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Exploration of Health Literacy in Science Learning Curriculum in Indonesia

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Abstract: This study aims to explore the integration of health literacy in science learning based on basic competencies and content of learning modules in science subjects in junior high schools in Indonesia. The modules analyzed are modules issued by the Indonesian government through the Indonesian Ministry of Education, Culture, Research and Technology issued in 2021. The method used in this study is document analysis. The main instrument used to analyze the module is the content analysis table. The data analysis technique used is the percentage technique. The results of the study indicate that the overall context of health literacy has been included in the science learning module with varying coverage based on the components of the health literacy context, and the student's grade level. The coverage of the identified health literacy context components, namely healthy life reached 20%, disease reached 37%, Hazard that Threaten Health reached 20%, Public Health 7%, and Applications of Science in the Field of Health reached 17%. In addition, based on the junior high school grade level, the context of health literacy is mostly contained in the 8th grade module, reaching 66% of the total basic competencies contained in the module, while the 7th grade reaches 54%, and the 9th grade reaches 40%.

Keywords: Health Literacy; Module; Curriculum

Introduction

One of the challenges of changing times in the 21st century is related to health community (Sahoo, 2010). One of them, seeing the rapid development of technology, it is undeniable that there is a lot of false information or hoax circulating in the community, including information related to health that has a bad influence on the community. We can see this during the Covid 19 pandemic that has occurred where at first many people did not believe in the existence of the Corona Virus because it was influenced by a lot of wrong information circulating. The spread of various hoax information during the pandemic is very massive. Based on the results of the identification of the Sub-Directorate of Internet Content Control, Directorate General of Informatics Applications, Ministry of Communications and Informatics, from mid-March 2020 to January 26, 2021, it was discovered that there were 1,387 hoax issues spread across various digital platforms (Saputra, et al. 2021).

Seeing these problems, students face a situation where they need to ask themselves whether the information provided is to give the whole picture or only to tell part of the truth, in other words students must have literacy skills in terms of health. Health literacy is the ability to access, understand, evaluate, and communicate information as a way to promote, maintain, and improve health in various settings throughout the life course (Rootman & Bihbety, 2008).

Individuals with an adequate level of health literacy have a sense of responsibility for the health of themselves, their families and the surrounding community (McQueen et al., 2007; Freedman et al., 2009). Therefore, in school students must learn to critically evaluate sources of knowledge, see who is arguing and for what purpose, what means have been used, and how messages related to what can be

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conveyed are considered scientific facts. However, to think critically, students need theoretical knowledge (Paakkaari, 2012).

Health education has been an important component of action to promote health and prevent disease for more than a century. Health education remains a very important tool in public health (Okan, 2019: 225). Health as a phenomenon or theoretical knowledge is expected to be studied and understood by students theoretically at school. It is this knowledge that will enable them to see health messages from a different perspective and to notice when some important aspects have been overlooked (Paakkaari, 2012).

Related to Health in education, Science learning is a place for students to learn about Health and disease at primary and secondary school levels. As a form of evaluation in the field of education, including the context of health and disease in schools, PISA 2018 has assessed scientific knowledge using contexts that raise issues about health and disease. The assessment contexts selected by PISA are based on their relevance to students' interests and lives and as such are areas where scientific literacy has particular value in improving and sustaining quality of life and in the development of public policy (OECD, 2019).

The context of health and disease based on PISA 2018 consists of: a) Maintenance of health, accidents, nutrition, b). Control of disease, food choices, community health, c). Epidemics, spread of infectious diseases (OECD, 2019). In addition, based on NSTA (2003), the context of health and disease contained in science content that elementary and middle school students must learn includes: a) Hazards related to living things (including allergies, poisons, disease, and aggression), b) Chemical, electrical and radiation hazards, c) Applications of science to local and regional problems and the relationship of science to one's personal health, well-being, and safety. In addition, Sorensen (2012) states that there are three domains on health topics, namely: a) Health care, b) Disease prevention, and c) Health Promotion. Based on some of the opinions above, it can be concluded that the components of Health and disease that are the context of health literacy in the content of science learning materials include those related to Healthy Life, Disease, Hazards that Threaten Health, Public Health, and Applications of Science in the Field of Health.

Students really need to understand the phenomena related to the components of the health context so that they can be applied in maintaining the health of themselves and the community. However, the results of the research by Permata, et al (2016) showed that the initial health literacy of students in a school was still low so that learning was needed that could improve students' health literacy.

