

## Model and Media “222” Model with Pop-Up Touch Button Audio Poster as a Strategy to Improve Preschool Teacher Dental Health Maintenance Skills

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### Abstract

Dental caries in children affects the function of the masticatory and digestive systems, decreased appetite, and reduced nutritional intake which has a negative impact on children's health and physical development leading to reduced concentration and decreased learning achievement thus affecting the quality of life of children. The high prevalence of dental caries is due to behavior that can be overcome by forming dental health habits from an early age through the “222” model and media pop-up touch button audio poster. This study aims to arrange the model and media “222” poster pop-up touch button audio to improve the dental health maintenance behavior of preschool teachers. This type of research uses a mixed method which is a combination of descriptive and analytical, with design research and development (R&D), in the model test using a quasi-experimental design. Bivariate analysis using paired t-test, Wilcoxon test, and Man Whitney. The number of respondents is 12 preschool teachers. The result is the model and media “222” with a pop-up touch button audio poster is appropriate as a guide for preschool teacher training in implementing the model. The “222” model is effective in increasing the knowledge, attitudes, and skills of preschool teachers towards the implementation of the model compared to the control group. The conclusion is model and media “222” poster pop-up touch button audio is feasible and the implementation is effective to improve the dental health maintenance behavior of preschool teachers.

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### Introduction

Oral and dental health is an integral part of general health, meaning that a person who has a toothache will suffer from general health problems.<sup>1</sup> Dental and oral health problems affect almost all population groups in the world. Based on the global burden of disease in 2016, dental and oral diseases are estimated to affect almost 3.5 billion (47.2%) people worldwide, where cavities (dental caries) are the most common and serious problems experienced by people in the world.

According to the 2018 Basic Health Research data, dental health problems in Indonesia are relatively high. Indonesian residents have dental problems in the form of damaged or cavities or sick teeth by 45.3%. This figure is still high when compared to Indonesia's national target of free dental caries (0%) in 2030. Central Java province is a province with a fairly high percentage of people with dental and oral health problems of 56.7%.<sup>2</sup> According to the world health organization (WHO) that 90.5% of children experience dental caries,<sup>3</sup> the impact of which more than 50 million hours per year are lost due to children not attending school, thus affecting intellectually and declining children's achievement<sup>12</sup>.

As a result of poor oral health, one of which is stunting. Stunting is a condition of growth failure in children due to long-term malnutrition, so the child is shorter or shorter of stature than a normal child his age and has delays in cognitive development<sup>11</sup>.

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The dental health service program implemented by the Indonesian government has not produced results, this is proven until 2021 the prevalence of dental caries in Indonesian children is still relatively high, reaching 57.6%. This condition is reinforced by the results of research which proves that No country in the world is free from dental caries.<sup>13</sup>

Strategic steps need to be taken to overcome dental health problems, but previously it is necessary to identify the cause of the problem. Dotted with the data above, it can be concluded that dental health problems are caused by poor dental health maintenance behavior. The dental health maintenance program implemented in schools through UKGS has not been able to change students' brushing behavior for the better and correct, because it is only implemented once a year. Habits in maintaining dental and oral health can be initiated through the improvement of behavior from an early age, where the most appropriate time is to instill value values to form positive behaviors. Elementary school age is the ideal age to train a child's motor skills, including brushing their teeth. The formation of brushing behaviors early on will lead the child to the habit of brushing their teeth in the future. According to teori *behavior change* to change a person's habits requires one period, which is 21 days, constantly conditioned to change his habits<sup>12</sup> a.

In an effort to overcome problems and obstacles, It can be started through the formation of behavior from an early age by instilling the habit of maintaining oral hygiene. Efforts to shape behavior can be done through dental health education with innovative new programs as an alternative educational method, namely through the "222" model and media *pop-up touch button audio poster*. b.

The result is media poster pop-up touch button audio is effective as a means of delivering dental health education messages to form habits through increasing the knowledge, attitudes, and skills of preschool teachers about brushing teeth twice a day, brushing teeth for two minutes and after brushing teeth do not eat for the given two hours for 21 days at school. c.

