



The Research-Based Respiration System Teaching Material Supplements to Improve Attitudes Refuse Shisha

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Abstract

The development of teaching material supplements is tailored to the needs of students and complements existing teaching materials. Based on KD 3.8 for class XI in the 2013 curriculum, the material for respiration systems, learning begins with an analysis of the facts. The facts from the latest research presented in the book are still limited. So that research-based teaching material supplements are needed. Teaching material supplements are developed by integrating the facts of research results, namely related to exposure to shisha smoke to the respiratory system. The purpose of this study was to determine the validity, practicality and effect of the developed teaching material supplements. This study is a modified Research and Development study. The stages in this research are identification of potential problems, data collection, product design, design validation, design revision, product testing and product revision. Product validation was carried out by material expert lecturers and media expert lecturers. Product trials were carried out by collecting data on the responses of teachers and students to teaching material supplements and students' attitudes towards shisha. The results showed that teaching material supplements were very valid according to material experts with a percentage of 84.68% and very valid according to media experts with a percentage of 98.08%. The level of practicality of teaching material supplements by the teacher was considered very practical with a percentage of 85% and very practical according to students with a percentage of 83.81%. Meanwhile, the effect of teaching material supplements based on a questionnaire on the attitude of rejecting shisha before and after being given teaching material supplements has a very high increase in rejecting shisha.

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INTRODUCTION

Biology learning has a broad, complex object of study and contains many facts. Teachers as educators are required to always add insight to every change and needs of the times. In addition to being concerned with facts and concepts, Biology is also concerned with discovery. The discovery process cannot be separated from a series of research activities. This causes biological material to be considered difficult material (Raida, 2018). Raida's research (2018) shows that the highest factors that cause biological material to be considered difficult are conceptual factors that are difficult to understand and too much material. Research by Sani et al (2019) in their research in one of the XI grade high school schools showed that the factors causing the highest learning difficulties were due to the teacher's explanation being less understandable followed by difficulty understanding school handbooks.

The results of the KD 3.8 analysis which reads "analyzing the relationship between the structure of the organ making up tissue in the respiratory system in relation to bioprocesses and functional disorders that can occur in the human respiratory system" are included in the C4 level, namely recognizing errors; the facts. The results of the analysis of textbooks at Sudirman Ambarawa Islamic Senior High School which are used as the main learning resource in learning Biology for class XI show that the respiratory system material in textbooks is still textual, the cases presented are universal and have not been specifically connected to fact-based analysis. scientific (research) especially current research. This shows that the teaching materials used still do not meet KD.

The research / facts presented in the respiratory system teaching material supplements that will be developed are research on the effects of shisha on the respiratory system. The selection of shisha is based on the section on the dysfunction of the human respiratory system where the disorder or disorder is often caused by the wrong life habit factor, namely smoking. The World Health Organization (WHO) states that tobacco products that are smoked, including through pipes, contain more than 7000 chemicals, including 250 toxic or cancer-causing chemicals. Along with the development of the times, the types or variations of cigarettes are not limited to brands, but their unique forms and ways of consuming them, one of which is "SHISHA".

Shisha itself has received attention from the World Health Organization since 2005 as an issue that must be considered by all parties. WHO raises the issue of shisha by publishing advisory notes containing the results of research on the effects of shisha on health and other research needs that can support shisha control (WHO, 2005). Research by Knishkowsky (2012) states that one of the factors that causes facts about the negative impact of shisha has not been widely published because of the myth about shisha that has a positive impact compared to ordinary cigarettes. This myth is certainly not true because based on research by Imran et al (2018), it is said that shisha smoke contains a higher level of respiratory irritation compared to regular cigarette smoke which is given in the same amount and duration.

The results of observations through a questionnaire with 33 students at SMA Islam Sudirman Ambarawa showed that 78.8% of students did not know about shisha and as many as 87.9% of students did not know the dangers of using shisha and 51.5% according to the students that shisha is not more dangerous from cigarette bars. This shows that the negative effects of shisha are not widely known among students. Research conducted by Pangestu et al (2017) on the respondent's attitude on shisha smoking behavior in students shows that the respondent is quite good at understanding the negative effects of shisha but the respondent still smokes shisha.

Therefore it is necessary to form the attitude of students from an early age to refuse the use of shisha so that in the future it is hoped that students will not smoke shisha and or refuse the invitation to smoke shisha through the supplement of teaching materials for the shisha research-based respiratory system.

METHOD

This research is a type of development research with the research and development / Research and Development (R&D) method Sugiyono (2015) refers to modified steps. These steps consist of identification of potentials and problems, data collection, product design design validation, design revision, product testing and product revision.

