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**DEVELOPMENT OF EDUGAME (QUARTET CARDS) REGARDING  
SNACKS FOR SCHOOL CHILDREN (PJAS) AT STATE  
ELEMENTARY SCHOOL IN PERHENTIAN RAJA SUB-DISTRICT  
KAMPAR DISTRICT**

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## **ABSTRACT**

*This study aims to develop learning media through a game referred to as edugame, in this case is using quartet cards regarding snacks for school children. This was a development research (R&D) which referred to the ADDIE development model including 4 stages, namely: Analysis to analyze module development needs, Design of the product in the form of module, Development of the module which was further assessed for feasibility by material and media expert for improvement, Implementation of the module as learning and teaching material, and Evaluation as the result which indicated that edugame (quartet cards) was feasible to use. In fact, this study only reached the development process due to time and manpower limitations. The edugame development procedures included the stages of needs analysis, literature study, media selection, preparation of teaching materials, media design, product validation, and final product improvement. The study instruments used in this study were material validation questionnaire, media validation questionnaire and parental acceptance response questionnaire. It was found that according to material experts, the edugame (quartet cards) regarding healthy snacks for students (PJAS) was included in the "very good" category, both in the aspect of material quality and the aspect of material benefit. Furthermore, according to media expert, such edugame was included in the "good" category in terms of media quality, language use and media layout aspects. In addition, the acceptance response variable was included in the "Very good" category in terms of ease of use, attractiveness, and efficiency aspects. Thus, based on the results of the assessment results, it can be concluded that the edugame (quartet cards) regarding healthy snacks for students was feasible to use. (kosongsatuspasitunggal 10 pt).*

**Keywords:** *Edugame, Kwartet Card, Snacks for school children*

## **INTRODUCTION**

The problem of food safety has become a world concern. The frequency of food poisoning outbreak in campuses or schools is also quite high, one of the causes of which is school snacks.<sup>1</sup> According to outbreak data in 2018 regarding snacks for school children, children in elementary schools are groups that are vulnerable to food poisoning. Such finding is supported by the results of the survey conducted by The Food and Drug Monitoring

Agency (BPOM) in 2018 which showed that 42 times (14.4%) incidents of food poisoning was due to snacks, and the highest outbreak was found among elementary school children by 34 incidents.<sup>2</sup> Data derived from BPOM RI 2011 annual report on food poisoning outbreak, it was found that 19% food poisoning cases occurred in schools and about 78.57% of them occurred among elementary school children. BPOM conducted laboratory tests on Snacks for School Children (PJAS) in 866 Elementary Schools/ Madrasah Ibtidaiyah spread across 30 cities in Indonesia. The results showed that there 1,705 of 4,808 samples of snacks (35.46%) did not meet the food safety and quality requirements (TMS). Current condition in Indonesia reveals that children still experience a double burden of nutrition, namely malnutrition and overnutrition. Common Nutritional Problems found among Elementary School-age Children include short, thin, overweight, obese, and anemia.<sup>2</sup> School children still experience a period of growth and development, so they need adequate food consumption along with balanced nutrition.

Considering the dangers of these unhealthy snacks, it is necessary to introduce healthy snacks and snacks that are harmful to health to school-age children so that they may have knowledge, a positive attitude and will behave in consuming healthy snacks. Therefore, it is very important to introduce healthy snacks, unhealthy snacks as well as their consequences for health. Health education which aims to introduce healthy and unhealthy snacks to school-age children is very effective when implemented using the method of playing in groups since school-age children are involved in the stage of social development in the form of group-learning and have already understood the rules in group. In addition, the appropriate media for conveying messages to elementary school-age children should involve images that are easy to understand. Currently, the authors developed edugame (quartet cards) with imaged accompanied by brief and clear explanations.

## METHODS

### *Characteristics of Participants and Research Design*

ADDIE development in this study involved analysis, design, development, implementation, and evaluation. This development research aims to develop an edugame (quartet cards) regarding snacks for school children.

The subjects in this study consisted of the main informant, namely the teachers in charge of UK; the key informant, namely the school principals; and additional informants, namely the class teachers at State Elementary School in Perhentian Raja Sub-District. Furthermore, there were also material experts, namely lecturers in nutrition courses and media expert, namely educational technology expert.

