**Conference Paper**

# The Effectiveness of Learning Videos for Increasing Knowledge about Women's Adolescent Nutrition and Reproductive Health

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## Abstract

The purpose of this study was to obtain valid and reliable data or facts related to the effectiveness of instructional video media in improving nutritional knowledge and reproductive health in young women. The problem in this study is the lack of knowledge of young women about nutrition and reproductive health and the lack of use of learning media in schools. This research is quasi-experimental research in the form of a pretest-posttest with a control group design with 180 respondents in several vocational schools in Jakarta and Bogor.

The normality test is done using the formula Lilliefors and obtained $L_{arithmetic}$ for learning video media by 0.110 and $L_{arithmetic}$ for conventional media 0.126 with $L_{table}$ = 0.093, because $L_{arithmetic} > L_{table}$, it can be concluded that the two data is not normally distributed. The influence between the two groups can be seen using the Mann Whitney test to obtain a $Z_{arithmetic}$ of 1.539 and $Z_{table}$ value at α = 0.05 of 1.200. Based on the calculation results, it can be concluded reject Ho if $Z_{arithmetic} > Z_{table}$, which means $H_1$ is accepted, and there is an increase in the knowledge of the experimental group given higher learning video media treatment compared to the control group given treatment using PowerPoint media. So it was concluded that there was an increase in knowledge on the use of video media for learning nutrition and reproductive health in young women.

**Keywords:** video media, knowledge, young women, nutrition, reproductive health

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## 1. Introduction

Teenagers are a group that needs to pay attention to their health, especially nutrition. During adolescence, there are physiological changes, so that energy and nutrient requirements significantly affect the growth and development of adolescents. Adolescents have categorized as vulnerable to nutritional problems that pose a risk to health. In adolescence, the acceleration of growth and development of the body requires more energy than that in adolescents' changes in lifestyle and habits that like to try the

food so that there is a mismatch of energy intake and other nutrients [1]. According to Dewantari awareness for healthy eating patterns had not yet possessed by most young women of childbearing age (teenagers). There is a tendency to eat outside the house, in prestigious places with menu choices, not meeting the principle of balanced nutrition. Favorite to eat fast food does not guarantee nutritional needs. This situation can have an adverse impact that will affect the health of the reproductive organs [2].

In young women, nutritional status can affect reproductive health. In the Chasanah study (2016), it had concluded that there was a significant relationship between reproductive health knowledge and nutritional status in young women [3]. This conclusion is reinforced by Jasienska (2017) that in an energy-rich environment of nutrition, increased production of ovarian steroids in women throughout the menstrual cycle and testosterone in men increases their potential for reproduction [4]. The results of this study indicate that the higher the understanding of adolescent girls about reproductive health, the better the nutritional status during the growth of reproductive health [5]. Providing initial education about nutritional knowledge and reproductive health in young women can be done in various ways. One way is to use learning videos in the classroom. Video learning is one of the most effective learning methods to increase adolescent knowledge. A research conducted by Hanifah, the level of nutritional expertise after researching balanced nutrition using video media has increased the average value of sample knowledge by 14,242 points. Weaknesses of the research are the samples used by young men and women; the material used was not specific about nutritional education and reproductive health for young women [5]. Fatimah and Musfiroh stated that the selection of video media as learning media or as a media for health promotion could be well received by respondents because learning is far more exciting and not watching [6].

Research conducted by Artanti, Febriana and Rusilanti on the Development of Learning Videos for Increasing Knowledge about Nutrition and Reproductive Health of Young Women concluded that the overall value achieved was included in the first category. This research shows that the learning video media is appropriate to be used as a learning medium to improve the knowledge of nutrition and reproductive health of young women [7]. The results of the video development had then continued by measuring the effectiveness of the video in improving the knowledge of nutrition and reproductive health of young women.

Bourgonjon's research results (2009) show that several factors directly influence the preference of students to use video games in class. These factors are students' perceptions of usability, ease of use, learning opportunities, and personal experience

with video games in general [8]. Many theories have revealed the problem of multimedia learning, and generally, shows that students use better-performing compilations to receive information based on two senses [9].

