

## The Effect of Using Mading Media in Increasing Children's Knowledge with Wordwall Assessment about Dental Caries

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### ABSTRACT

This study aimed to examine the effect of using mading media on improving students' knowledge about dental caries. A quasi-experimental design with a two-group pretest-posttest approach was conducted on 80 seventh-grade students of SMP Negeri 26 Palembang, divided into treatment and control groups. Data were analyzed using paired t-test. The results showed an increase in knowledge scores from 9.95 before the intervention to 18.02 after three days of using mading media, with a significant difference ( $p = 0.001$ ,  $p < 0.05$ ). It can be concluded that mading media is effective in enhancing children's knowledge of dental caries and can serve as an attractive and interactive visual education alternative in schools.

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## INTRODUCTION

Dental caries is the most common disease found in the oral cavity, so it is one of the main problems in the field of dental and oral health. The cause is the demineralization process in the outer layer of the teeth due to exposure to organic acids formed from foods containing sugar. Caries is chronic and develop slowly, so they can cause long-term disruption for sufferers. However, because it rarely causes life-threatening conditions, this disease is often ignored by the public and health policymakers (Boy and Khairullah, 2019).

Caries is a disease of the hard tissues of the teeth, namely enamel, dentin and cement, caused by the activity of a small body in a carbohydrate that is distributed (Ulfah and Utami, 2020). Caries is influenced by several factors resulting from the interaction between environment, behavior, and genetic factors (Sari and Utami, 2019).

The results of the 2023 Indonesian Health Survey (SKI) state that the largest proportion of dental problems in Indonesia are damaged or cavity teeth at 43.6%, the prevalence of dental health at the age of  $\geq 3$  years according to the province of South Sumatra is 45.6%, and in accordance with educational characteristics is 46%.

Understanding dental and oral health is one of the steps in efforts to prevent and overcome dental health problems, which is carried out through an educational approach. Through dental health education, it is hoped that there will be a change in individual and community behavior from unhealthy habits to behavior patterns that are more supportive of dental and oral health (Ramadhan et al., 2016).

According to WHO in Mayusip et al (2015) the age of 12 years is considered the age of global monitoring of dental caries, because at this age almost all permanent teeth have grown, except for the third molar. This age group is an important indicator, considering that around 76.97% of caries cases occur in children of that age. In addition, 12-year-old children are relatively easy to reach by the School Dental Health Business (UKGS) program, so this age is set as a global monitoring standard for dental caries cases.<sup>6</sup> The Gospel of Jesus

Wall magazines or commonly interpreted as mading are one of the simplest types of mass communication media. Rubrics that are usually found in wall magazines include: news, editorials, opinions, essays, profiles, short stories (short stories), cross-sections, comics, caricatures, reviews, and the face of wall magazines (Lim et al., 2024).<sup>7</sup> The use of mading media has proven to be quite effective in improving children's knowledge, because this media is able to provide a creative learning experience. The process emphasizes five main aspects of learning, namely observation, interviews, information collection, data processing or association, and information delivery (Rosiana et al., 2023).

Wordwall is a learning media that can be used for interactive learning activities. The use of wordwall in assessment activities has advantages, namely simple and attractive features and appearance and a clear correction system. This will create fun assessment activities for students. In addition, the time for solving questions can also be adjusted (Ernasari and Meilina, 2024).

There is still little research related to dental health using media making with wordwall assessments, especially in terms of the effect on increasing knowledge about dental caries aimed at children. Based on the description above, the researcher is interested in conducting a study entitled "The Effect of the Use of Making Media in Improving Children's Knowledge with Wordwall Assessment About Dental Caries".

## **LITERATURE REVIEW**

### ***Dental Caries***

Dental caries is one of the most common oral health problems among school-age children. It occurs due to tooth tissue damage caused by acids produced from sugary food residues that are not properly cleaned (WHO, 2020). If left untreated, caries can persist and lead to long-term or even permanent impairment (Risksdas, 2018). Therefore, early prevention through dental health education is essential to reduce the prevalence of caries among children (Sheiham & Watt, 2000).

### ***Dental Health Education for Children***

Schools serve as a strategic setting to deliver health education, including oral health. School-based interventions have been proven effective in improving students' knowledge and awareness of maintaining oral hygiene (Petersen, 2005). The choice of instructional media plays an important role in the success of education, particularly if presented in a simple, engaging, and child-friendly way (Notoatmodjo, 2012).

### ***Mading (Bulletin Board) as an Educational Medium***

"Mading" (school bulletin board) is a visual medium that effectively delivers information in schools through text, images, and illustrations (Arsyad, 2016). Its advantages include accessibility, low cost, and continuous exposure for students. Previous studies have shown that visual media such as posters or bulletin boards significantly increase students' health knowledge (Sari, 2018).

