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Effect of the problem-based adolescent reproductive health module on students' life skills and attitudes

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ABSTRACT

This study aimed to analyze the effect of the implementation of a problem-based adolescent reproductive health module on students' life skills and positive attitudes toward reproductive health. It was quasi-experimental research by applying a randomized pretest-posttest control group design, involving junior high school students who were divided into two groups, namely experimental and control groups. The data collection was conducted by using a life skills test and an attitude scale questionnaire as instruments. The instrument validity was tested by applying the Lawshe formula. The instrument's reliability was tested using the Alpha-Cronbach formula. Multivariate Analysis of Variance was used to analyze the data collected. The research results indicated that learning by using a problem-based adolescent reproductive health module had a positive impact on the students' life skills and attitudes toward their reproductive health. Learning about the human reproductive system by using the module motivates the students to search for answers to the questions given at the beginning of the material. Based on those findings, learning using this module is recommended as one program to teach students (adolescents) education on reproductive health.

Keywords: health module, adolescent reproduction, life skills

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INTRODUCTION

Adolescence is a transitional period between childhood and adulthood (Andrzejewski et al., 2020; Mehringer & Dowshen, 2019). Adolescents in the 21st century face many problems that have the potential to threaten their future (Son et al., 2017). A few risk factors that are faced by adolescents that may result in health issues for them are the psychophysiological development process, knowledge, health services, environment, life skills, and technology advancement (Calihan et al., 2021; Nguyen et al., 2019). Adolescents (students) are very often confused about facing their physical and psychophysiological changes. They commonly search for information on the internet or from their peers, whose accuracy is still in question. Therefore, adolescents need to have accurate information from reliable sources (Budiono & Sulistyowati, 2013). Information accessibility improvements in this globalization era enable everybody, including adolescents, to obtain rich information about anything. The information obtained from mass media, be it printed or electronic, fastens changes (Fatimah et al., 2021; Mmeje et al., 2020). Even though this information flow supports various development sectors, it also has the potential to weaken socio-cultural systems and have negative impacts on lives, including those of adolescents. Information flow has liberalized their ways of thinking, behaving, and acting toward sexuality. Adolescents nowadays have very permissive characteristics in relation to premarital sexual activities, and this results in various reproductive issues (Taylor et al., 2020; Trejos-Castillo & Noriega, 2020).

Sexuality and reproductive health issues are types of problems that are dominantly faced by adolescents in the present. Some examples of them are the increased number of teenagers with HIV/AIDS, sexually transmitted infections, unintended pregnancy, and drugs, alcohol, psychotropics, and other additive substances abuse. These sexuality problems, HIV/AIDS, and drug abuse are said to be three basic threats to adolescent reproductive health (Muadz, M.M. et al., 2008). Besides the negative impact of information technology advancement, the risk of these three threats in adolescents is also caused by their psychophysiological development, their limited knowledge of sexuality and reproduction, and the influence of the environment. The hormonal changes that happen to adolescents result in sex drive. Adequate knowledge, positive attitudes toward reproduction and sexuality, and life skills in reproductive health can decrease the risk of adolescents experiencing reproductive health problems. Permissive environments in our society can motivate teenagers to have premarital sex (Atik & Susilowati, 2021; Ekasari et al., 2020; Lestary & Sugiharti, 2011; Nasution, 2012). Another factor that also influences the emergence of adolescent reproductive health problems is the decrease in first marriage age and the increase in the proportion of unmarried adolescents. This condition is caused by more adolescents, be them boys or girls continuing their education to a higher level and more adolescents participating in the job market. The long period of time of being single leads to risky behavior, such as having premarital sex, which can cause unintended pregnancy, sexually transmitted infections including HIV/AIDS, and drug abuse.