The study instrument used here was an interview guide to obtain as much information as possible from the subjects. Researchers used a voice recorder during the in-depth interviews. The edugame (quartet cards) validation assessment instrument was used to obtain validation data from media expert and material experts on the developed edugame (quartet cards). The study site was State Elementary School in Perhentian Raja Sub-District, Kampar District, Riau Province. The study was conducted in January 2023.

### *Data analysis*

Qualitative data were obtained through in-depth interviews. Data were further analyzed through transcription, reduction, coding, and categorization processes. Furthermore, interpretation analysis was performed until themes emerged. The theme components obtained through the qualitative stage were then transferred into edugame (quartet cards).

## RESULTS AND DISCUSSION

The results of this study were obtained from the first stage of study which was the media development stage of edugame (Quartet Cards) regarding Snacks for Elementary School Children (PJAS) through in-depth interviews with 1 nutritionist and 1 media expert, 2 school principals as the persons in charge of the elementary school, 2 teachers in charge of the elementary school UKS as part of the management of snacks at school. The second stage was performed among 2 class teachers. Data collection was carried out from January 12 to 23, 2023.

### Characteristics of Research Subjects

#### 1. Characteristics of the First Phase Research Subjects

The characteristics of the research subjects can be observed in the following table:

**Table 1 Characteristics of Qualitative Respondents**

Name	Occupation	Total
Nutritionists	Dosen	1
Principal	Civil servant	2
Person in charge of UKS	Civil servant	2

#### 2. Characteristics of the Second Phase Research Subjects

The research subjects in the second stage involved 1 media expert and 2 classroom teachers:

**Table 2 Qualitative Characteristics of Respondents Feasibility Test by Experts and Acceptance Test by Parents**

Name	Occupation	Total
Media Expert	Ka.TU	1
Classroom teacher	Honor	1
Classroom teacher	PNS	1

### Conceptual Model for the Development of Edugame (Quartet Cards) regarding Snacks For School Children

Conceptual model for the development of "Quartet Cards regarding Snacks for School Children (PJAS)" media was obtained from a qualitative study conducted among 8 people including 1 nutritionist, 2 school principals, 2 teachers in charge of UKS, 2 elementary school teachers at SDN Perhentian Raja, and 1 media expert. In-depth interviews with these 8 people aims to develop a good edugame (quartet cards) that suits the needs of students and teachers as well as the needs to create the proper edugame (quartet cards) prototype.

#### 1. Results of In-depth Interview

##### 1) Analysis

###### (1) Needs

The following are excerpts from interviews with respondents including school principals, teachers in charge of UKS, parents of students and media expert reviews:

*"Until now, no one has provided specific education about snacks for school children in this school, there was only a little information provided by the community health center." (R5)*

*"Games are better if they are used to increase knowledge. Here, knowledge is only delivered through counsellings" (R4)*

Based on the results of interview above, the respondents explicitly said that in reality, edugame (quartet cards) was not yet available in schools and those with high initiatives strongly agreed with the provision of edugame (quartet cards) since it is really needed by school children and may further improve their knowledge and understanding on healthy school snacks.

Respondents of nutritionists explicitly stated that the development of an edugame (quartet cards) about snacks for school children was needed, especially since many children have a poor knowledge on school snacks. Proper imformation is surely needed to increase children's knowledge about healthy snacks for school children, especially elementary school-age children.

###### (2) Characteristics

Interviews conducted with respondents of teachers in charge of UKS at school revealed the characteristics of students at school.

*"There were children who brought packed meal and there also children who bought snacks. If their parents had time to cook, they would bring packed meal, but if they didn't have time, the children would buy snacks" (R2)*

Based on the results of interview above, the respondents explicitly conveyed that the characteristics of students at school were sometimes not conducive and were supported by the busyness of parents, the number of snacks provided as well as the afternoon lessons conducted which were included in the category of vulnerable hours for students which made students less concentration in learning. However, interesting learning media will

be able to make students more focused. In addition, materials which are packaged properly will be attractive for students to make them re-concentrate.

### (3) Materials

Interviews conducted with respondents revealed that the materials that must be included in the edugame (quartet cards) were about clean and healthy snacks for school children (PJAS), snacks that meet balanced nutrition, made from natural ingredients, do not use preservatives and artificial food coloring agent.