### ***Wordwall as an Assessment Tool***

Wordwall is an interactive digital platform widely used in learning assessment. By providing quizzes, games, and puzzles, Wordwall enhances student motivation and facilitates evaluation (Yuliana, 2020). According to Lee & Hammer (2011), gamification in learning assessment improves participation, engagement, and knowledge retention. In the context of health education, Wordwall can be applied as a fun and effective way to measure students' understanding (Fitriani, 2021).

### ***Research Relevance***

Based on prior studies, combining mading as a visual educational medium and Wordwall as an interactive evaluation tool is considered relevant for improving students' knowledge of dental caries. Making provides continuous exposure in the school environment, while Wordwall fosters active engagement through game-based assessments. Together, these approaches are

expected to enhance children’s comprehension of dental caries prevention more effectively.

### METHODOLOGY

The type of research used in this study is quantitative research with an experimental design, namely Quasi Experimental (pseudo-experiment) with a design used by Two Group Pretest – Posttest Design. The research was carried out at SMP Negeri 26 Palembang. The sample in this study amounted to 80 children who were selected using random sampling techniques.

The data were analyzed univariate and bivariate. This research was carried out after obtaining consent from the respondents in the form of informed consent. The research has also been declared feasible by the Health Research Ethics Commission of the Ministry of Health of the Ministry of Health of Palembang through a certificate number No.0198/KEPK/Adm2/III/2025.

### RESEARCH RESULT

Based on the results of the study, the effect of the use of mading media in improving children's knowledge with wordwall assessment about dental caries in April 2025 with a sample number of 80 children obtained the following results:

Table 1. The average score of children's knowledge about dental caries before and after using media mading with a wordwall assessment at SMP Negeri 26 Palembang.

<b>Intervention Activities</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Hours of deviation</b>
Before using the media		5	16	9,95	2,353
After using the mading media in week 1		9	17	13,00	2,051
Using mading media in week 2	40	12	20	15,83	1,880
Using mading media in week 3		16	20	18,02	1,368

Source: Primary Data 2025

From the table above, it shows that there was an increase in the knowledge of grade VII children about dental caries at SMP Negeri 26 Palembang before using media mading with an average score of 9.95, after using media mading there was an increase in children's knowledge about dental caries with an average score of 18.02. The increase in children's knowledge is because this mading can foster students' interest in creativity and as a medium to encourage students to read, assess and respond, so as to be able to improve the results of student learning.

Table 2. The difference in average score before and after using making media with wordwall assessment in improving children's knowledge about dental caries at SMP Negeri 26 Palembang

Intervention Activities	N	Average (mean) Mading	Difference	P*)
Pretest	40	9,95	3,05	0,001
Post test week 1		13,00		
Pretest		9,95	5,88	0,001
Post test week 2		15,83		
Pretest		9,95	8,07	0,001
Post test week 3		18,02		

Source: Primary Data 2025

- (1) Independent T Test with 95% confidence interval
- (2) If ( $p < 0.05$ ), then there is a significant difference
- (3) If ( $p > 0.05$ ), then there is no significant difference

From the table above, the results of the difference in the average score of media making about dental caries increased before and after learning by 8.07. Based on the Paired T test, a p value of 0.001 ( $p < 0.05$ ) was obtained, which means that there is a significant difference between the respondents' knowledge before and after learning about dental caries.

## DISCUSSION

Based on the results of research conducted before and after the use of media making about dental caries in April 2025 at SMP Negeri 26 Palembang, as shown in Table 1, it can be seen that there is an increase in the average score of knowledge before the use of media making by 9.95, while after the use of media making there is an increase, namely in the first posttest of 13.00, the second posttest of 15.83, and the third posttest of 18.02.

Based on table 2, it can be shown that the results of the difference in the average score of student knowledge improvement after using the making media from the first posttest is 3.05, the second posttest is 5.88, and the third posttest is 8.07 with a p value of 0.001 ( $p < 0.05$ ), meaning that this making has an effect in providing positive stimulation for students to develop and apply literacy skills through involvement directly in its management and presentation.

One of the strategies that can affect the increase in students' interest and literacy ability through the use of interesting and interactive media in the learning process, this increase in knowledge is achieved when learning with making media. This is also supported by the journal Irma (2019) that making media can foster students' interest in creativity and as a medium to encourage students to read, assess and respond, as one of the media in training and habituating students in reading and manifested in the form of writing.

In line with the research conducted by Saidina et al (2024) from previous research, students' interest after using digital making media was obtained 85.44%

with a very feasible category. It can be concluded that making learning media can increase children's interest in learning.

Wall magazines or making are one of the simplest forms of communication media for a person. Making which is usually displayed on the wall or other places that present its principles in the form of writing, drawings, or a combination of both. Making is also a good tool for building a smart community in sharing information (Tilawatila, 2024).

