Integrative Health Thematic Strategy Increases Learning Outcomes And Students 'Clean And Healthy Living Behaviors

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Abstract. This study aimed to improve student learning outcomes, clean and healthy living behaviors (PHBS). This goal achieved through an integrative health thematic strategy (STIK). This study was a quasi-experiment with randomized pretest-posttest control group design. It conducted in 2016/2017 academic year in Buleleng sub-district. It used two sample classes who took by multistage random sampling technique. One class as a Control Group was taught with Conventional Strategy (SK) using the 2013 Curriculum Integrated Thematic Book, and one class as a Treatment Group was taught with STIK using an integrative health thematic textbook (BATIK). Data were analyzed using MANOVA at a significance level of 5%. Based on the results of the data analysis it is evident that STIK improves the learning outcomes of thematic knowledge 16.6 percent, PHBS knowledge 71.7 percent, PHBS attitudes 70.5 percent, and practice PHBS 10.8 percent. The conclusion of this study is that STIK can be recommended as an alternative learning strategy that has the advantage of improving learning outcomes and providing health education to students.

Keywords: Integration, Health Education, Learning Outcomes

1. Introduction

Education is an important social determinant for health [1]. Education plays an important role in health promotion [2]. Related education and health relations closely [3], the relationship between the quality of education and health is reciprocal [4]. Students must be healthy to be educated, and they must be educated to stay healthy [5]. Children require an optimal health status to be able to take lessons properly. Good health status supporting children's success in learning [6]. The school cannot educate and succeed in learning if students are not healthy [7]. The school acts as the entrance for changes in healthy behavior. The role of the school is very important in changing and giving an understanding of the behavior of healthy living [8]. Health interventions can have a positive impact on student health and academic achievement [9]. Therefore health education is very important given to school children to have a clean and healthy lifestyle (PHBS).

However, in Indonesia, health education in schools is still lacking. The attention of the school community and the community towards health efforts at school is still low. The healthy behavior among students was bad. Many childhood illnesses can reappear during school. The nutrition status of the school children was poor. Healthy behavior of school-age children is still low [10,11], children
behave ignore or negate breakfast [12,13], and children school age lacks physical activity [14]. The evidence shown provides an illustration School-age children are a group at risk of developing health problems and diseases (population at risk) [15]. This risk factor has implications for the learning achievements of school children. Every risk of health can affect academic success. The more health risks students have, the more it is unlikely that they will succeed in school. Improvements in health factors can help improve academic achievement [9,16]. In connection with that, health education was very urgent to be given as early as possible. Studies have found that promoting and building behavior healthy for younger people is very useful for their growth and development. Education Health in schools helps students learn the skills they will use to make healthy choices throughout their lives [17].

If we reflect on the above reality, health education is certainly an urgent need in the world of education. But to change the curriculum is also not an easy thing. Therefore, one way that can be taken is to integrate health education into existing subjects according to the applicable curriculum. Currently, in Indonesia, the curriculum that applies in Indonesian education is the 2013 Curriculum. According to the 2013 Curriculum, learning at the elementary school level use integrative thematic learning strategies. This strategy provides an opportunity to incorporate (integratively) health education material into the theme of learning. It is important that health education is given thematically to children according to their growth process [18]. Innovations in the form of strategies to integrate health education into the theme of learning have never been done in learning. The strategy integrates health education into learning the opportunity to do in learning using a thematic strategy. This strategy is then called the thematic strategy. Integrative health (STIK), namely learning strategies that provide opportunities for students to obtain knowledge, attitudes, and skills regarding health, achieve health literacy, practice behavior improves health and promotes the health of others [19]. STIK supported with BATIK in implementation. BATIK was Research and teaching material product Development (R & D) by integrating health education material into the theme of learning and has been proven to have quality or feasibility as teaching material. The integration of health education in the theme of learning used the insertion method [20]. There are two patterns of insertion, i.e. explicitly through the subtitle "Let's Do Clean and Healthy Life", and implicitly integrated into in text/reading, the use of children's songs contains health messages and charged illustrations health message. The purpose of this study is to prove STIK with BATIK assistance to improve learning outcomes and provide health education so that it can improve clean and healthy behavior in students. This healthy behavior will improve the health status of students so as to improve student learning outcomes.

2. Methods

This research is a quasi experimental study with a randomized pretest-posttest control group design [21]. This experimental research is one of the stages in research development. The trial stage expanded [22], where previously through research development has been produced by BATIK which is declared feasible as teaching material to be implemented in learning with STIK.

