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## Educating Healthy and Clean Behavior with Healthy Adventure Snake and Ladder: Children at Penyengat Olak Muaro Elementary School Jambi, Indonesia

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### Abstract

Healthy and Clean Life Behavior must be applied as early as possible to build a positive Healthy lifestyle to achieve healthy life. However, healthy and clean behavior is difficult for children. Therefore, there must an education regarding this. In this study, the researchers aimed to educate children through Healthy Adventure game and identified the effectiveness of Healthy Adventure to elevate Students' knowledge regarding Healthy and Clean Life Behavior. This research was a quasi-experimental study with control and intervention groups. The data were analyzed using Paired T-test with SPSS version 26. The sample of the study consisted of 32 participants in 33 / IX Penyengat Olak Muaro Jambi Elementary School. The results of the analysis using a paired sample t-test showed a difference in the knowledge of respondents between before and after the intervention using the media of health education. Based on the statistical test with paired samples test the value of  $p < 0.000$  ( $< 0.05$ ). As the result of the study, it was proved that Healthy Adventure significantly improve students' knowledge, attitude and skill regarding Healthy and Clean Life Behavior.

**Key words:** Education; Healthy; Clean; Life; Behavior; Healthy Adventure.

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## **1. Introduction**

Healthy and Clean Life Behavior significantly affect humans' life. A healthy and clean lifestyle will improve well-being, while an unhealthy and unclean lifestyle will emerge diseases, depression and isolation [1]. Constructing a healthy and clean life behavior must be initiated regardless of age. A healthy and clean habit will bring advantages such as; preventing risk of cardiovascular disease, minimize diabetes and reduce obesity. Specifically for children, Healthy and Clean Life Behavior will prevent cognitive dysfunction and even psychiatric disorder [1,2]. Preventing disease is far better than curing disease. Therefore, Healthy and clean lifestyle not only prevent disease, but also curing disease. Many diseases can be recovered by applying healthy and clean lifestyle [3]. The healthy and clean lifestyle can prevent and cure cardio-metabolic diseases such as diabetes mellitus, hypertension, atherosclerosis and dyslipidemia. Herman and his colleagues discovered that healthy lifestyle is better than medication. It is affordable, easy and curing better. Therefore, Healthy and Clean Life Behavior has a vital role to maintain health and prevent diseases so that it must be applied as early as possible [2]. Moreover, School age children are potentially exposed disease and health problem. There are many health problems and diseases caused by biological, environmental and behavioral factors. Furthermore, behavior of children is more likely to be the most common factor due to unhealthy lifestyle and non-hygiene behavior. On the peak of it, the world is facing a new virus called Covid-19 that requires a serious concern and prevention. One of the prevention is a healthy and clean life behavior. However, conducting a healthy and clean life behavior is a difficult task for kids. Therefore, there must be new innovative educational tools to demonstrate the importance of healthy and clean life behavior to children. Although many programs have been conducted to educate children about HCLB, most of the children have less knowledge about it. Children grew and learnt naturally with fun and playing. Therefore, the game played by children must contained both amusing and educating values. [4]. Playing game is effective for learning because the educational activity is hidden behind the game. Therefore, students can learn with fun with games. One of the popular educational tools to educate children is snake and ladder game. Snake and ladder originally made in India that was commonly played by Hindu people. The snake and ladder contained much values of human's life. The ladder was considered as ladder of human's virtuous that would help them to achieve goodness and to reach paradise. Meanwhile, the snake symbolized human's unrighteous and sins that could destroy them and could force them to their decline. There are 100 squares in the commonest snake and ladder game. Every square symbolized Faith (12) Reliability (51), generosity (57), knowledge (76), Vulgarity (49), Theft (52), Lying (58), Drunkenness (62), Debt (69), Rage (84), Greed (92), Pride (95), Murder (73) and Lust (99). This game was practiced to educate children regarding Hinduism. The game taught that good attitude and righteous would elevate the players to nirvana. On the contrast, sins and unrighteous would drag the players down. The 100 squares symbolized a long journey to Nirvana. [5]. Hence, there are many studies regarding the innovation of Snake and Ladder game as an educational game. Teachers from India and Indonesia both agreed that educating and training children with snake and ladder significantly improved students' knowledge. The studies varied from mathematics, science and even physical education. Therefore, the researchers arranged an educational game inspired-from snake and ladder. The game was Hygiene adventure game. Thus, the present study attempted to identify the effectiveness of Hygiene Adventure to enhance students' knowledge regarding Healthy and Clean Life Behavior.