## Materials and methods

The method used is Research and Development (R&D). Test the model using

quasi-experimental pre and post-test with control group design. The purpose of this study is to produce a gamification-based dental and oral health education model that 222 Model with Poster Pop Up Touch Button Audio in an effort to improve the dental health behavior of the preschool teacher. The main steps of the research and development procedure include 5 stages: 1). Information gathering, 2). Design and build models, 3). Expert validation and revision, 4). Test modules, 5). The final models. The study was conducted in a primary school in the city of Semarang Indonesia.

The sampling technique uses a random sampling technique with a total of 12 preschool teachers who meet the inclusion criteria, inter class correlation statistical tests to determine the feasibility of the model. normality test using test Shapiro Wilk for the respondent amounted to < 50. Criteria for Inclusion: teacher comes from a predetermined preschool, available as respondent with a letter signed informed consent. Exclusion Criteria: preschool teachers who are not from the preschool that has been determined, teachers who are not present at the time of the study.

## Results

### Data Collection

The results of the collection of information obtained the conclusion that dental health education for preschool children is carried out using gamification (games) and simulation methods accompanied by media with the aim of attracting children's attention. The selection of media must be varied, innovative, interesting and fun so as to generate interest.

### Design and Build

The results of information gathering are used in making the design of the model building with the Borg and Gall theory approach as follows, namely: Design of the 222 Model with Poster Pop Up Touch Button Audio in an effort to improve dental health behavior preschool teacher

### Expert Validation

Table 1 The result of expert validation shows that the p-value = 0.001, which means that the 222 Model with Poster Pop Up Touch Button Audio is relevant and appropriate as a medium for increasing the dental health behavior

of preschool teacher.

Expert Validation*			
	n	f (%)	P-value
Relevant	3	100	0,000
Irrelevant	0	0	

**Table 1.** Statistical Validation Test Statistics

#### Model Test

Table 2 shows the results of the normality of normal distribution data test is proven by the p-value <0.005.

No	Variabel	Intervensi		Kontrol		Uji Homogeniitas
		n	%	n	%	
Teacher Praschool						
1	Pre Test Knowledge	6	100%	6	100	0,122
2	Post Test Knowledge	6		6	%	
3	Pre Test Attitude	6	100%	6	100	0,056
4	Post Test Attitude	6		6	%	
5	Pre Test Skills	6	100%	6	100	0,022
6	Post Test Skills	6		6	%	

**Table 2.** Normality Test Data

Table 3 shows the results of the homogeneity test of the data of minor doctors and PAUD teachers have a sig value. > 0.05, meaning that the data is the same or homogeneous.

Variabel	Kelompok	Statistic		Delta	p-value
		Mean±SD Pre test	Mean±SD Post test		
Knowledge	Intervention	3,50 ± 1,761	7,50 ± 1,871	4,00	0,008*
	Control	5,33 ± 1,633	5,50 ± 1,378	0,17	0,822*
Attitude	Intervention	4,00 ± 2,000	8,50 ± 1,049	4,50	0,002*
	Control	4,50 ± 2,588	5,83 ± 1,169	1,33	0,158*
Skills	Intervention	4,00 ± 1,789	8,00 ± 1,414	4,00	0,000*
	Control	5,50 ± 1,049	5,83 ± 1,472	0,33	0,175*

**Table 3.** Homogeneity Test.

Table 4. Shows the results of the test of the effectiveness of knowledge, attitudes, and skills in the control group, it is known that the p-value > 0.05, which means that there is no significant difference before and after being given counseling with poster media. The test of the effectiveness of the knowledge, attitudes, and skills data in the intervention group showed p-value <0.05, which means that there was a significant difference before and after the implementation of the "222" model with pop up touch button poster media for preschool teachers.

No	Variabel	*p-value	
		Guru Paud	
		Intervensi	Kontrol
1	Pre Test Knowledge	0,111	0,505
2	Post Test Knowledge	0,961	0,191
3	Pre Test Attitude	0,933	0,692
4	Post Test Attitude	0,820	0,421
5	Pre Test Skills	0,607	0,820
6	Post Test Skills	0,960	0,804

**Table 4.** Test the effectiveness of paired and unpaired data on the variables of knowledge, attitudes and skills of preschool teachers in the intervention group and the control group.