Active learning is learning that allows students to learn quickly, fun, and can achieve learning objectives by expectations [10]. Active learning is what produces knowledge that is useful and aims for students through appropriate procedures [11]. The effectiveness of learning in this study will measure the achievement of learning outcomes of students in following the learning process. Achievement of learning outcomes had obtained if students can understand and master the learning objectives of understanding young women about nutritional needs and adolescent reproductive health before being given treatment using videos on learning nutrition and reproductive health knowledge.

# 2. Methods and Equipment

## 2.1. Methods

This research is quasi-experimental in the form of a pretest-posttest with control group design. In this study, the experimental group received material using instructional video media, while the control group was given material with PowerPoint media.

### 2.1.1. Research design

The preparation of this study uses pre-test and post-test. The control group had given a pre-test ($Y_1$). It then carried out the delivery of nutrition and reproductive health material for young women with PowerPoint media. After that, students have given a post-test return ($Y_2$). In the experimental group pre-test ($Y_1$) and delivery of nutrition and reproductive health material for young women using video media after that had given a post-test ($Y_2$). Learning outcome data is shown by the difference in the value obtained from the pre-test result score ($Y_1$) and the post-test result score ($Y_2$) of students. The research design can describe as follows in Table 1.

TABLE 1: Research design.

| Group | Pre-test | Treatment (Video Media) | Post-test | Score difference |
|---|---|---|---|---|
| Control | $Y_1$ | - | $Y_2$ | $Y_2$-$Y_1$ |
| Experiment | $Y_1$ | X | $Y_2$ | $Y_2$-$Y_1$ |

The data in this study are data obtained after conducting research conducted at the Global Paskita Vocational School, Bogor Vocational High School 3, and 32 Jakarta Vocational School with 60 respondents per school each. Respondents are young women with an age range of 14-18 years. Age diagram of respondents of the group of video and PowerPoint are shown in Figure 1.

**Age diagram of respondents of the group of Video**

18 year old, 2
17 year old, 18
16 year old, 14
15 year old, 52
14 year old, 4

**Age diagram of respondents of the group of PowerPoint**

18 year old, 3
14 year old, 1
17 year old, 10
15 year old, 37
16 year old, 39

**Figure** 1: Age diagram of respondents in video and PowerPoint groups.

From the diagram above, it had concluded that the majority of respondents were young women aged 15 and 16 years.

## 3. Results

The results of the initial test (pretest) are carried out to give an overview of the students' initial abilities before the treatment has given. The results of this initial learning are the results of pretest learning cognitive aspects between the experimental group and the control group before scholarship has given. The pretest learning outcomes of the cognitive elements between the learning group with instructional video media with the control or learning group with PowerPoint had seen in Table 2.

TABLE 2: Pre-test results of the video media and PowerPoint media groups.

| Learning Media | n | Average | Lowest | The highest |
|---|---|---|---|---|
| Video | 90 | 70 | 39 | 89 |
| PowerPoint | 90 | 72 | 39 | 100 |

From the results of this initial test, that before treatment, both groups had the same initial ability so that the initial test results can be used as a reference to find out the differences in the results of the post-test later.

The results of the final test (post-test) are carried out to give an idea of the student's last ability after the treatment had given. The ultimate test results are the final learning outcomes between the experimental group and the control group after treatment had

given. Final test results between the learning group with instructional video media with the control or learning group with PowerPoint media had seen in Table 3:

TABLE 3: Post-test results of the video media and PowerPoint media groups.

| Learning Media | n | Average | Lowest | The highest |
|---|---|---|---|---|
| Video | 90 | 77,23 | 32 | 93 |
| *PowerPoint* | 90 | 73,68 | 14 | 89 |

From the table above shows that in the experimental group treated using video media obtained an average of 77.23 learning outcomes with the highest value of 93 and the lowest of 32, while in the control group after treatment using PowerPoint gained an average of 73,68 with the highest amount of 89 and the lowest value of 14. Based on these results shows that the learning outcomes of nutrition and reproductive health knowledge in the experimental group using video media is higher than the control group using PowerPoint media. Average value of increased knowledge onf students using video media and PowerPoint media are shown in Figure 2.