For adolescents to decrease their risk of facing reproductive health and sexuality problems, they have to be assisted to gain accurate information about reproductive health. Students who received reproductive health education in school had a lower risk of developing reproductive health issues such as risky sexual behavior, sexually transmitted infections, alcohol and drug abuse, unintended pregnancy, and abortion (Belay et al., 2021; Reis et al., 2011) adolescents knowledge and attitudes toward sexuality and reproductive health can be done in junior high schools (Sommart & Sota, 2013; Wulandari et al., 2012). In addition to increasing knowledge and developing positive attitudes, there are also several life skills that adolescents need to be trained in to avoid the risks of the three reproductive health issues, namely (1) problem-solving and decision-making skills; (2) (positive) thinking skills;(3) interpersonal communication skills;(4) physical health skills; (5) skills to be firm; (6) skills to trust and respect themselves; and (7) skills to deal with stress. Problem-based learning is an effective way to practice decision-making skills, communication skills, and critical thinking skills. Adolescents have to be given reproductive health education as early as possible before puberty, and for that, teachers' as well as schools' roles are highly needed (Citrawathi, 2016; Cook & Walsh, 2012; Mayasari & Adawiyah, 2016; Thirunavukarasu & Simkiss, 2013; Yuhanah, 2020). There are a number of factors that affect the implementation of reproductive health education in schools, including the availability of teaching materials, teachers' attitudes about the three primary issues with reproductive health, and the amount of time available for instruction (Kalanda, 2010). Learning resources in the form of modules help students learn since they feature a number of learning exercises that are organized systematically to support autonomous learning (Citrawathi & Adnyana, 2017; Wilujeng et al., 2020). This research aimed to analyze problem-based reproductive health modules for adolescents affected their life skills and develop positive attitudes toward reproductive health. Problem-based learning can be used to improve the students' knowledge, develop their positive attitude toward reproductive health, and train their life skills. In addition, problem-based learning leads students to learn the concepts and principles of problem solving in complex real-life situations. Hence, the problem-based learning module can be implemented to give education on reproductive health (Batdi, 2014; Citrawathi, 2016). The problem-based adolescent reproductive health module is a module that is written based on the reproductive health problems in the students' immediate surrounding as the context of understanding the content. Through this module, students can study about the human reproductive system. Both their practical knowledge of reproductive health and their positive attitude toward it will be developed.

METHOD

This study was a quasi-experimental design, applying randomized pre-test and post-test control group design (Malmia et al., 2019; Pursitasari et al., 2020). The problem-based adolescent reproductive health module, during which the students learned about the human reproductive system, was administered to the experimental class in this study. The control group, however, did not employ this module in their learning of the topic. To ascertain the difference in the experimental and control groups' favorable attitudes regarding reproductive health and life skills, pre-test and post-test assessments were administered to both groups. The module was developed using the Dick and Carey development model. Validation was carried out by content experts and media experts, and the mean score was 3.87 (scale 5). The module was declared very feasible as a learning resource to provide adolescent reproductive health education. The research design used in this study is presented in Table 1.

Table 1. Research design

Class		Pre-test	Treatment	Post-test
Experimental	R	O	X_1	O’
Control	R	O	X_2	O’

Remarks: R = Random, O = Pre-test; X_1 = Learning using the module; X_2 = Learning without using the module. O’ = Post-test

The learning process by using the module is presented in Table 2.

Table 2. The steps of the learning process

Learning Steps	Main Activity
Step 1. Finding problem	Students found problems in groups and individually in the articles provided in the worksheet
Step 2. Stating problem	Students wrote using their own words the problem statements based on the problems that they studied
Step 3. Collecting information	Students collected information from the module and several relevant sources individually and in groups
Step 4. Identifying solution	Students formulated solutions on the reproductive health problems that they studied
Step 5. Selecting the best solution	Students discussed in class to select the best solution

This experimental study was conducted at SMP Laboratorium (Laboratory Junior High School) of Universitas Pendidikan Ganesha. It was conducted in class IX-1 with 31 students and in class IX-2 with another 31 students. The 62 students who participated in the study were divided into two classes: XI-1, which had 33 (53.2%) male students and 29 (46.8%) female students, and XI-2, which had 17 (51.6%) male students and 14 (48%) female students. The study was conducted when the class discussed the human reproductive system. The teacher used a problem-based learning model to discuss the human reproductive system. The adolescent reproductive health module was applied during the model implementation. In this study, the learning outcomes for the students were evaluated in terms of their life skills and their positive attitudes regarding reproductive health. Attitude refers to a complex mental condition that involves belief and certain feelings that cause one to act in certain ways. The structure of attitude consists of three components, namely (a) a cognitive component that is a representation of what is believed by one individual, (b) an affective component that refers to feelings that include emotional aspects, and (c) a conative component that is the aspect of tendency to show certain behavior that is in line with that person’s attitudes. Healthy reproduction attitudes are students’ attitudes toward reproductive health based on cognitive, affective, and conative components. Students’ attitudes toward reproductive health are measured using an attitude test. Positivity toward reproductive health is related to responsible and healthy attitudes and behaviors that are owned by somebody