*"The images were simple and liked by children since they were in the form of cartoon, the language was also easy for children to understand" (R6)*

*"The images were quite good and the explanation was easy for children to understand" (R7)*

Based on the interview excerpts above, the respondents explicitly stated that the contents or materials presented in the edugame (quartet cards) were packaged in an attractive way so that it could increase students' attitudes and initiative. The students were encouraged to play while learning about snacks for school children, due to students and the community still have poor knowledge and understanding about the importance of healthy school snacks to form quality children. Respondents said that the images were interesting, since so far school children had only received occasional and brief counseling from the CHC.

## 2) Design

### (1) Image Framework

The image framework was made in Sketch using CorelDraw and Photoshop softwares. The lineart was made digitally, and the coloring on the images was applied after lineart visualization in the form of a base color which was then followed by the final coloring.

### (2) Game Methods

Interviews conducted with respondents found that the learning methods used were games and quizzes.

*"Oh, it's better if this game uses cards, kids can be distracted from cellphones, can't they?" (R7)*

Based on the interview excerpt above, the respondent explicitly stated that the learning process applied the game/quiz method. However, because it was possible that there were several sections that required lectures, the lecture method would also be inserted during the teaching and learning process depending on the materials involved.

### (3) Game Media

Interviews conducted with respondents found that the game medium used was quartet cards.

*"Good" (R5).*

*"We also got banners from the health department, but it's just for display. When the kids went to the UKS they saw the information about balanced nutrition. However, if the kids didn't come here they won't see it. Through this quartet card game, the kids know the information well" (R5).*

Based on the interview excerpts above, respondents explicitly conveyed that the game media that were often used were story books, quizzes as well as questions and answers. Counselings usually used power points and sources of teaching materials in the forms of books, ebooks, websites, videos, articles, especially journals. But, literatures in the library are good enough for the Elementary School stage. Sometimes there were updates such as counseling or training regarding the latest books facilitated by the school.

### (4) Display

Interviews conducted with respondents revealed that the desired game appearance in this learning game was cartoon covers, easy-to-read writing, bright and upbeat colors, Indonesian and contemporary languages, illustrated games, 33 cards, and descriptions.

*"Many attractive image, then the colors were also funny. The most important thing was that the explanation was shorter but clear, so it's not too tiring." (R3)*

*"The appearance was ok, the images were good, but it's not child-friendly. The corners of the cards should be rounded up a bit, then you can make it waterproof, so that it fits children when playing, it doesn't tear because of water and is more long-lasting" (R4).*

Based on the interview excerpts above, the respondents explicitly stated that the expected edugame (quartet cards) display was using the current trend colors, bright and colorful. Elementary school children are the target, so it needs to be adjusted for color combinations that attract the attention of school children.

The concepts existed in the design development were discussion and playing in groups. In addition, the display concepts available in Edugame (quartet cards) were image cards, easy-to-read text, bright colors, Indonesian and contemporary languages mixed together, with a total of 33 cards.

## 2. Development of Edugame (Quartet cards)

The edugame (quartet cards) about regarding snacks for school children (PJAS) was developed based on the results of in-depth interviews in the first stage about needs in the field. There was a need to create an innovation in health education through edugame (quartet cards) that could help teachers and children acquired knowledge information about appropriate snacks for school children (PJAS) so as to create children with good quality.

### 1) Analysis Stage

The activity performed at this stage was needs analysis by collecting the required data which formed the basis for the development of Edugame (quartet cards). The materials chosen to be involved in the Edugame (Quartet cards) were tips for choosing healthy snacks, characteristics of healthy snacks, dangers of unhealthy snacks, chemical contamination, and physical contamination.

### 2) Design Stage

Table 3 Creating an Edugame Development Framework

Card Section	
Drawn using Coreldraw X7	
Front of cards	Back of cards
Image of a primary school boy holding a trophy Unpad Logo and Name of Researcher and Supervisors	Images were adjusted to the topic Explanation of Arial letter

### 3) Development Stage

Table 4 Development of Edugame "Quartet Cards" regarding Snacks for School Children (PJAS) Design

No	Material	Before Revision	After Revision
1	Front of Cards (contain images and explanations)		
2	Drafting team		

(The team that compiled and studied the edugame (quartet cards) regarding Snacks for School Children (PJAS)) were:  Mustika Hana Harahap Prof. Dr. Dida Akhmad Gurnida, dr., Sp.A(K), M.Kes., Dr. M. Alamsyah Azis., dr., SPOG(K), KIC., M.Kes)		
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#### 4) Implementation Stage

Implementation of edugame (quartet cards) was not performed due to time limitation.