Teaching materials are an important part of learning. The COVID-19 pandemic has turned the learning process into online learning, so teaching materials must also be online-based. Since the COVID-19 pandemic, the Indonesian government through the Ministry of Education has issued teaching materials to support science learning in the form of modules that can be accessed by all teachers and students. Therefore, this research was conducted by looking at the extent to which the curriculum in Indonesia, especially science learning during the COVID-19 pandemic, had integrated the context of health literacy as learning content contained in basic competencies and teaching materials (learning modules). Therefore, this research needs to be done so that it is hoped that the results of this study can provide information about how the context of health literacy has been integrated in the curriculum of science education in Indonesia. Thus, the results of this study can later become information as an evaluation material in the development of better teaching materials, especially regarding the integration of health literacy in science subject matter.

Method

The research method used in this research is content analysis which is qualitative research. As for the data collection in this study, the content analysis table was adapted from the PISA 2018 framework, NSTA 2003, and Soronsen (2003) which were validated by expert validators. The instrument is used to see the trend of curriculum content related to the context of health literacy. Curriculum content is identified based on the basic competencies and content of learning modules used in Indonesia. The module is a learning module issued by the Ministry of Education and Culture which consists of a 7th grade science module, 8th grade science module, and 9th grade science module. The results of the analysis are translated in the form of percentages and a description of the health literacy context contained.

Result and Discussion

Science learning content in Indonesia has standards that have been determined in the curriculum, namely core competencies which are translated into basic competencies. The curriculum is a guide used by education units and teachers in carrying out learning activities. One of the curriculum specifications related to the learning process is content standards. Content standards are standards that must be met to achieve learning objectives in accordance with the curriculum that has been set in Indonesia. Content standards are in the form of core competencies that must be mastered by students which are then translated into several basic competencies. Basic competencies contain standards of

learning content that must be achieved in learning. Based on the results of the analysis, it can be seen that the coverage of health literacy in basic competencies is depicted in the graphs in Figure 1 and Figure 2. The results of the analysis of science learning content for junior high schools in Indonesia based on grade level are described in Figure 1.

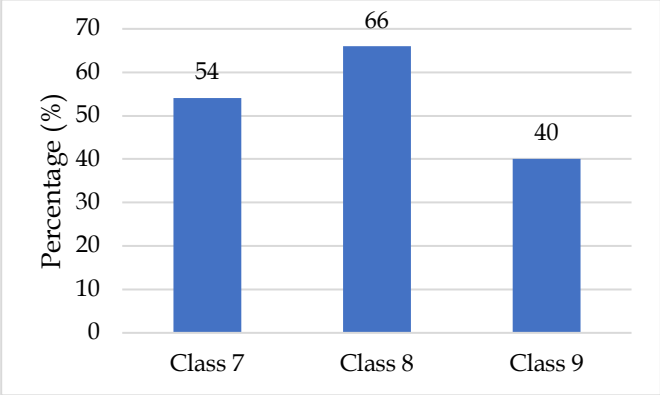

Figure 1. Percentage of Integration of Health Literacy Context in Science Learning Content by Grade Level

The graph above shows that the context of health literacy in science content is varied at the grade level, with grade 8 having the highest percentage. This is because in grade 8 the most basic science competencies are in the biology family. Health and disease in context are most closely related to Biology. Thus, it is hoped that the content of science learning should be an integration of various relevant contexts. Science learning content that is integrated with the context of health and disease can train students' scientific literacy by helping students to practice interpreting information and applying it in everyday life. Scientific literacy requires the ability to accurately and effectively interpret and construct science-based ideas (Chavagneto: 2010, Norris & Phillips: 2003).

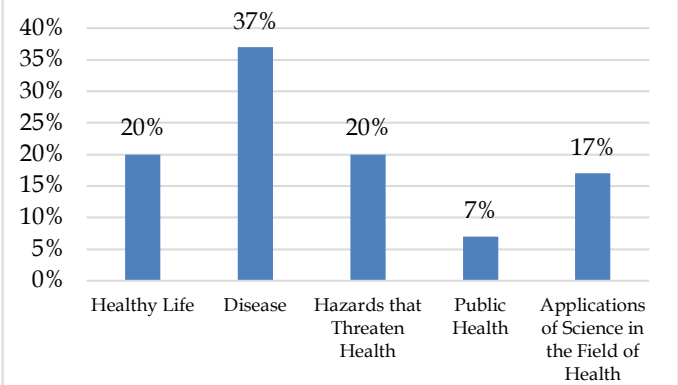

Figure 2. Percentage of Health Literacy Context in Science Learning Module

In more detail, the following describes the scope of the health literacy context in the science learning module based on the basic competencies contained. In more detail, it can be seen in Table 1.