Population and Samples

The population was all of second grade elementary schools at 2016/2017 academic year in Buleleng sub-district. The sample was two second grade elementary school students from different elementary schools. Samples were taken by the Multistage Random Sampling technique. The first class as a Control Group and second class as a Treatment Group. The Control Group is a class whose students were taught by Conventional Strategy (SK) using the Integrated Curriculum Thematic Book 2013 and the Treatment Group were classes in which students were taught with STIK using BATIK.

Data collection

In line with the research design Randomized Pretest-Posttest Control Group Design data, the study consisted of pretest and posttest for each learning outcome, namely thematic knowledge, PHBS knowledge, PHBS attitude, and PHBS practice. Data on the results of learning thematic knowledge and PHBS knowledge measured using multiple-choice written test, PHBS attitude learning outcomes
data were measured using questionnaires, and PHBS practice data were measured using the questionnaire recall method.

**Data analysis**

Data was analysed with descriptive analysis and inferential analysis Multivariate Analysis of Variance (manova) for normalized the gain score data. Before the manova analysis, prerequisite tests were carried out, Shapiro-Wilk used in normality test, homogeneity tests with the Box's Test of Equality of Covariance Matrices and the Levene's Test of Equality of Error Variances, and the multicollinearity test with the Pearson correlation test.

Normality test data was carried out in eight units of the dependent variable, where four units of analysis were on STIK and four units of analysis were on SK. In this study the Shapiro-Wilk normality test was used because the number in each group of samples was less than 50. The results of the analysis showed that all units of analysis for the dependent variable data showed Shapiro-Wilk statistical score is greater level of significance that \( p > 0.05 \), it means that the distribution of thematic learning outcomes data, PHBS knowledge, PHBS attitudes, and PHBS practices in two groups come from normally distributed populations.

The homogeneity test of variance-covariance matrix uses the Box's Test of Equality of Covariance Matrices with level of significance \( \alpha = 5\% \). Based on the analysis, it was obtained that level of significance \( p > 0.05 \), it means that the dependent variable learning outcomes thematic knowledge, PHBS knowledge, PHBS attitude, and PHBS practices have a homogeneous variance-covariance matrix on the STIK and SK independent variables. It also be interpreted that the dependent variable meets the similarity of the variance-covariance matrix. Homogeneity test of variance-covariance matrix partially used the Levene's Test of Equality of Error Variances with level of significance \( p > 0.05 \), it means that the data distribution of thematic knowledge learning outcomes, PHBS knowledge, PHBS attitudes, and PHBS practices showed homogeneous variants.

To find out the interrelation between dependent variables, Pearson correlation test was used between dependent variables \( r \) was small (<0.8). It means there is no multicollinearity among the dependent variables.

Based on the results of the prerequisite analysis to be able to use the manova test as presented above it can be concluded that all assumption tests show that they are eligible to proceed with the manova test.

**3. Results and Discussion**

Data on learning outcomes (LO) in this study are the results of learning thematic knowledge, PHBS knowledge, PHBS attitudes, and PHBS practices presented in Table 1.

| Table 1 | Distribution of Pretest Learning Outcomes, Posttest and Normalized Gain Score on Learning with STIK and SK |
|---------|----------------------------------------------------------------------------------------------------------------|
| Treatment | LO | Test | Descriptive Statistics | Normalized Gain Score |
| STIK | Knowledge of Thematic | Pretest | 25.8696 | 2.817 | 0.840 |
| | | Posttest | 34.1304 | 1.659 |  | |
| | Knowledge of PHBS | Pretest | 30.3478 | 2.166 | 0.681 |
| | | Posttest | 36.9130 | 1.505 |  | |
| | Attitude of PHBS | Pretest | 103.0000 | 7.367 | 0.463 |
| | | Posttest | 120.2609 | 4.361 |  | |
| | Practice of PHBS | Pretest | 28.9565 | 3.198 | 0.636 |
Based on Table 1 to find out the differences in student learning outcomes (thematic knowledge, PHBS knowledge, PHBS attitudes, and PHBS practice) between students taught with STIK and SK, conducted with Manova (Multivariate Analysis of Variance). In multivariate variance analysis, there are several statistical tests that can be used for making decisions, namely Pillai’s Trace, Wilk’s Lambda, Hotelling’s Trace and Roy’s Largest Root [23]. In this study used Hotelling’s Trace test statistics. This test statistic is suitable because in this study there were only two groups of independent variables. The significance level used is α = 5%. The results of the Manova test presented in Table 2.