#### 5) Evaluation Stage

Evaluation was not performed due to time lim.

**Feasibility of materials and media of edugame (quartet cards) regarding “Snacks for School Children (PJAS)”**

#### 1. Material Experts

**Table 5 Material Validation by Material Experts**

No	Statement	Score				
		R2	R3	R4	R5	R6
1.	The accuracy of the title with the contents of edugame (quartet cards)	4	5	5	4	5
2.	The clarity of Quartet card framework	4	5	5	3	4
3.	The clarity of material exposure	4	5	5	4	5
4.	The clarity of the images provided	5	5	5	4	5
5.	Completeness of the description of the materials in accordance with the level of development of elementary school children	4	5	5	3	4
6.	The materials presented are in accordance with everyday life	5	5	5	4	5
7.	Presented competencies that must be mastered by students	5	5	5	4	4
8.	Language suitability with good and correct Indonesian rules	4	5	5	4	5
9.	Spelling accuracy	4	5	5	4	5
10.	Accurate use of terms	5	5	5	4	4
11.	The accuracy of the use of sentence structures	5	5	5	4	5

Referring to the conversion of the Benchmark Reference Assessment (PAP), the value of X (mean derived from experts) the result was in a very good category since the X value was on a scale of 5 ( $X>4.2$ ). Thus, it can be interpreted that the feasibility of the edugame (quartet cards) materials about snacks for school children (PJAS) was very good.

Based on the validation results from the material experts, it can be concluded that the edugame (quartet cards) media regarding Snacks for school children (PJAS) was declared feasible with improvements/revisions by 1 expert, while 4 experts declared a proper use without improvement.

#### 2. Media Expert

**Table 6 Validation by Media Expert**

No	Statement	Score	
		Score	Score
1.	Image quality		5
2.	Attractiveness of the image design		4

3.	The clarity of writing or typing	5
4.	The accuracy of the presentation of the materials	5
5.	The compatibility of edugame (quartet cards) with learning objectives	5
6.	The suitability of edugame (quartet cards) with student characteristics	4
7.	Efficiency of edugame (quartet cards) in relation to time	4
8.	Efficiency of edugame (quartet cards) in relation to cost	5
9.	Efficiency of edugame (quartet cards) in relation to effort	5
10.	Safety for students	5
11.	The quality of edugame (quartet cards)	5

Referring to the conversion of the Benchmark Reference Assessment (PAP), the value of X (mean of each aspect) was 4.7, on a scale of 4. So, it can be interpreted that the feasibility of edugame (quartet cards) media regarding snacks for school children (PJAS) was in the moderate category. Based on the validation results from media expert, it can be concluded that the edugame (quartet cards) regarding snacks food for school children (PJAS) was declared feasible for use with certain improvements or revisions.

**Table 7 Aspects to be Improved According to Expert Assessment**

Respondent	Proposed Improvement	After Improvement
R3	It's quite good and helpful, it should be packed as neatly as possible to make it safe for children and in the future, the card material should be water resistant.	Improved the edugame (quartet cards) design
R4	The corners of the cards should be rounded up a bit, so that they are not sharp for fear of injuring the child	Improved the edugame (quartet cards) printing

Table 4.10 presents the results of improvement based on the analysis made by 1 nutritionist, 2 school principals, 2 teachers in charge of UKS. The results were further corrected and shown back to the assessors so as to further conduct trial of edugame (quartet cards) among students.