Table 1. Coverage of Health and Disease Literacy Context Components in Basic Competencies

Health Literacy Context Component	The results of the identification of the Health Literacy Context contained in the Module		
	Class 7 Modul Module	Class 8 Modul Module	Class 9 Module
A. Healthy Life ▪ A1. Body's Nutritional Needs ▪ A2. Health care (medical or clinical problems)	1) Subcomponent A1 is not contained in the Module 2) Subcomponent A2 is contained in KD 3.5	1) Subcomponent A1 is contained in KD 3.5 2) Subcomponent A2 is contained in KD 3.5, KD 3.6, KD 3.7, KD 3.9, and KD 3.10	1) Subcomponent A2 is contained in KD 3.7
B. Disease ▪ B1. Description of the disease or disorder ▪ B2. Cause and effect of a disease	1) KD Subcomponent B2 is contained in KD 3.7 and KD 3.8	1) Sub-component B1 is contained in KD 3.5, KD 3.7, KD 3.9, KD 3.10, KD 3.12 2) Sub-component B2 is contained in KD 3.5, KD3.6, KD 3.7, KD 3.8, KD 3.9, KD 3.10, KD 3.12	1) Subcomponent B2 is contained in KD 3.3
C. Hazards That Threaten Health ▪ C1. Chemical hazard, toxic to Health ▪ C2. Electrical and Radiation Hazards for Health	1) Subcomponent C1 contained in KD 3.8 and 3.9 2) Subcomponent C2 is contained in KD 3.8 and KD 3.9	1) Subcomponent C1 is contained in KD 3.6 and KD 3.9	1) Subcomponent C1 contained in KD 3.10 2) Subcomponent C2 is contained in KD 3.6
D. Public Health ▪ D1. Epidemic, spread of infectious disease ▪ D2. Health Promotion (a determinant of health in the social and physical environment	The Public Health context is not contained in the module.	1) Subcomponent D2 is contained in KD 3.9 2) Subcomponent D2 is contained in KD 3.7	1) D1 subcomponent not loaded in module 2) Subcomponent D2 is contained in KD 3.10

Health Literacy Context Component	The results of the identification of the Health Literacy Context contained in the Module		
	Class 7 Modul Module	Class 8 Modul Module	Class 9 Module
E. Applications Of Science in The Field of Health (Application of science to local and regional or global health problems)	The context of Applications of Science Ii the Field of Health is contained in KD 3.3 and KD 3.6	The context of Applications of Science in The Field of Health is contained in KD 3.7, KD 3.10, KD 3.11, and KD 3.12	The context of Applications of Science Ii the Field of Health is contained in KD 3.7

Based on graphs 2 and Table 1, it can be seen that the public health context has the least percentage. This is based on the lack of context that discusses how to control disease or maintain public health, such as an explanation of how to control infectious diseases, and avoid actions that are detrimental to public health.

Hahn & Truman (2015) stated that broad educational attainment should be a legitimate arena for public health interventions. In addition, Nutbeam (2008) also states that health literacy is also one of the knowledge-based ones, and can be developed through education, especially learning. Therefore, it is very important especially in learning science to train students to understand the context of public health. In more detail, the health context contained in the module can be seen in Table 2.

Table 2. Details of Health Literacy Context in Module Content

Module	Basic competencies	Identification Results
7th grade	KD 3.3	The type of mixture that can be used as an ingredient to make tools in the health sector.
	KD 3.5	Nutrients needed by the body along with food sources that contain these nutrients
	KD 3.6	1. Technique science development as alternative for disease treatment 2. Examples of medical treatment for a disease, and the function of organs that can control the health of the body.
	KD 3.7	The interaction of living things between microorganisms and animals with humans that causes disease in humans
	KD 3.8	1. Air pollution is the cause of human respiratory disease 2. Pollutants that pollute the soil are in the form of chemical substances that can cause health hazards 3. The impact of UV radiation which is impact Air pollution can cause cancer (threatening human health).
	KD 3.9	1. The dangers of excessive greenhouse gases for health 2. UV radiation causes disease in humans
8th grades	KD 3.5	1. The body's nutritional needs, food content, and a healthy menu for the health of the human body 2. How to maintain health by reducing the consumption of certain foods 3. Understanding some digestive diseases 4. Causes of some digestive diseases
	KD 3.6	1. The importance of not consuming excessive additives to maintain a healthy body 2. Effects of smoking on health 3. Addictive substances as the cause of several diseases that attack the human body
	KD 3.7	1. Wound healing mechanism, how to maintain health system blood circulation 2. Various descriptions disease 3. Definition of several diseases. 4. Cause and effect happening a disease
	KD 3.8	The impact of illness and accidents that cause blood pressure disorders
	KD 3.9	1. How to prevent exchanging diseases (washing hands, wearing masks, and keeping a distance). 2. The impact of respiratory disease causes respiratory rhythm disturbances
	KD 3.10	1. Activity that doesn't need to be done for maintain the health of the excretory 2. Description of some types of disease system excretion 3. How to control excretory disease 4. The negative impact of distraction system excretion
	KD 3.12	1. Description of some eye disorders or diseases 2. How to overcome disturbance sense of sight 3. Causes of human visual impairment
Grade 9	KD 3.3	Genetic factors are one of the causes of disease in humans.
	KD 3.6	Earth's magnetic particles can be harmful to the health of the human body.
	KD 3.7	1. Conventional biotechnology products can be a safe food choice for health.