in relation to the reproductive organs and their functions, as well as prevention of the issues that may take place. The life skills that were taught and trained were (1) problem-solving and decision-making skills; (2) positive thinking skills toward the three main problems with reproductive health; (3) interpersonal communication skills; (4) skills in taking care of physical health; and (5) skills in being firm and affirmative. The learning outcomes of the students' learning using the module and not using the module during sessions on the human reproductive system in their science class are discussed in the section on the students' attitudes and life skills.

The data collection in this research was done by applying two instruments, namely the life skills test and the attitude scale questionnaire. Students' attitudes toward reproductive health were measured using attitude scale questionnaires and their life skills were measured using a life skills test. The attitude scale questionnaire consists of 40 statements with five answer choices (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree). The life skills test consists of 15 problem-solving questions in the form of essays. Instrument development was done following a few steps, namely writing the draft, developing the instrument, and conducting validity and reliability tests. The validity test was done by applying the Lawshe formula (Lawshe, 1975). The CVR test result of every statement was 1.00, and the CVI test result was also 1.00. Hence, it could be concluded that the instrument had very good quality. The instrument reliability was determined by applying the Alpha-Cronbach formula. The results indicated that the reliability coefficient was 0.91, which meant that the reliability was very high.

The collected data was analyzed using descriptive and inferential analysis methods. A descriptive analysis technique was applied to describe the mean scores and the deviation standard of the pre-test and post-test for knowledge, attitude scale, and problem-solving skills of the experimental class and the control class. A descriptive analysis was also conducted to determine the normalized gain score. This score was used in the inferential statistics to determine the improvement of each learning result. Inferential analysis was used to analyze the impact of the use of a problem-based adolescent reproductive health module on their positive attitude toward reproductive health and life skills. The analysis used was multivariate analysis of variance (MANOVA). A pre-requisite test was conducted before the MANOVA test was done by testing the multivariate normality, homogeneity, and multicollinearity or the correlation of dependent variables. The MANOVA and the pre-requisite tests were done with the assistance of IBM SPSS Statistics 25.0 for Windows.

FINDING AND DISCUSSION

Finding

The data were analyzed from the pre-test and post-test scores on each learning strategy by calculating the normalized gain score (g) using Hake's (Hake, 1998) formula. The mean score and standard deviation of the gain score of the learning results can be seen in Table 3.

Table 3. The average gain score in the experimental class and control class

Learning Strategies	Learning Results	Descriptive Statistics	
		Mean	Standard Deviation
Experimental class	Positive attitude toward reproductive health	0.19	0.11
	Life Skills	0.65	0.13
Control class	Positive attitude toward reproductive health	0.16	0.09
	Life Skills	0.31	0.11

Table 3 shows that learning results improvement related to a positive attitude toward reproductive health is low both for students learning using the module and those not using the module. The gain score of students' positive attitudes toward adolescent reproductive health of the students who learnt using the module was higher than that of the students learning without using the module. While for life skills in reproductive health, the gain score of those who learnt using the module was 0.65 and that of those who learnt without using the module was 0.31. It

could be categorized as moderate. The gain score of the life skills of the students who learnt using the module was higher than that of those who learnt without using the module.

The MANOVA analysis test was preceded by prerequisite tests that included normality tests, homogeneity tests, and multicollinearity. The normality test of data distribution indicated that the significance score was 0.538 ($p>0.05$), which meant that the data distribution of positive attitudes toward reproductive health and problem-solving skills is normally distributed. Homogeneity test results indicated that the significance score of Levene's test for attitude variable was 0.213 and the life skills variable was 0.239. As those two scores were higher than 0.05, the variance-covariance matrix on the variables of attitude and life skills learning individually was the same between the group learning using the module and the group learning not using the module. The analysis results also indicated that the correlation between the dependent variables of attitudes and life skills was 0.207. So, the correlation between dependent variables was smaller than 0.8. This means that there was no collinearity between the dependent variables, and the MANOVA analysis could be continued. The results of the MANOVA analysis are presented in Table 4.