In line with the journal Baroroh et al (2021) entitled the influence of classroom making on improving literacy culture understanding making, the function of making, the benefits of making, characteristics of making, steps to make making. Making or wall magazines have a simple character because the appearance is a sheet, not in the form of a book or magazine as we usually know. Making has an easy-to-read character while standing. To read this magazine also does not take too long, making can be read at a glance, it can be read at a distance of more than 30 cm from our eyes. Making is a magazine in the form of decorations, writings, and pictures displayed on the wall that does not have many columns or rooms.

In line with Kasiyun's research in Umar (2021) that efforts to increase students' interest in reading by forcing them to read as many books as possible are not effective. Disclosure of the initial conditions of students' reading interest based on the concentration component, the reading motivation component, and the reading effort component to obtain a concrete picture of student behavior related to reading interest can be provided with classroom making movements. The increase in knowledge in this study can also be seen by the results of the wordwall assessment used. Where this assessment contains a questionnaire with an attractive image display and is delivered using electronics. Students' interest in the wordwall assessment makes them read making longer, thus making children's understanding of the material more settled, which results in better children's knowledge.

In line with Brink and Lautenbach's research in Novitasari et al (2021), Electronic Assessment is an electronic assessment that can be defined as a method of using information technology for any activity related to assessment. E-Assessment is an assessment using IT-based technology. This assessment covers various activities ranging from planning, data collection, implementation, to assessment results.

According to Nisa and Susanto (2022), Wordwall is a website that offers a variety of educational games as a fun assessment tool and evaluation tool for students. This site is easily accessible and used by students through their respective gadgets and laptops. So far, the assessment has been carried out manually and the results will be evaluated manually, but using the current technological advancements, the team developed an electronic assessment that can provide results directly so that it is easier to evaluate the evaluation. It was this idea that sparked the development of this diagnostic e-assessment (Septy et al., 2024).<sup>17</sup>

The change in children's interest in reading making is caused by behavioral changes that describe the learning process using wordwall assessment in

individuals, in the Theory of Behavior Change "ABC" (Antecedent-Behavior-Consequence) explained by Suizer (1999) in Affandy (2017) Human behavior can occur through the process of stimulus, organisms, and responses. The stimulus given to the organism can be accepted or rejected. If the stimulus is rejected, it means that it does not succeed in attracting the individual's attention and the process stops there. However, if the stimulus is received, then the individual pays effective attention and the process can proceed to the next stage. The stimulus has the effect of the individual's actions (behavior change).

From some of the opinions above, it can be concluded that making media can significantly increase students' knowledge about dental caries at SMP Negeri 26 Palembang. There was a gradual increase in knowledge score from pretest to the third posttest, with a p value of 0.001 ( $p < 0.05$ ). These results are also supported by other studies that show that making is effective as a visual and interactive literacy medium that is able to increase student interest, engagement, and learning outcomes.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the results of a study that has been conducted in April 2025 regarding "The Effect of the Use of Making Media in Improving Children's Knowledge with Wordwall Assessment About Dental Caries" in 2025, the following conclusions are obtained:

1. The average score of knowledge in SMP Negeri 26 Palembang students before using dental caries media was 9.95, and after using media media was 18.02.
2. There is an average difference in knowledge score in SMP Negeri 26 Palembang students before and after using media making about dental caries of 8.07.
3. There was an effect on the use of making media on increasing children's knowledge about dental caries which was shown by the significant value of the pretest score variable and the posttest score of a p value of 0.001 ( $p < 0.05$ ). These results show that the media making is effective in increasing the knowledge of grade VII students about dental caries, with a higher increase in knowledge than before the treatment carried out at SMP Negeri 26 Palembang.

It is hoped that the school will create a program or organization such as multimedia so that school children can develop their interests, talents and opinions expressed in the media making, so that making (wall magazines) can be made regularly for learning methods, and so that children's interest in reading is reviewed from the results of the research that has been carried out.

It is necessary to hold a UKGS program in collaboration with related parties to routinely hold counseling on dental health and periodic check-ups so that children's dental health is maintained.

Further research is needed on making media in increasing knowledge with different samples and quantities to improve previous research.

## **ADVANCED RESEARCH**

Future research should expand the use of mading media in oral health education by applying it to larger and more diverse populations, as well as integrating it with other innovative digital tools such as gamification platforms and multimedia-based learning. Comparative studies between mading media, digital applications, and conventional health education methods would provide deeper insights into their relative effectiveness in improving children's knowledge and behavioral change regarding dental caries. Longitudinal studies are also recommended to assess the sustainability of knowledge retention and the impact on actual oral health practices. In addition, collaboration with school-based health programs such as UKGS and partnerships with health professionals could strengthen the role of mading media as a complementary educational approach within the broader framework of preventive dental health strategies.

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