

## DEVELOPMENT OF VIDEO GAME-BASED EDUCATIONAL MEDIA AS AN EFFORT TO PREVENT SEXUAL VIOLENCE IN ELEMENTARY SCHOOL CHILDREN

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### Abstrak

*Sexual violence against children is a serious issue that impacts their psychological, social, and cognitive development. The lack of early sexual education, coupled with societal views that consider this topic taboo, increases children's vulnerability to becoming victims. With technological advancement, educational media in the form of video games has emerged as an engaging and promising alternative to enhance children's knowledge of sexual violence prevention. Objective: To develop an educational video game and evaluate its effectiveness as a tool for preventing sexual violence among elementary school children. This study employed a Research and Development (R&D) design with a one-group pretest-posttest approach without a control group. A total of 90 students from grades 3 to 5 were selected through stratified random sampling. Research instruments included pretest and posttest knowledge questionnaires, as well as a media feasibility assessment questionnaire. Data analysis using the Wilcoxon test showed that the average knowledge score increased from 7.01 before the intervention to 10.61 after the intervention. The results indicated a significant improvement in children's knowledge after using the educational media ( $p < 0.05$ ). Furthermore, the feasibility assessment revealed that the video game was rated as "highly feasible" by users as an educational tool. The educational video game is both effective and feasible as a tool for teaching sexual violence prevention to elementary school children. It also supports parents and teachers in delivering sensitive material through an enjoyable and interactive approach.*

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### INTRODUCTION

Sexual violence, particularly against children, remains a prevalent and serious issue. According to the latest data in Indonesia, as of January 1, 2025, there were 417 reported cases of child sexual abuse involving children aged 6–12 years, with the majority of victims being girls (1). These figures are expected to increase in line with rising public awareness and reporting. According to the West Java Office for Women's Empowerment, Child Protection, and Family Planning (DP3AKB Jabar, 2024), 1,120 cases of child sexual abuse were recorded in West Java throughout 2024 (2). Child sexual violence

can take many forms, including coercion into sexual activity and forced participation in pornography.

A study conducted in a vocational high school in Jakarta found that the majority of students had experienced sexual harassment within the school environment. Analysis of incidents among female adolescents revealed that most had experienced harassment two to three times, with a prevalence rate of 30.6%. The most commonly reported forms were exposure to inappropriate stories and verbal insults (71.1%), followed by exposure to obscene images (66.7%) (3). Moreover, a 2022 study among male students in senior

high schools in Yogyakarta reported that out of 172 respondents, most had experienced verbal or online sexual harassment via platforms such as WhatsApp, Instagram, Facebook, Telegram, and other internet services. Additionally, 76 respondents (44.2%) had been forced to touch or kiss (on the lips, body, or private parts) others without mutual consent (4). These findings highlight that verbal and visual sexual harassment, whether direct or online, is commonly experienced by both girls and boys.

The consequences of frequent sexual harassment include long-term disruptions in social, emotional, and cognitive functioning, which can lead to mental health problems such as hallucinations and depression (5). Victims may also engage in high-risk behaviors such as drug abuse and early sexual activity. Childhood experiences of sexual violence often leave deep psychological imprints that persist into adulthood, creating a continuous cycle of violence.

Various factors contribute to the occurrence of child sexual abuse, including environmental conditions and exposure to pornography. A study conducted at the Class II Juvenile Correctional Institution (LPKA) in Makassar between 2018 and 2021 reported 36 cases, with perpetrators aged 10 to 18 years. One perpetrator stated that economic hardship contributed to low educational attainment, which subsequently limited employment opportunities and led to deviant behaviors. These findings suggest that economic factors also play a significant role in the occurrence of sexual violence (6).

Early sexual education is considered an important preventive measure to ensure children do not obtain inaccurate or misleading information about sex from untrustworthy sources, such as the internet or peers. Parental involvement plays a crucial role in this context. One key aspect is establishing open communication with children so they feel comfortable discussing sexual topics with their parents. When children receive proper

sex education from an early age, they are more likely to develop self-awareness and responsibility and are less likely to feel embarrassed when discussing sensitive issues (7).