## **2. Hygiene Adventure**

Hygiene Adventure was a modification of snake and ladder game. The Hygiene game contained a healthy and clean life behavior concept. The researchers modified it. It contained information regarding Healthy and Clean Life Behavior such as; thorough hand washing, dangers of skipping hand-washing, healthy and clean latrine, healthy food and snack, healthy canteen, measuring height and weight, doing exercise, mosquito larvae growth's place, mosquito larvae and nests' eradication, importance of breakfast, keep environment hygiene, waste disposal, air pollution, dental health, effect of unhealthy food and snack. Initially, all the players must determine their first player by doing stone paper scissor until the last player. Then, the player must throw dice to obtain their lucky numbers to step into squares. If they are lucky, they will get a ladder to elevate them upwards. Yet, when they are unfortunate, they will get a snake that will drag them down. In the ladder, the player will be asked three questions, if they correctly answer the questions, they will go upwards. The same condition with the snake, the player will get three questions, if one question is wrong, they must go down. In case the three questions are correct, the player can stay in snake. The player who can reach 100<sup>th</sup> square first is the winner and he/she can ask the other players to do a favor.

## **3. Method**

This study was a quasi-experimental study with non-equivalent control group design to attest the effectiveness of Healthy Adventure to enhance students' knowledge in intervention group. Then, the researchers measured the score of both control and intervention groups. Population in the study is Penyengat Olak Muaro Jambi Elementary School 33 / IX. The study took 32 sample as participants. Furthermore, to examine students' knowledge regarding Healthy and Clean Life Behavior, the researcher gave pre-test, playing the Healthy Adventure and hold post-test to determine effectiveness of Healthy Adventure in improving students' knowledge about Healthy and Clean Life Behavior (HCLB). The participants were given a questionnaire to fill both in pre-, and post-test.

### **3.1. Instrument**

The instrument of the study was a sort of questionnaire that consisted of three parts. The first part was about participants' demographic details. Moreover, the second part was a structured-questionnaire about students' knowledge regarding healthy and clean life behavior. The questions such as: definition of HCLB, thorough hand washing, dangers of skipping hand-washing, healthy and clean latrine, healthy food and snack, healthy canteen, measuring height and weight, doing exercise, mosquito larvae growth's place, mosquito larvae and nests' eradication, importance of breakfast, keep environment hygiene, waste disposal, air pollution, dental health, effect of unhealthy food and snack. The third part was participants' opinion regarding the Healthy Adventure game.

### **3.2. Data collection**

The researchers collected the data of pre-test before the game program. Furthermore, the participants joined and played the Hygiene Adventure frequently for about 5 to 6 times per week. Then, the participants filled the last

questionnaire as a post-test data.

### **3.3. Technique of Data Analysis**

The data were analyzed to measure the independent variable's relation to dependent variable. The dependent variable was the Hygiene Adventure and the independent variable was students' knowledge regarding Healthy and Clean Life Behavior. Moreover, the study used independent t-test to measure score difference between control and intervention groups. The statistical analysis was conducted with SPSS version 26.

### **3.4. Ethical Clearance**

An ethical permission was issued by Health Research Ethics Committee of Jambi Polytechnic under the register number LB.02.06/2/13/2021. Moreover, spoken and written permit were obtained from the school principle and the teachers as well as the parents of participants by explaining the advantages of the research for researchers, school and participants in educating children regarding healthy and clean life behavior.

### **3.5. Participants' Demographic Description**

The participants in this study consisted of 62.5% female and 37.5% male participants. Since the population was 5<sup>th</sup> grade students of 33 / IX Penyengat Olak Muaro Jambi Elementary School, the participants were equally 10 years old.

**Table 1:** Participants' demographical data

	N	%
Male	13	37.5%
Female	20	62.5%
Islam	30	90.9%
Non-Islam	3	9.09%

## **4. Result**

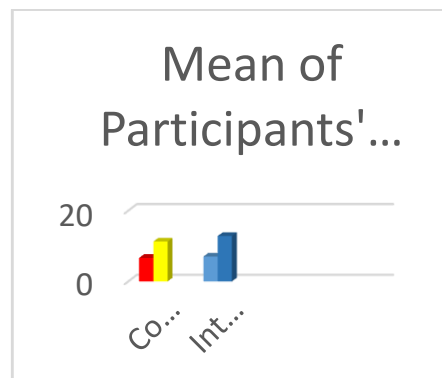
### **Average pre-test and post-test score of participants' knowledge regarding HCLB**

All participants in both groups were asked to answer a pre-test to attest their previous knowledge about Healthy and Clean Life Behavior. Then, the control group joined a conventional class with traditional teaching of speech by teacher or trainer in front of the class explaining about HCLB. Meanwhile, the intervention group joined an educational game Hygiene Adventure and could play it inside and outside class with teacher or trainer. The control group obtained pre-test score as 6.62 and 11.25 post-test score. Meanwhile, the intervention group obtained mean 7.00 of pre-test score and 12.81 post-test score after playing Hygiene Adventure.