Table 4. The distribution of MANOVA test results

	Effect	Score	F	p	PES
Strategy	Pillai's Trace	0.944	494.345[b]	0.0001	0.944
	Wilks' Lambda	0.056	494.345[b]	0.0001	0.944
	Hotelling's Trace	6.961	494.345[b]	0.0001	0.944
	Roy's Largest Root	9.961	494.345[b]	0.0001	0.944

From the Wilks' Lambda multivariate significance test, the score gained was 0.056 with an F value of = 494.345[b] and significance = 0.0001 ($p<0.05$). The test results indicated that problem-based learning using the module improved the learning results related to students' positive attitudes toward reproductive health and life skills. The *Partial Eta Squared (PES)* score was 0.944 (94.4%). This means that the module used to facilitate the problem-based learning in the reproduction system in junior high school improved the students' learning results by 94.4%. The significance score of the improvement of the learning results in the attitude aspect was 0.184 ($p>0.05$). This means that problem-based learning of the human reproductive system using the module did not improve learning results significantly on the attitude aspect significantly. Problem-based learning facilitated by the module could improve the development of positive attitudes toward reproductive health by as much as 2.9%. For the learning results on life skills, the significance score obtained was 0.0001 ($p<0.05$). This means that learning using the module could improve students' life skills in reproductive health, and the improvement was 80.9%.

Discussion

The range of ages of the students in the ninth grade of junior high school is between 12 and 14 years old. At those ages, the students are in their puberty period (Fadhila, 2017; Mansoben & Pangaribuan, 2020). In that period, students as adolescents are expected to have knowledge, a positive attitude toward reproductive health, and life skills in reproductive health (Muadz, M.M. et al., 2008; Sugiyanto & Suharyo, 2011). Based on Piaget's cognitive development, junior high school students are already in the formal operational stage. This means that based on cognitive development, junior high school students can learn using problem-based learning strategy. In the formal operational stage, students have the ability to think logically about various abstract, systematic, and scientific ideas in solving problems (Ibda, 2015). In this research, students were given problems and they were trained to learn to solve those problems. Through the process of discussion, students were trained to think critically to obtain solutions after reading several relevant sources. The problems given were real problems related to reproductive health that affected their skills in taking care of their physical health. In the learning activities, the students learnt in groups and were given a chance to present their group work results. By doing so, the students were trained in communication skills, positive thinking skills, and skills of being firm

and affirmative. The learning results of the students who learnt using problem-based learning could be categorized as good in the aspects of problem-solving skills and attitudes.

The problem-based adolescent reproductive health module was written based on the needs analysis conducted in the junior high school. This means that the model was in line with the curriculum, the teachers' needs, the students' needs, and also the school's needs. The module that was written based on the students' needs makes learning more interesting, impressive, fun, and improves the students' knowledge and attitudes so that the learning process becomes more effective (Arum & Wahyudi, 2016; Hafsah et al., 2016; Tajmiati et al., 2017). This viewpoint is consistent with study findings, which showed that instructional materials created based on needs analysis findings and used in conjunction with effective learning techniques can enhance students' learning outcomes (Citrawathi, 2014; Putri et al., 2018; Wibowo et al., 2017).

The implementation of the module in class IX in their classroom sessions on the human reproductive system was very prospective to be done as class IX students are 14 to 15 years old. According to Piaget's development theory, junior high school students are in the formal operational stage. This means that the students already have the ability to think logically about various abstract ideas and can solve problems scientifically and systematically (Atik & Susilowati, 2021; Riyadi, 2017). The success of the learning process was determined by the appropriateness of students' thinking abilities with the materials that they studied (Nuroso & Siswanto, 2012). Therefore, the learning material has to be in line with their cognitive development (Cahyadi, 2019; Tegeh et al., 2015; Triana Indrawini et al., 2017). In this research, in learning about the human reproductive system, the students were given real problems, particularly related to reproductive health problems faced by adolescents. The distinctive characteristic of this module is that at the very beginning of the chapter or subchapter, an explanation of real reproductive problems that happen around students or experienced by them is provided. That way, the learning process becomes more interesting, contextual, more innovative, and more impressive for students, so they are more motivated in their learning. The module's materials covered topics of human reproductive organs, protection against sexual abuse, problems related to students' reproductive health, sexually transmitted diseases, and HIV/AIDS. The material is in accordance with the needs of students as teenagers (Rochmayani & Zulaekha, 1994).