In line with the rapid advancement of technology, various media have been developed to assist parents in educating their children, including media for sexual violence prevention. One such medium is educational games. The increasing accessibility of digital devices for playing games presents both risks and opportunities. When used appropriately, such as through specially designed video game-based educational media, screen time can become an effective platform for delivering educational messages, including those related to sexual violence prevention (8,21,22).

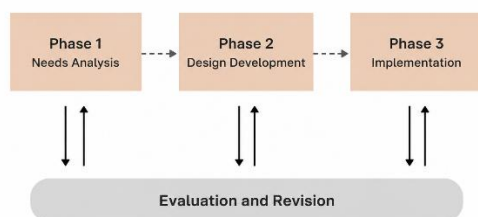
Therefore, video game-based educational media can serve as an innovative and engaging method for educating elementary school children about sexual abuse prevention. This study was conducted among students in grades 3, 4, and 5, as this age group is in a critical stage of cognitive development and demonstrates a high level of curiosity.

Based on the aforementioned background, the researchers aimed to develop an educational video game that serves as an engaging and effective alternative for children to access accurate information, particularly related to sex education and the prevention of sexual violence (9,23).

## **METODE**

This study employed a Research and Development (R&D) method with a quantitative approach. The development model used was based on the Hannafin and Peck model, which consists of the stages of needs analysis, design, and implementation (10,11). The quantitative approach was applied during the product testing phase to measure the effectiveness of the educational media through pretest and posttest, with

statistical analysis conducted using the Wilcoxon test. (12,19,20).



**Pict. 1** Model Hannafin dan Peck

The study population consisted of elementary school students in grades 3, 4, and 5. A total of 90 student respondents were selected using an equal stratified random sampling technique. The research was conducted during April–May 2025 at SDN Cibirusah Kota 05.

The study utilized questionnaires that had previously undergone validity and reliability testing with 30 student respondents who met the inclusion and exclusion criteria. The questionnaires included a pre-test and post-test to measure students’ knowledge before and after the educational video game intervention.

Data collection was carried out by directly distributing the questionnaires to respondents who met the inclusion and exclusion criteria (13). Before the study, ethical approval was obtained from the Health Polytechnic of the Ministry of Health Jakarta III, with approval number No. DP.04.03/F.XIX.13/3531/2025 (15).

Statistical analysis was conducted to identify characteristic variables and evaluate the effectiveness of the educational media during the product testing phase using pretest and posttest scores, analyzed with the Wilcoxon signed-rank test.

## RESULTS AND DISCUSSION

After the educational media was successfully developed, it was subsequently evaluated by both a media expert and a subject matter expert to determine whether the product was appropriate for use.

The media feasibility test was conducted by one media expert, resulting in a feasibility score of 85%, which is categorized as "very feasible" (14,16). The content feasibility test, carried out by one elementary school teacher, yielded a score of 90%. Additionally, a feasibility test involving 30 respondents indicated that the educational media was generally deemed appropriate for educational use, with an average total feasibility score of 86%, falling under the "feasible" category (21,22).

**Table 1.** Frequency Distribution of Respondents’ Characteristics by Gender and Age at SDN Cibirusah Kota 05, 2025 (n = 90)

Variable	Frequence (n)	Presentase (%)
<b>Gender</b>		
Male	38	42,2
Female	52	57,8
Total	90	100
<b>Age</b>		
< 10 tahun	23	25,6
≥ 10 tahun	67	74,4
Total	90	100

Based on the table, out of 90 respondents, the majority were female, totaling 52 students (57.8%). In terms of age, most respondents were aged ≥ 10 years, totaling 67 students (74.4%). At this age, some children begin to enter puberty, also known as early adolescence. Children at this stage are also more vulnerable to becoming victims of sexual violence (17,18).