**Table 2:** Mean of Participants' score

HCLB	Knowledge	
	Pre-test	Post-test
Control group	6.62	11.25
Intervention group	7.00	12.81

Based on the table above, the control group obtained mean score of 6.62 in pre-test. Meanwhile, the intervention group obtained 7.00 mean score in pre-test. These mean scores in pre-test was not the concerns. The concern in the study was the post-test scores between control and intervention groups. The control group achieved 11.25 mean score in post-test. In contrast, the intervention group achieved 12.81 mean score in post-test. Based on the mean score in the post-test, intervention group achieved higher mean score. It meant that intervention of Healthy Adventure game was effective in enhancing participants' knowledge. Thus, the mean score could be illustrated in the following graphic.



**Figure 1:** Illustration of Mean difference between Control and Intervention groups

**Table 3:** Mean difference of Students' knowledge

			Mean difference
		N	
Control group	with	16	4.63
conventional teaching			
Intervention group	with	16	5.81
Hygiene Adventure			

**Effectiveness of Hygiene Adventure Snake and Ladder game in enhancing students' knowledge about Healthy and Clean Life Behavior.**

Statistical analysis confirmed that there was a difference score between pre- and post-test in control and

intervention groups. The evidence proved that an educational game was likely to be more effective in educating children regarding HLCB. The difference value was  $p = 0,016 < \alpha(0,05)$ . Moreover, the paired T-test resulted difference between pre-test and post-test with value  $p 0,000 (<0,05)$  that explained that both conventional teaching and educational game were effective in educating children about HCLB. However, the more significant difference only could be seen in educational game with Healthy Adventure Snake and Ladder. Thus, it could be inferred that the Hygiene Adventure Snake and Ladder game was more effective than the conventional speech explanation to enhance students of SDN 33/ IV Penyengat olak Muaro Jambi.

**Table 7:** Effectiveness of Healthy Adventure

Item	Category	N	Mean Difference	N Max	N Min	P Value
Healthy and Clean Life Behavior	Control Group with conventional teaching	16	4.63	17	6	0,016
	Intervention Group with Hygiene Adventure	16	5.81	17	9	

## 5. Discussion

Healthy and Clean Life Behavior is a series of habit that is done by all of school communities such as teachers, students, surrounding people. This behavior is an educational outcome to establish a healthy community [6]. This present study found that most of students had less knowledge about Healthy and Clean Life Behavior. Further, during the Healthy Adventure game, students were excited to play and learn together. Hence, after playing the game, the students obtained more knowledge unconsciously. Then, on the post-test, students' knowledge increased drastically from 7.00 to 12.81. The result approved that there was an effect of Healthy Adventure game towards students' knowledge about Healthy and Clean Life Behavior. Meanwhile, the control group only obtained 11.25 post-test's score average from 6,6 average in the pre-test. This meant that there was a less significance of conventional teaching with speech. Notoatmodjo postulated that educational media would help increasing and engaging education and training because it emphasized message clearly and visually [7]. Instructional media enabled students to comprehend a complicated message easily. Thus, the instructional media with Healthy Adventure effectively enhanced students' knowledge about Healthy and Clean Life Behavior. Children around the world can play the Healthy Adventure as educational game to establish a healthy lifestyle. This game will alternate students' habit into a positive habit. Game was an amusing activity to do. Game was commonly played by children. Game must not only amusing but also educating children. Therefore, the Healthy Adventure was a suitable game for learning and playing as well.

## 6. Conclusions

According to the study, there was a mean difference of participants' knowledge before and after playing the Healthy Adventure game. The mean difference was 5.81, which demonstrated the effectiveness of the Healthy Adventure to enhance students' knowledge regarding Healthy and Clean Life behavior in 33 / IX Penyengat

Olak Muaro Jambi Elementary School.

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