Regarding the attitude aspect in the learning results, the significance score obtained was 0,184 ($p>0,05$). This means that the learning strategy did not improve the learning results significantly. This indicated that learning using this module did not have a meaningful effect on improving healthy reproductive attitudes compared to learning without using this module. Even though the results were not significant, learning using this model could improve the students' positive attitude toward reproductive health compared to not using it. The difference could be seen from the mean score at Estimate Marginal Mean. From the Estimated Marginal Mean, it was obtained that the average score of the positive attitude toward reproductive health of the students that learnt using the model was 0.198, while that of the students who learnt without using the module was 0.163. This shows that students have healthy reproductive attitudes, and these attitudes improve after being taught by the problem-based adolescent reproductive health module.

Learning using the module could improve the learning results in the area of life skills by as much as 80.9%. This was in line with the research results stating that problem-based learning was effective in the improvement of life skills such as problem-solving and decision-making, interpersonal communication, and creative thinking skills (Citrawathi & Adnyana, 2017; Karimian et al., 2019). Learning using this module is a type of learning that prioritizes students' activities. The learning process was started by exposing real problems in society such as premarital sex, unintended pregnancy happening to adolescents, sexually transmitted infections, HIV/AIDS, drug abuse, or other problems faced by students such as growth and development issues and eating disorders. The problems discussed were those listed in the module, and to solve the problems, the students were guided by using worksheets. Problem solving was done in groups and all students were asked to participate. Every group member used a worksheet to identify difficulties in the module, discuss and determine the problems, search for information, and find solutions to the problems they researched. Therefore, students were given problem-solving training to help them develop life skills like (1) problem-solving and decision-making skills, (2)

positive thinking skills related to reproductive health, (3) interpersonal communication skills, (4) physical health skills, and (5) the ability to be firm and affirmative. When given the option to work together and actively seek out information from multiple learning sources, students exhibited improved learning outcomes. By giving students real-world examples of the life skills they are acquiring in this learning activity, the teacher plays a critical role in encouraging the students' learning (Adnyana & Citrawathi, 2011; Nuroso & Siswanto, 2012).

Various research has revealed that adolescents need information about reproductive health. Such information can be given in schools through reproductive health education to help students make decisions on solving reproductive health problems (Joseph et al., 2021). This can be done integratively in subjects with relevant material, such as the human reproductive system in a science class at the junior high school level. Health education that is done by applying appropriate strategies and in line with students' needs can improve their knowledge, develop their positive attitudes, and improve their life skills in reproductive health. One of the sources of information about reproductive health that students expect is teachers. The modules developed in this study can be used to provide reproductive health education to students. With adequate knowledge, a positive attitude, and life skills, students can avoid the risk of reproductive health problems (Atik & Susilowati, 2021; Gavin et al., 2010; Sugiyanto & Suharyo, 2011; Wulandari et al., 2012).

CONCLUSION

Learning using a problem-based reproductive health module had a positive effect on students' positive attitudes and life skills in their reproductive health. Learning by using the module is the kind of learning that prioritizes students' activities. The health and reproductive problems discussed were listed in the module, and to solve the problems, the students were guided by using worksheets. Problem solving was done in groups; all students were asked to participate, facilitated by the teacher. By using worksheets, every group member identified the problems in the module, discussed and decided the problems, searched for information, and found the solutions. In the problem-solving process, the students were trained to improve their life skills. The module could improve the development of positive attitudes by as much as 2.9% and improve the students' life skills by as much as 80.9%. Based on the findings and discussion, the module is recommended to be implemented to give students (adolescents) reproductive health education.

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