**Table 2.** Distribution of Pretest and Posttest Knowledge Scores at SDN Cibirusah Kota 05, 2025 (n = 90)

Variabel	Pretest	Posttest
Mean ± SD	7,01 ± 1.232	10.61 ± 1.046
Median	7.00	11.00
Min-Max	4-9	8-12

Based on the results of the univariate analysis of the frequency distribution of knowledge scores in the pretest and posttest, it was found that the highest pretest score was 9, while the lowest was 4. The average pretest

score was 7.01 with a standard deviation of 1.232 and a median of 7.00. Meanwhile, in the posttest, the highest knowledge score was 12, and the lowest was 9. The average posttest score was recorded at 10.61 with a standard deviation of 1.046 and a median of 11 (21, 22). The results of the normality test indicated that the data in this study were not normally distributed. Therefore, the researchers used a non-parametric statistical test, namely the Wilcoxon Signed-Rank Test (19,20). This test was applied to all 90 respondents to assess the effect of the SEDU-Quest video game-based educational media on increasing knowledge about sexual harassment prevention. The use of animation, characters, and a game-like system makes the learning process more engaging and understandable for children. In addition to enhancing knowledge, SEDU-Quest also helps build self-awareness and self-protection skills in children, making it an innovative, interactive educational tool that aligns with current digital technology developments (21,22).

**Table 3.** Distribution of Pretest and Posttest Knowledge Scores at SDN Cibusah Kota 05, 2025 (n = 90)

		<i>n</i>	<i>Mean Rank</i>	<i>Sum</i>
<b>Keterangan</b>	Posttest Knowledge	<i>Negative Rank</i>	0	.00
	Pretest Knowledge	<i>Positive Rank</i>	90	45.50
		<i>Ties</i>	0	
		<i>Total</i>	90	

Based on the table above, the Wilcoxon signed-rank test was conducted on 90 respondents. The analysis showed that all 90 respondents had positive ranks, indicating an increase in knowledge scores from pretest to posttest. There were no negative ranks (decreases in scores) and no ties (no change in scores).

Each difference between the pretest and posttest scores was ranked. In this study, the average rank obtained was

45.50. The total sum of ranks for the positive differences was 4095, representing the cumulative rank scores of the 90 students who experienced an increase in posttest scores compared to the pretest.

**Table 4.** Results of the Wilcoxon Signed-Rank Test at SDN Cibusah Kota 05, 2025 (n = 90)

<b>Results of the Wilcoxon signed Rank Test.</b>	
<i>Z</i>	-8.302
<i>Asymp. Sig. (2-tailed)</i>	0.000

The system-generated result showed a Z-value of -8.302, indicating an increase in posttest scores compared to pretest scores (the negative sign reflects the direction of the increase). The significance value (p-value) was 0.000 (< 0.05), leading to the rejection of the null hypothesis (H<sub>0</sub>). Therefore, there was a significant improvement in knowledge after the intervention using the SEDU-Quest video game-based educational media.

**CONCLUSION**

The research resulted in the development of a video game as an educational tool for the prevention of sexual violence in elementary school children, utilizing the Hannafin and Peck development model, which consists of the following stages: needs assessment, design phase, and development and implementation phase.

The media underwent validation by both a media expert and a content expert. In terms of communication and visual aspects, the video game received a score of 85%, categorized as “highly feasible.” The educational content presented in the media received a score of 90%, indicating that the material was considered relevant, age-appropriate, and free from misinterpretation.

Additionally, a user trial involving 30 participants assessed the media based on attractiveness, content, and language, resulting in a score of 86%. This indicates that the SEDU-Quest video game-based educational media

not only meets theoretical and technical feasibility criteria but also received positive feedback from users. Based on the product trial involving 90 respondents, the developed educational media proved effective in improving children's knowledge. This was evidenced by an increase in the average score from 7.01 (pretest) to 10.61 (posttest), with a p-value of  $0.000 < 0.05$ , indicating a statistically significant difference. These findings suggest that video game-based educational media can serve as an engaging and effective alternative for delivering content on the prevention of sexual violence among elementary school children (9,21-23).

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