Table 2 Summary of Multivariate Test Result

| Influence | Pillai’s Trace | Wilks’ Lambda | Hotelling’s Trace | Roy’s Largest Root |
|-----------|----------------|---------------|-------------------|-------------------|
| Value     | 0.856          | 0.144         | 5.939             | 5.939             |
| F value   | 74.234         | 74.234        | 74.234            | 74.234            |
| P value   | 0.001          | 0.001         | 0.001             | 0.001             |
| PES       | 0.856          | 0.856         | 0.856             | 0.856             |

From the multivariate significance test as presented in Table 2. It showed that F = 74.234 and p < 0.05. These multivariate test results show that STIK improved the learning outcomes of thematic knowledge, PHBS knowledge, PHBS attitudes, and PHBS practices simultaneously higher than SK. Partial Eta Squared (PES) Value was 0.856. This means that STIK implementation increases student learning outcomes simultaneously 85.6 percent higher than SK. Partially increasing the learning outcomes of thematic knowledge, PHBS knowledge, PHBS attitudes, and PHBS practice presented in Table 3.

Table 3 Summary of Results of the Test of Between-Subjects Effects

| Source      | Knowledge of Thematic | Knowledge of PHBS | Attitude of PHBS | Practices of PHBS |
|-------------|------------------------|-------------------|------------------|-------------------|
| P value     | 0.002                  | 0.001             | 0.001            | 0.014             |
| Partial Eta Squared | 0.166               | 0.717             | 0.705            | 0.108             |
| Enhancement (%) | 16.6                 | 71.7              | 70.5             | 10.8              |

Based on Table 3 for the four aspects of learning outcomes obtained p-value <0.05. It means the results of the analysis Tests of Between-Subjects Effects on average data normalized gain score gives an overview of STIK improves learning outcomes higher than SK partially for each learning
outcome. As for the increase were 16.6 percent for thematic knowledge, 71.7 percent for PHBS knowledge, 70.5 percent for PHBS attitudes, and 10.8 percent for PHBS practices.

Based on data analysis, STIK improves student learning outcomes higher than SK. STIK increases the learning outcomes of thematic knowledge, PHBS knowledge, PHBS attitudes, and PHBS practices simultaneously at 85.6 percent. STIK also enhances the results of learning thematic knowledge, PHBS knowledge, PHBS attitudes, and partial PHBS practices, respectively from the highest to the lowest are PHBS knowledge 71.7 percent, PHBS attitude 70.5 percent, thematic knowledge 16.6 percent; and PHBS practices 10.8 percent. Thematic knowledge is learning outcomes according to the 2013 curriculum (instructional effect). While the results of PHBS knowledge learning, PHBS attitudes, and PHBS practices are nurturant learning outcomes. It was a result of the integration of the content of health education into learning.

Increased results of learning thematic knowledge (instructional effect) and PHBS (nurturant effect) as due to the implementation of STIK assisted by BATIK is due to an increase in interest and motivation to learn students. Increased student interest and motivation is caused by (1) the use of integrative health thematic strategies in learning, (2) health education is needed by students, (3) the use of internal insertion methods integrating the content of health education, and (4) learning with STIK fun (joyful learning) as a result of using the full color BATIK, health education material is contextual, the use of children's songs filled with health messages, interesting illustrated images containing health messages.

First, the use of integrative health thematic strategies in learning was according to student characteristics. Learning strategies implemented in learning must be adjusted to the level of development students. Noting the level of development also means considering their developmental tasks [24]. Integrative thematic strategies are very suitable for the characteristics of school-age children (6-8 years), where children concrete, integrative/holistic, and hierarchical learning tendencies [25]. In connection with these characteristics, then elementary school age learners are easier to learn through integrative thematic learning. Learning experiences and activities that are relevant to the level of development and needs of students will fun and learning outcomes will last longer because they are more memorable and meaningful. Discuss the problem real (concrete) makes the learning process more interesting and meaningful [26], students are also easier construct knowledge if the lesson is meaningful to students [27]. The lesson will be meaningful if it is in accordance with students' abilities and relevant to the cognitive structure of students [28].

Second, health education material is needed by students. School-age children are risky group health problems (population at risk). As the population at risk, it is very important to give health education. This is in the opinion of [29], one of the needs of school-age students the basis is to build a healthy attitude about yourself [29]. Students have satisfaction and appreciation and directing the learning experience towards achieving learning achievement if the teaching materials fulfill their needs [30]. The study material that fits students' needs improves interest in student learning. Interest arises when students are interested in something because it suits their needs or feels that something that will be learned is meaningful to him [31]. Attention the lesson will arise in students if the learning material is according to their needs. Students will study seriously only if the curriculum (in this case teaching material) is suitable or in accordance with their needs [32]. Learning that fits your needs encourages interest and motivation students [33].