Module	Basic competencies	Identification Results
		2. Positive impact and negative biotechnology in the health sector (for medicinal ingredients), as well as the impact of genetic engineering (modern biotechnology) on health.
	KD 3.10	1. Hazards of chemical substances (pollutants) for human health.
		2. Air pollution is the cause of high failure lung function of its citizens

Based on the table above, it can be seen that the context of health literacy that is used as learning content, which tends to be on Biology and Physics material, but not found in the context of Health that is linked or combined with earth material. Basically, the material about earth can also contain the context of health and disease, such as based on NSTA (2003), the science material in the field of Earth includes the importance of cycling materials such as oxygen, carbon, and nitrogen. Therefore, the recommendations from the results of this study for study the next step are to develop junior high school science teaching materials that contain the context of Health and Disease that are integrated in all fields of science that can be loaded in an integrated manner.

Integrated science learning is learning that combines, integrates, and integrates science learning in one unit (Khairani et al, 2017). Integration in science is very much needed in learning because integrated science learning requires students to be able to think critically and learn actively (Khairani et al, 2017)

Conclusion

The results of this study indicate that the overall context of health and disease has been included in the science learning module but with varied coverage based on grade level, scientific field, and components of the health literacy context. In addition, based on the junior high school class level, the context of health literacy is mostly contained in the 8th grade module and at least contained in the 9th grade module. support the improvement of students' health literacy and scientific literacy skills.

References

Chavagnetto, A.R. (2010). Argument to foster scientific literacy: A review of argument interventions in K–12 science contexts. *Review of Educational Research*, *80*(3), 336-371. Retrieved from https://www.jstor.org/stable/40927285

Freedman, D. A., Bess, K. D., Tucker, H. A., Boyd, D. L., Tuchman, A. M., & Wallston, K. A. (2009). Public health literacy defined. *American journal of preventive medicine*, *36*(5), 446-451. https://doi.org/10.1016/j.amepre.2009.02.001

Hahn, R. A., & Truman, B. I. (2015). Education improves public health and promotes health equity. *International journal of health services*, *45*(4), 657-678. https://doi.org/10.1177%2F0020731415585986

Holbrook, J., & Rannikmae, M. (2009). The meaning of scientific literacy. *International Journal of Environmental and Science Education*, *4*(3), 275-288

Khairani, S., Asrizal, A., & Amir, H. (2017). Pengembangan Bahan Ajar Ipa Terpadu Berorientasi Pembelajaran Kontekstual Tema Pemanfaatan Tekanan Dalam Kehidupan Untuk Meningkatkan Literasi Siswa Kelas VIII SMP. *Pillar of Physics Education*, *10*(1). http://dx.doi.org/10.24036/2571171074

McQueen, D. V., Kickbusch, I., Potvin, L., Balbo, L., Abel, T., & Pelikan, J. M. (2007). *Health and modernity: the role of theory in health promotion*. Springer Science & Business Media.

National Science Teachers Association. (2003). Standards for science teacher preparation. *Faculty Publications: Department of Teaching, Learning and Teacher Education*, 86

Norris, S. P., & Phillips, L. M. (2003). How literacy in its fundamental sense is central to scientific literacy. *Science education*, *87*(2), 224-240. https://doi.org/10.1002/sce.10066

Nutbeam, D. (2008). The evolving concept of health literacy. *Social science & medicine*, *67*(12), 2072-2078. https://doi.org/10.1016/j.socscimed.2008.09.050

OECD. (2019). PISA 2018 Assessment and Analytical Framework, PISA, OECD Publishing, Paris

Okan, O., Bauer, U., Levin-Zamir, D., Pinheiro, P., & Sørensen, K. (2019). *International Handbook of Health Literacy: Research, practice and policy across the lifespan* (p. 764). Policy Press. (OECD, 2019).

Paakkari, L., & Paakkari, O. (2012). Health literacy as a learning outcome in schools. *Health Education*. https://doi.org/10.1108/09654281211203411

Saputra, W. T., & MBP, R. L. (2021). Sosialisasi Pencegahan Hoax Seputar Informasi Covid 19 Di Kalangan Remaja. *IKON*, *26*(1), 47-55. Retrieved from https://journals.upi-yai.ac.id/index.php/IKON/article/view/1218

Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: a systematic review and integration of definitions and models. *BMC public health*, *12*(1), 1-13. https://doi.org/10.1186/1471-2458-12-80