Haas et al., 2021; Zamani et al., 2020).

Knowledge is a critical issue in many types of sustainable development. Since education is a tool for altering people's beliefs, attitudes, and behaviors, sustainable development can be accomplished through it. A learning process based on lofty objectives and the idea of sustainability, education for sustainable development (ESD), often known as instruction, emphasizes emphasis on all levels and types of learning to attain quality education. (Andić & Vorkapić, 2017; Biström & Lundström, 2021; Lavanya & Saraswhati, 2018).

The ESD perspective has three aspects: socio-cultural, environmental, and economic. Sustainable development goals will be achieved if the ESD values in the perspective component are applied (Kater-Wettstädt, 2018; Z. Liu et al., 2020; O'Flaherty & Liddy, 2018; Richter-Beuschel & Bögeholz, 2020).. The perspective of the three aspects consists of 15 components as follows:

socio-cultural	environment	Economy
1) Human rights	1. Natural resources	1. Reducing poverty
2) Security	2. changes in the weather	2. corporate responsibility
3) Gender equality	3. rural development	3. market economy
4) Cultural diversity and intercultural understanding	4. sustainable urbanization	
5) Health	5. Disaster prevention and management	
6) HIV/AIDS		
7) Administration		

Table 1. Components of the three aspects of ESD

Research results Balitbang found in 2008: 1). Many principals and teachers do not fully understand Education for Sustainable Development (ESD), both in terms of concepts, objectives, policies and programs. This has logical implications for applying ESD to students; 2nd). There is no clear policy on ESD that can be used as a reference for the development and implementation of programs at the education unit level; 3). There is simply a passing mention of an environmental

perspective, which is not representative of the implementation of ESD in schools as a whole that encompasses all ESD perspectives. For teachers, this is particularly useful in recognizing learning.

Based on these facts, it is important to analyze the content of the ESD perspective in teaching materials, especially in science textbooks for 7th-grade secondary schools (Johnston, 2019); and analysis of textbook content is an important step in evaluating and comparing it with previous textbooks (Qasrawi & Abdelrahman, 2020).

The purpose of this study is to determine the extent to which the ESD perspective's content is incorporated into the 2013 grade 7 science curriculum, and grade 7 science textbooks, and how teachers have used it in science instruction. Therefore, in this paper, we want to analyze the content of the ESD perspective in the 7th-grade junior high school science book with the focus of the question: How does the emergence of the ESD perspective content in the 7th-semester 2nd-grade junior high school science textbook? This research was conducted on the topic of living things and their environment because it is related to environmental problems as described above

METHOD

Research using content analysis will be used in this study, which employs descriptive approaches, is one of the various descriptive research types. Content analysis is a research technique for making valid inferences from data that can be re-examined based on the context of use (Novianto & Mustadi, 2015).

Some experts formulate the concept of content analysis or content study, that is, content analysis is a research technique for making inferences that can be reproduced (imitated) and realized by paying attention to the content (Krippendorff, 2018).

This study's focus is on seven scientific teaching resources for the seventh grade, including six with the K13 curriculum and one with the JSIT curriculum. (Integrated Islamic School Network). In more detail, the study's goal is as follows: teaching materials A published by book curriculum center (W. Widodo et al., 2017), teaching materials B published by Yrama Widya (Purnomo et al., 2020), teaching materials C published by Bumi Aksara (Prawirohartono & Khalim, 2020), teaching materials D published by Intan Pariwara (Sukoco et al., 2016), teaching material E published by Erlangga (Tim Abdi Guru, 2016), teaching material F published JSIT (Sudarmanto et al., 2020), and teaching material G published by Yudhistira (Sally, 2018)

The source of the data in this research are the 2013 curriculum 7th grade 2nd semester science textbooks, which include the subject of living things and their environment that present signs in the form of letters, numbers, pictures or symbols.

The data collection tools and techniques in this study include: document analysis in the form of a science curriculum for the 2013 7th grade curriculum, a control sheet for the emergence of the ESD perspective in science textbooks for the 2013 curriculum 7th semester 2nd semester.

The steps taken during the data collection phase are as follows: (1) analyzing each statement on the analyzed page and matching it with the ESD indicators on the control page; (2) adding the appearance of the ESD indicator in each of the teaching materials analyzed; and (3) calculating the percent occurrence of the ESD indicator for each perspective. The percentage of ESD perspective is determined by the formula:

$$\% = \frac{Number\ of\ indicators\ for\ each\ aspect}{Number\ of\ indicators\ total\ aspect} \times 100\%$$

In addition, data analysis was performed to determine the average score of each indicator. This analysis aims to find out how big is the ESD perspective on teaching materials. (Wijayanti et al., 2021).