For the difference in an increase ($\theta$), the value of the pre-test and post-test results in the two groups, it had seen that the difference in the rise ($\theta$) in the value using the instructional video media was slightly higher than that using the PowerPoint learning media. Difference in increment ($\theta$) values for instructional video media obtained an average cost of 6, while the increment in increment ($\theta$) values using PowerPoint learning media obtained an average value of 1.
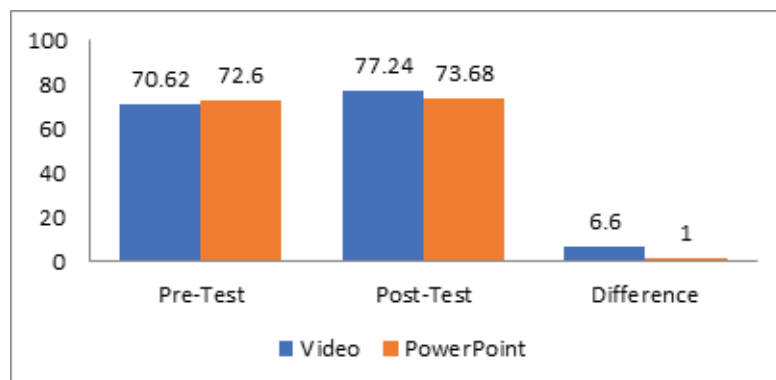


**Figure** 2: Average value of increased knowledge of students using video media and PowerPoint media.

The data normality test is used to determine whether the data obtained had usually distributed or not. This test uses the Lilliefors test formula with the criterion that the data had often distributed if $L_{arithmetic} < L_{table}$; otherwise if the results of $L_{arithmetic} > L_{table}$ declared abnormal.

The data obtained from the calculation is $L_{table}$ for n = 90 with a significance level of 0.05 is 0.093. Data normality test results of increased knowledge on instructional video

TABLE 4: Video and PowerPoint media group normality test results.

| Learning Media | n | $L_{arithmetic}$ | $L_{tabel}$($\alpha = 0,05$) | Conclusion |
|---|---|---|---|---|
| Video | 90 | 77,23 | 0,093 | $L_{arithmetic} > L_{tabel}$ H0 is rejected. So the data is not normally distributed. |
| *PowerPoint* | 90 | 73,68 | | |

media have a price of $L_{arithmetic}$ = 0.110 and $L_{table}$ = 0.093 at a significant level of alpha (α) 0.05, for n = 90. While for the results of increased knowledge on learning media, PowerPoint has a price of $L_{arithmetic}$ = 0.126 and $L_{table}$ = 0.093 at a significant level of alpha (α) 0.05, for n = 90. Because both data have a calculated $L_{arithmetic} > L_{table}$, it had concluded that the two data have generally not distributed.

Based on the results of the normality that had done, it had stated that the data of this study have not normally distributed, so the statistical test uses the nonparametric hypothesis test, the Mann Whitney test:

$$U_1 = n_1 \cdot n_2 + \frac{n_2(n_2 + 1)}{2} - \sum R_2$$

$$U_2 = n_1 \cdot n_2 + \frac{n_1(n_1 + 1)}{2} - \sum R_1 \tag{1}$$

After getting the test statistic values $U_1$ and $U_2$, the next step takes the smallest amount of the two benefits. The lowest value obtained is then compared with the Mann Whitney table. If $U_{arithmetic}$ (U lowest value) $< U_{table}$, then $H_0$ is rejected ($H_1$ accepted).

Hypothesis testing is done by the Mann Whitney Test to find out whether there is an increase in knowledge between the experimental class that had given treatment with the learning video media and the control class that had given treatment with PowerPoint media.