This research was conducted at the Department of Biology, State University of Semarang for product development and at SMA Islam Sudirman Ambarawa for product testing. The instruments used in data collection in the early stages were carried out using teacher interview data and student observation questionnaires. While the instrument used in the validation and product testing stages was carried out using only a questionnaire. The validation of teaching material supplements was carried out by three validators, namely one material expert validator and two media expert validators. The trial was conducted at SMA Islam Sudirman Ambarawa by taking questionnaire data on student responses to teaching material supplements as many as 27 students and a questionnaire for rejecting shisha attitudes with 20 indicators given to 30 students. Teaching material supplements were also assessed by 3 teachers from different agencies using an assessment response questionnaire

RESULTS AND DISCUSSION

Respiratory system teaching material supplements are research-based supplements that serve to complement the main learning resource in schools. The teaching material supplement contains the results of research conducted by researchers, namely the effect of shisha smoke on the respiratory system of white rats, in this case the lungs and other literature sources used in teaching material supplements obtained from books and collections of articles related to the respiratory system. Based on the results of observations under a microscope, one of the parameters used to determine the histological differences between the control group and the treatment group (the group exposed to shisha smoke) is to measure the diameter of the alveoli. Teaching material supplement contains facts, table of contents, instructions for use, this list, Basic Competencies (KD), learning objectives, material flow, shisha and its dangers, respiratory organs, respiratory disorders, practice questions, summary, index, glossary, bibliography and profiles author.

Validation of teaching material supplements

The evaluation of the validity of teaching material supplements used textbook assessment instruments sourced from the modified BSNP. The validity of the teaching material supplement was validated by one material expert validator and two media expert validators. The validity of the material is assessed based on three aspects, namely aspects of content, presentation and language. The material expert validation questionnaire sheet consists of 13 indicators of content aspects, 9 indicators of presentation aspects and linguistic aspects consisting of 9 indicators. So that the total number of indicators on the validation questionnaire instrument for material experts is 31 question indicator items. Based on the evaluation of the validation results by material experts, the average percentage score is 84.68% with very valid criteria with the highest aspect in the presentation aspect, namely 88.89%. The following are the validation results:

Table 1. The results of the validation of the respiratory system teaching materials supplement

Assessment Aspect	Total Score	Max Score	Percentage (%)	Criteria
Contents	45	52	86,54	Very Valid
Presentation	32	36	88,89	Very Valid
Language	28	36	77,78	Valid
Total	105	124	84,68	Very Valid

The validity of the teaching material supplement media was assessed based on three aspects, namely the size of the teaching material supplement, the cover design aspect and the content design aspect. The media validation questionnaire sheet consists of 2 indicators on the size aspect, 9 indicators on the cover design aspect and 17 indicators on the content design aspect. So that the number of elongation items is 26 indicator items. Following are the results of media validation from the developed teaching material supplements.

Table 2. The results of the validation of the respiratory system teaching materials supplement media

Assessment Aspect	Total score		Max score each validator	Percentage (%)		Average (%)	Criteria
	1	2		1	2		
Size	8	8	8	100	100	100	Very Valid
Cover design	27	28	28	96,43	100	98,22	Very Valid
Content design	67	66	68	98,53	97,06	97,80	Very Valid
Total Score	102	102	104	98,08	98,08	98,08	Very Valid

Based on the assessment by media experts, the total percentage was 98.08% which was included in the very valid category with the highest percentage in the aspect of the size of teaching material supplements.

Teacher and student responses to teaching material supplements

The product trial aims to determine the practicality of the media developed using the teacher assessment response questionnaire instrument and student response questionnaire. Teaching material supplements were tested by 3 teachers from different agencies. While trials on students were carried out by 27 students at the Sudirman Ambarawa Islamic High School. The following is a table of the results of the teacher's response to the respiratory system teaching material supplements:

Table 3. The results of the teacher's questionnaire responses to the respiratory system teaching material supplements

Teacher	School	Total Score	Maximum Score	Percentage (%)	Criteria
Teacher 1	SMA Negeri 1 Donorojo	68	80	85	Very Practical
Teacher 2	SMA Islam Sudirman Ambarawa	70	80	87,5	Very Practical
Teacher 3	SMA Negeri 28 Kabupaten Tangerang	66	80	82,5	Very Practical
Total score		204	240	85	Very Practical

The average percentage score obtained from the teacher's response is 85% with the very practical category. This shows that practical teaching material supplements are used by teachers as a source of teaching materials in biology subjects. Research conducted by Wulandari et al. (2017) produced data that teachers and students responded very well to the research-based teaching material supplements developed which contained material descriptions from basic concepts to research results. Judging from the aspect of assessment of the respiratory system teaching material supplements, there are 3 aspects that were assessed by the teacher in this study, namely aspects of material, presentation and language. Here's the table:

Table 4. The results of the teacher's questionnaire response to the respiratory system teaching material supplements in terms of its aspects

No	Aspect	Total score			Max score Every teacher	Percentage (%)			Average (%)
		Teacher 1	Teacher 2	Teacher 3		Teacher 1	Teacher 2	Teacher 3	
1	Theory	38	38	35	44	86,36	86,36	79,55	84,09
2	Presentation	17	19	17	20	85,00	95,00	85,00	88,33
3	Language	13	13	14	16	81,25	81,25	87,50	83,33

Based on table 4, it can be seen that the highest percentage aspect of the results of the responses of the three teachers to teaching material supplements was obtained in the presentation aspect, namely 88.33%. In the presentation aspect, an important part that is highlighted in the presentation of teaching material supplements is the existence of research studies that come from journals and articles related to the respiratory system and are equipped with pictures. Pratama (2018) states, one alternative that can be done is to integrate research in learning with the use of journals as teaching materials. The benefits that can be obtained if the learning process uses a journal is that it can follow scientific developments. Dewi and Widodo's research (2017) states that the abstract characteristics of respiration material can be facilitated by animated media that have a clear and comprehensive picture of respiration in the human body.