Data analysis is one of the important steps to obtain research findings. The steps in data analysis are as follows:

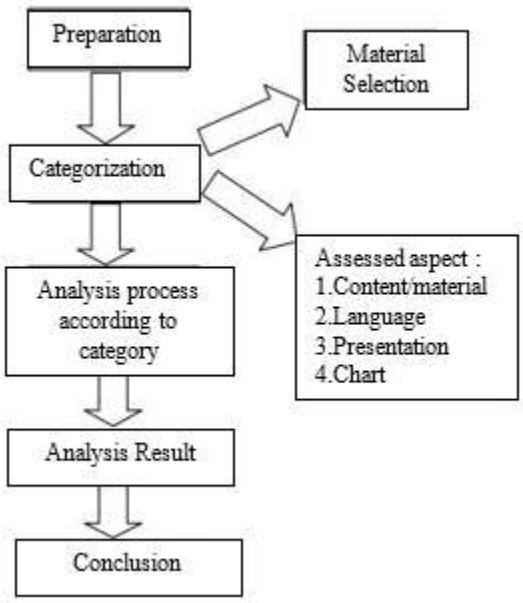


Figure 1: Data analysis steps (Nurmilati, 2017)

RESULTS AND DISCUSSION

This content analysis was conducted to investigate how seven 7th grade science textbooks contained ESD indicators. Then, a comparison is made between seven 7th grade science textbooks by looking at the ESD aspects, which include socio-cultural, environmental and economic aspects, in the science textbooks. The research findings to be discussed are as follows: document analysis results in the form of a science curriculum for the 7th grade 2013 curriculum; Results of the analysis of the emergence of ESD aspects in 7th grade secondary school science textbooks.

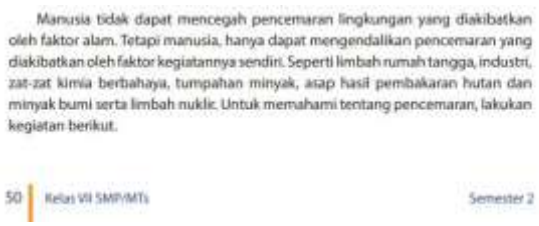
Analysis of Science Curriculum for 7th Grade SMP 2013 Curriculum

In order to determine the topics to be used in the teaching materials to be developed, the findings obtained from the 7th grade secondary school 2013 curriculum science syllabus analysis and the results of the Basic Competencies (KD) analysis used in this study are as follows: 3.7. analyze the interactions between living things and their environment and the population dynamics resulting from these interactions; 3.8. analyze the formation of environmental pollution and its effect on the ecosystem; 3.9. analyze climate change and its impact on ecosystems; 4.7. present the results of observations on the interaction of living things with their environment; 4.8. to write on ideas for solving environmental pollution problems based on observations; and 4.9. write about the idea of tackling the adaptation/climate change problem.

Analysis of the emergence of the ESD indicator

Findings from the analysis of the emergence of ESD indicators in seven science textbooks for the 7th grade 7th semester 2013 curriculum on environmental materials include three aspects of ESD: socio-cultural, environmental and economic aspects. It is presented in Table 2. Text elements/units teaching materials include: paragraphs, questions, pictures, tables and their explanations and brief comments. The following is an analysis snapshot of the emergence of ESD indicators for socio-cultural, environmental and economic aspects in Figure 2-4:

Figure 2: Representation of the socio-cultural perspective on the examined teaching materials


Manusia tidak dapat mencegah pencemaran lingkungan yang diakibatkan oleh faktor alam. Tetapi manusia, hanya dapat mengendalikan pencemaran yang diakibatkan oleh faktor kegiatannya sendiri. Seperti limbah rumah tangga, industri, zat-zat kimia berbahaya, tumpahan minyak, asap hasil pembakaran hutan dan minyak bumi serta limbah nuklir. Untuk memahami tentang pencemaran, lakukan kegiatan berikut.