The hypothesis testing criteria are as follows:

$H_0$: µ1 ≤ µ2

$H_1$: µ1 > µ2

Information:

$H_0$: There is no increase in knowledge on the use of nutrition and reproductive health video learning media in young women

$H_1$: There is an increase in education on the use of food and reproductive health video learning media in young women

Hypothesis $H_0$ is accepted if $Z_{arithmetic} < Z_{table}$

Hypothesis $H_0$ had rejected if $Z_{arithmetic} > Z_{table}$

The results obtained an average data increase in learning outcomes of the experimental group with the treatment using video learning media by 6.6 and the average improvement in the learning outcomes of the control group with treatment using PowerPoint media of 1.0. Based on the calculation results obtained, $Z_{arithmetic}$ of 1.539 and $Z_{table}$ at α = 0.05 of 1.200.

Based on the results of the study, it had concluded reject H0 if Z count> Z table, which means $H_1$ had accepted. As well as the data increase in the experimental group knowledge given the video learning media treatment is higher than the control group given the treatment using PowerPoint media. So it was concluded that there was an increase in knowledge on the use of video media for learning nutrition and reproductive health in young women.

## 4. Discussion

The results of research that have done get the results that there is an increase in knowledge of students who get treated using learning video media and PowerPoint learning media; these results had seen from the results of the pretest and posttest. In this study, it had proven through the average pretest and posttest results for the experimental group, which have an average pretest result of 70.62 and posttest results of 77.24 with an increase of 6.63%. In contrast, the control group got pretest results of 72.60 and posttest results of 73.68 with an increase of 1.09%.

The results showed the respondents' knowledge had increased after being given health education with video media. Video media in providing education about nutrition and reproductive health that is appropriate and interesting in conveying information influences the results of learning. Video media displays moving images, writing, and there is a sound that explains the pictures that are displayed to attract attention from the target of health education. Video media presents materials in a concise, clear, and easy to understand manner, this can facilitate understanding and strengthen respondents' memories by using video learning media to be more varied, engaging, and fun. The time of the video playback also does not take a long time; all messages can be conveyed and had received by respondents.

Mayer et al.'s (2005) study concluded that static illustrations, when combined with printed text, can reduce irrelevant cognitive content and improve cognitive processes better than static animation [12]. But Marcus et al. (2018), through the results of experiments, stated that learning by using animation is superior to static representation in teaching [13]. Iqnas concluded that the use of e learning media does not show

any significant difference in learning motivation between pretest and posttest but can be used as one of the solutions to achieve maximum learning process especially in overcoming the limitations of space and time [14]. In another study, Suyitno et al. concluded that the use of Stand Trainer media showed differences in the influence of media use in improving student learning outcomes in Automotive Motor courses [15]. Daryanto suggests that learning media is anything that can be used to channel the message (learning materials), so it can stimulate students' attention, interest, though, and feelings in learning activities to achieve the learning goals [16]. Can be concluded information and Technology based media can facilitate the students' learning better [17, 18].

## 5. Conclusion

Based on data analysis that had done in this study, there is a significant influence on video media for learning nutrition and reproductive health to increase the knowledge of young girls aged 14-17 years. After testing the hypothesis test, the results obtained indicate that the hypothesis stating there is a significant influence on the video media for nutrition and reproductive health learning to increase students' knowledge can be accepted ($H_0$ rejected).

These results appear in hypothesis testing using the Mann Whitney test, namely $Z_{arithmetic}$ of 1.539, significantly at alpha level (α) 0.05, with $Z_{table}$ 1,200. It meant $Z_{arithmetic}$ > $Z_{table}$ so that it successfully tests the significance of the effectiveness of instructional video media in increasing student knowledge. Data from the pre-test and post-test results show that the data had usually distributed.

Based on the assessment data obtained, it had concluded that the group that uses learning video media has a higher value of increasing knowledge. With the effectiveness test on teaching media, it proves that instructional video media is effective in improving students' learning.

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# Conflict of Interest

The authors have no conflict of interest to declare.

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