Health education material that integrated based on an analysis of student needs when compiling BATIK through research and development (R & D) was skin hygiene, hair hygiene, oral hygiene and teeth, hand and foot hygiene, regular exercise habits, adequate sleep habits, eating healthy food and balanced menu, eating vegetables and fruits, not smoking, monitoring weight (BB) ideal and ideal height (TB) on a regular basis, not snacking on the roadside, eating and drinking in the school canteen healthy [10]. The integrated health education material is contextual. Teaching material contextual nature connects academic content with the context of students' daily lives [34]. This stimulates developing students' thinking skills with health problems faced every day.
Third, the integration of health education uses the insertion method. The nature of insertion (insertion) of material health education into the theme of learning is presented subtly and not forced. Implementation learning follows learning patterns according to subject matter topics according to the applicable curriculum. Every learning activity in it already have health education, the implementation is not needed a lot of time, so it's almost not noticeable, that students have actually received education health.

The integration of health education provided to students in this study is in line with the findings Gadin et al., [35], that the principles that guide health improvement in schools can be applied in among students. Bruselius-Jensen and Bunde [36] also conducted research on the integration of health education into the mathematics curriculum. The results of the study obtained findings that integration as intended produce good learning outcomes in mathematics and health education. The results of this study support the National Association of State Boards of Education program that school health programs are important, not only to improve education performance but also to improve the health and well-being of students [37]. Education that promotes health cannot be considered as an addition to the curriculum topic, but it is better integrated as a necessary part of the overall structure of the education system [38].

Fourth, joyful learning STIK implemented in interesting and fun learning as a result of the BATIK's full-color design, educational material health needed by students and is contextual, the use of children's songs that contain health messages, and the use of interesting illustration images that contain health messages. STIK learning uses BATIK characterized by creative learning which is a synergy of meaningful learning, contextual learning, constructivism theory, active learning and according to child development psychology. Based on Kirikkaya's research, et al. [39] joyful perception has a positive influence on students' learning motivation. According to Udvari-Solner and Kluth [40], joyful learning is the "positive intellectual and emotional state of the learner (s) that was achieved when individuals or groups were enjoying pleasure and a sense of responsibility from the process of learning". Another meaning of joyful learning is "learning process or experience which could make". learners feeling pleasure in a learning scenario/process [41]. Joyful learning according to Jadal [42,43] is an approach to the learning process or learning experience that makes learners feel comfortable (feel pleasure) which is part of the process or learning strategy. Joyful Learning is a learning method that involves feeling happy, happy, and comfortable from the parties who are being in the learning process [41]. Joyful learning allows motivated students for continuous learning [44].

The use of children's songs that contain health messages creates a learning atmosphere fun, so students enjoy the learning process [45]. Sing a song supports learning. After students sing a song, the teacher has high expectations about their understanding of the contents of the song [46]. In addition, singing activities while moving the limbs is a distant activity for elementary school-age children to function to restore a conducive atmosphere of re-learning. Many children do not consider singing activities as work [47]. The song also helps create a relaxed atmosphere to create a non-threatening environment. By reducing anxiety, songs can help increase student interest and motivation [48]. A pleasant learning atmosphere is much in accordance with joyful learning [49]. Jadal's research results [50] show that pleasant learning has the effect of increasing student achievement. BATIK's full-color illustrations and designs motivate and attract students' interest in learning. Illustration helps to understand something [50]. Students better understand a concept if learning presented not only with words but with pictures [51]. In learning pictures are the most commonly used media. This is because students prefer pictures than they do writing. Image is an effective visual tool because it can be visualized something that will be explained more concretely and realistically. The information delivered can be easily understood because of the results displayed closer to reality through photos or images shown to children, and results received by children will be the same [52].

The advantages of STIK learning innovation with the help of BATIK are students get the health education without reducing the competencies that must be mastered by the students as the curriculum demands and not increase the learning burden of students. The success of STIK provides an additional learning experience of health education actually is a health promotion effort that aims to
improve Clean and Healthy Behavior (PHBS) students. In this case the instructional effect does not change, namely the achievement of competence the basis as demanded in the syllabus (curriculum), while health education is only a learning outcome nurturing effect. The findings of this study are in line with the opinion of Kolbe [37] who argued that health education helps students achieve higher health and learning standards. The findings of this study are in line with the results of a WHO study conducted on health education that shows a positive impact on academic achievement [53]. This means that it is also treated with STIK has a positive effect on improving student learning outcomes and clean and healthy living behaviors.

4. Conclusion

The conclusion of this study is the integration of health education into the theme of learning through STIK assisted by BATIK to improve student learning outcomes and clean behavior (PHBS). Implications of the research is STIK can be used as an alternative learning strategy that can improve learning outcomes and improve a clean and healthy lifestyle (PHBS) of students.

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