50 Kelas VII SMP/MTs Semester 2

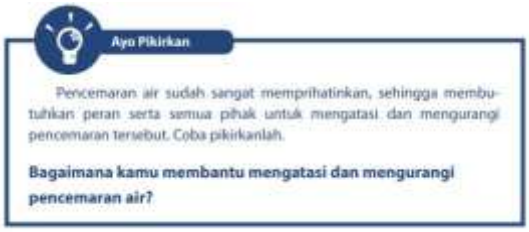


Figure 3: The view of the environmental perspective in the examined teaching materials

Figure 4: View of the economic perspective on the examined teaching materials

of each aspect in the ESD perspective is 9.57% in the socio-cultural perspective, 19.15% in the environmental perspective and 15.09% in the economic perspective. Of these data, the environmental perspective included in each teaching material has the highest average percentage compared to the socio-cultural and economic perspectives, because the main material analyzed in each teaching material is environment and the lowest is socio-cultural. perspective. From Table 2, teaching materials E and F show the highest percentage of environmental perspectives with 26.6%, while teaching materials A, B and D have the lowest rate with 13.4%.

The socio-cultural dimension in Table 2 shows that E teaching materials have the highest percentage with 13%, and the lowest percentage is A, B, C, D, F and G teaching materials with 9%. The last aspect is the economic aspect, from Table 2 it is seen that the highest percentage of realization of this aspect is F teaching material with 25.7%, and the lowest is A teaching material with 6.7%.

Table 2. Percentage of Occurrence of each aspect in the ESD perspective for each Teaching Material

No	ESD aspects	Appearance (%)							Average
		Teaching materials A	Teaching materials B	Teaching materials C	Teaching materials D	Teaching materials E	Teaching materials F	Teaching materials G	(%)
1	Socio-cultural	9	9	9	9	13	9	9	9,57
2	Environment	13,4	13,4	20,06	13,4	26,6	26,6	20,6	19,15
3	Economy	6,7	13,3	13,3	20	13,3	25,7	13,3	15,09

Table 2 shows the percentage of repetition of each aspect of the ESD perspective in each teaching material. According to the results of the analysis, the average realization percentage

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Table 3. Percentage of total occurrence of three aspects in ESD perspective for each teaching material

no	teaching materials	Occurrence (%)
1	A	29.1
2	B	35.7
3	C	42.9
4	D	42.9
5	E	52.9
6	F	61.3
7	G	42.9

The table above shows the emergence of the Education for Sustainable Development perspective for each teaching material that includes socio-cultural, environmental and economic aspects. According to the results of this study, the average percentage of teaching materials A is 29.1%, teaching materials B 35.7%, teaching materials C 42.9%, training materials D 42.9%, educational materials E 52.9%, F 61.3% 'type. % and G is 42.9%. Teaching material F contains the highest ESD perspective compared to the other six teaching materials, while teaching material A is the lowest.

Teaching material A is a student book published by the Ministry of Education and Culture and most commonly used as a textbook in schools. The results of the analysis of seven teaching materials show that in order to solve the emerging environmental problems, the integration of materials in teaching materials with an ESD perspective needs to be improved. Teaching materials used in learning with ESD content have the mission of integrating the principles, values and practices of sustainable development into all aspects of education and learning. This educational effort will promote the creation of a more sustainable future in the context of environmental integrity, sustainable economic development, and a just community for present and future generations.

Schools play an important role in the development and implementation of ESD. (Tristananda, 2018). This means that it is very possible to integrate the role of teaching materials used in learning with ESD content. Several studies demonstrate the important role of ESD-integrated teaching materials, concluding that they can improve critical thinking skills. (Arya & Dhankher, 2020; Ekantini & Wilujeng, 2018; Fitrianur & Hamdu, 2021; Gantini & Hamdu, 2021; Mardiah et al., 2021); problem solving (Pradipta et al., 2021; Rahhal, 2017); the system thinks (Schuler et al., 2017); awareness (Brković & Milošević, 2012). From some of these studies, it is seen that teaching materials containing ESD are very important in the effort to change the consciousness and

mentality of the society about the sustainability of the environment they live in.

CONCLUSION

Based on the analysis of the research and discussion results, it can be concluded that the seven science teaching materials in the form of textbooks for the 7th grade SMP 2nd semester 2013 curriculum include ESD aspects but still differ from one aspect to the other. The most common ESD aspect in the 2013 curriculum 7th grade 2nd semester science textbooks is the environmental aspect, because the analyzed KD is related to the environment.

As a suggestion from the results of this study, it is necessary to develop a book that includes all aspects of ESD from three perspectives: socio-cultural, environmental and economic. In addition to including the three aspects of ESD, it would be better if the development of teaching materials includes steps towards qualifications in Education for Sustainable Development.

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