In addition to teachers, the practicality test of teaching material supplements was also carried out on students. Test The results of the questionnaire analysis of students' responses to the respiratory system teaching material supplements obtained an average score of 83.81% with very practical criteria. The scores for the students' responses are presented in table 5. The response questionnaire to students consists of 25 indicators which are divided into 3 aspects, namely 10 items to measure the display aspects (no.1-10), 10 items to measure the material aspects (no.11— 20) and 5 items to measure the aspect of benefits (no.21-25). Based on the average percentage of the questionnaire for each aspect of the students, the results for the display aspects were 84.81%, the material aspects were 82.96% and the benefits aspects were 83.52%. Of the three aspects, the highest percentage was the display aspect (84.81%). The display of shisha teaching materials supplements and respiration contains microscopic images of the lungs from the results of research on shisha. This can help students in learning lung tissue. Learning media can show something abstract to be real and make the concept more interesting (Purwati, 2014). In terms of material, Setyawati and Ambarwati (2020) state that the appearance of material which is packaged in a simple, uncomplicated and concise form will give the impression of being easy to light so that it affects readers' acceptance.

Table 5. Results of students' responses to the respiratory system teaching material supplements

No	STATEMENT	(%)
1	The cover display (pictures and text) is attractive	90,74
2	The content design of each page is creative and attracts attention to study material	87,96
3	The instructions for using the book are clear and easy to understand	83,33
4	The pictures are clear and attractive	91,67
5	The letters or fonts used are easy to read	76,85
6	The display of supporting images of the material is clear and in accordance with the content of the material	87,96
7	Display cover and content accordingly	89,81
8	The proportion of colors used is appropriate and balanced	82,41
9	The sentence structure is easy to read for learning	78,70
10	The overall appearance is attractive and can increase enthusiasm for learning	78,70
11	The material presented can add insight and knowledge	94,44
12	Presentation of material related to daily life	85,19
13	Examples of questions used related to everyday life problems	80,56
14	The material presented is contemporary which contains many facts from the results of research	86,11
15	There is a section where I can find my own concept	71,30
16	The presentation of the material encouraged me to think deeper and discuss with friends	77,78
17	The questions presented can test how far I understand the respiratory system	88,89
18	The presentation of the material in each chapter is consistent so that it doesn't confuse me	81,48
19	The research presented is not confusing and adds to my insight	80,56
20	The language used is simple and easy to understand	83,33
21	The presentation of the material made me more excited about learning the respiratory system	78,70
22	There are words that motivate me to care about the dangers of smoking	88,89
23	This teaching material supports me to master the respiratory system material	83,33

24	I don't feel bored learning the respiratory system material using this teaching material	73,15
25	I am more aware and aware of the dangers of smoking, especially the dangers of using shisha	93,52
Rata-rata percentage		83,31

The Effect of Respiratory System Teaching Material Supplements on Attitudes to Reject Shisha

The questionnaire given consists of 20 statement indicator items. Based on the results of the initial observation questionnaire analysis on the attitudes of 30 students, it showed that 53.3% of students had very high criteria for refusing to smoke shisha and 46.6% of students showed high criteria. While the results of the questionnaire analysis on the attitudes of students after being given supplements of the respiratory system teaching materials showed that 73.3% of students had a very high attitude of rejecting shisha and 26.6% responded highly. This shows that the response of students to refusal to use shisha increased after students were given supplements of shisha teaching materials and the respiratory system. With the existence of teaching material supplements, students get sufficient knowledge about the dangers of shisha smoke, so that the response of students to avoid or reject shisha cigarettes is high.

Attitudes that are formed in individuals can be influenced by several factors, namely personal experience, the influence of other people who are considered important, cultural influences, mass media and educational institutions (Azwar, 2012). The formation of an attitude to reject shisha is not only influenced by the environment when using shisha teaching materials supplements and respiration but also by the personal experiences of students. According to Notoadmojo (2012), attitudes are divided into several levels, namely Receiving, Responding, Appreciating and Responsible. The existence of a supplement of shisha teaching materials and respiration in which it presents the main stimulus in the form of research results on shisha exposure to make students "accept" the results of the facts presented and respond by filling out a questionnaire for rejecting shisha and showing a high percentage of rejection.

CONCLUSION

Based on the results of research on the development of respiratory system teaching material supplements, it can be concluded that teaching material supplements in the respiratory system material are valid in high school. The supplement of teaching materials on the practical respiratory system material used in learning and the supplement of teaching materials on the respiratory system material affects the attitudes of students in rejecting the use of shisha.

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