#### Discussion

The results of expert validation of model 222 show that the p-value = 0.020, meaning that 222 Models with Poster Pop Up Touch Button Audio are worthy of improving the dental health behavior of preschool teachers. The expert validation process is very important in testing the feasibility of 222 Models with Poster Pop Up Touch Button Audio before they are implemented by teachers and school children, in order to produce models that are useful in improving the quality of education. A good method will support the learning process of brushing practices.<sup>15</sup>

The provision of health education will also be more effective and the results are optimal when using the right health education methods and media and involving more senses.<sup>16</sup> The results of collecting information that has been carried out by researchers have concluded that school students have a habit of being happy to move, love to play, like to be in groups, and like hands-on practice. To shape changes in dental health maintenance behavior for preschool children, appropriate, interesting, fun learning methods and media are needed, in accordance with the characteristics of elementary school children and involve children in its implementation, the right method used is a game-based learning method.

Posters are one of the visual educational media that can help change behavior by increasing knowledge, facilitating abilities, and interest in behavior.<sup>19</sup> The model and media "222" pop-up audio touch button poster in dental health education is appropriate and relevant as a guideline in improving students' oral health maintenance behavior. Other studies prove that the feasibility of learning media has 3 aspects, namely: media engineering aspects, visual

communication aspects and learning aspects<sup>7</sup>. Teachers and student doctors in *the transfer of knowledge and skills* about brushing teeth to students, are equipped with training on maintaining dental health including brushing teeth. Training is a process of teaching certain knowledge and skills and attitudes so that the target is skilled and able to carry out something taught according to standards<sup>14</sup>. The role of the teacher is needed in educate and fostering children to maintain their dental health. Teachers have a role in shaping children's dental health maintenance behavior in schools, including in the process of students learning to brush their teeth, so that school-based dental health programs involving teachers are effective in maintaining dental health<sup>8</sup>.

Knowledge is the result of knowing after people have done sensing of a certain object. Meanwhile, attitude is a response or reaction of a person who is still close to objects and stimuli. Attitude is a readiness to act on an object and a passion for the object. Attitudes do not yet reflect an activity or action but attitudes shape the occurrence of an action.<sup>21</sup>

Attitude improvement occurs if there is a person's response after being given information then weighing will take action in accordance with the information provided.

Model training and media "222" model with a popup touch button audio poster, effectively increases the knowledge, attitudes, and actions of preschool teachers towards the implementation of the model. This is due to the preschool teacher training activities: 1) Obtaining material on health issues, dental and oral health maintenance, dental health counseling, and dental hygiene assessment. 2) Conducting simulations between teachers by practicing how to provide counseling with media "222" poster pop-up touch button audio, how to drip tooth dye, how to brush your teeth properly and correctly, and how to check dental hygiene in a simple way. 3) Demonstrating the results of the training to preschool children.

With the installation of the 222 Models with Poster Pop Up Touch Button Audio poster in schools and the sound of songs when brushing their teeth, there is automatically direct interaction through the various senses involved, namely the senses of sight and hearing. The more five senses used will facilitate the absorption/understanding of the material, a

person who has an understanding of a concept then that person will easily carry out his practice<sup>17</sup> According to Edgar Dale, who is depicted through the 'Cone of Dale's Experience,' the educational process by involving more senses will be easier for educational targets to accept and remember.<sup>18</sup>

This is in accordance with previous research which proved that proves that increasing teacher participation and skills in health services in schools is in accordance with the scope of delegation of authority, so that teachers and minor doctors can play an active role in guiding students in improving dental and oral hygiene<sup>9</sup>.

## Conclusions

The model and media "222" pop up touch button audio poster is appropriate as a guide for training small doctors and PAUD teachers in implementing the model, The "222" model with pop up touch button audio poster media was effective in increasing the knowledge, attitudes and skills of preschool teachers towards the implementation of the model in preschool children compared to the control group.

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## Declaration of Interest

The authors report no conflict of interest.

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