**Parental Acceptance Response towards Edugame (Quartet Cards) regarding “Snacks for School Children”**  
**Table 8 Parental Acceptance Response towards Edugame (Quartet Cards) regarding “Snacks for School Children” (PJAS)”**

No	Statement	Score		
		R 7	R 8	R 9
1	The materials presented in edugame (quartet cards) were easy to understand	3	5	5
2	The materials presented in edugame (quartet cards) were systematic	4	5	5
3	The language used in the edugame (quartet cards) was simple and easy to understand	4	4	5
4	Edugame (quartet cards) had an attractive appearance	4	5	4
5	The composition of the images in edugame (quartet cards) was clear and easy to understand	3	4	4
6	The composition of colors in edugame (quartet cards) was interesting to read	5	5	4
7	Presentation of materials on edugames (quartet cards) could stimulate students' ideas in solving problems	3	4	5
8	Presentation of materials on edugames (quartet cards) could develop communication skills	5	4	5
9	Presentation of materials on edugames (quartet cards) could develop collaboration skills	4	4	5
10	Edugame (quartet cards) could be used as a means of independent learning	4	5	5

Referring to the conversion of the Benchmark Reference Assessment (PAP), the X (mean) values were 3.9, 4.57, 4.71, and 4.5. The X values were on a scale of 5 ( $>4.2$ ). Thus, it can be interpreted that the acceptance response of edugame (quartet cards) regarding snacks for school children (PJAS) was very good.

Based on the results of parental acceptance response towards edugame (quartet cards), it can be concluded that the edugame (quartet cards) regarding snacks for school children (PJAS) were very well accepted by students of State Elementary School in Perhentian Raja Sub-District.

**Table 9 Recommendation and Criticism**

Respondent	Recommendation and Criticism regarding Parental Acceptance Response
R7	Edugame (quartet cards) was very good and easy to understand, hopefully in the future it can be even better
R8	Everything was good
R9	I like the edugame (quartet cards). However, since the completion process was online, at first I was confused about how to fill it out because it couldn't be as fast as the offline work. Thank you for the edugame (quartet cards) that was made, the materials were very useful

Table 4.8 presents the results of student responses based on analysis by 3 respondents. According to student recommendation and criticism, it was obtained a very good acceptance response towards Edugame (quartet cards) regarding snacks for school children (PJAS).

## Discussion

### The Concept of Development of Edugame (quartet cards) regarding Snacks for School Children (PJAS)

Based on the results of study, the preparation of edugame (quartet cards) regarding "Snacks for School Children (PJAS)" was developed in accordance with the field needs as an interesting phenomenon in the development of society 5.0 era children. To face the era of society 5.0 there should be an paradigm shift in educational unit. The researchers applied the ADDIE model in the development of edugame (quartet cards) regarding Snacks for School Children (PJAS) to increase elementary students' knowledge. A study conducted by Arshinta 2019 revealed the effectiveness of edugame (quartet cards) which was effective in changing knowledge about healthy snacks. The ADDIE model provides answers to the problems in quality learning planning. Such finding is in line with the Decree of National Education Ministry no.41 of 2007 concerning process standards, wherein a teacher is asked to develop a lesson plan (RPP) and one of the elements in the lesson plan is learning resources. Furthermore, a study conducted by (Sari, 2022) found that application of the ADDIE model learning design made it easier for teachers to plan quality, effective, and efficient learning.

The ADDIE development model consists of 5 stages, namely analysis, design, development, implementation, and evaluation. At the analysis stage, The opinions of respondents were obtained. It was found that edugame (quartet cards) was an interesting and easy-to-understand method for providing education about snacks for school children which covered images, easy-to-read writing, bright colors, Indonesian and modern languages, illustrated edugame (quartet cards), 33 cards. Besides, respondents revealed that edugame (quartet cards) references were not yet available at State Elementary in Perhentian Raja Sub-District. On the other hand, such development was accepted in a very enthusiastic manner and is fully supported by students, teachers and the other school environment. They said that the title of edugame (quartet cards) was very interesting. In addition, one of the most important things was that they said that this edugame (quartet cards) was needed by elementary school children because school snacks are part of knowledge that students must understand for their health. Therefore, this edugame (quartet cards) is important to discuss among elementary school children.

The availability of edugame (quartet cards) acts as the latest and alternative reference as a source of student learning and may facilitate teachers in the teaching and learning process. It is expected that in the future, children, parents and the community will be able to understand the importance of good parenting, and to distinguish between snacks that are healthy be consumed and those that are not allowed in order to create good quality children for the future.

The next stage performed by researchers was the design stage. At this stage the researchers prepared the edugame (quartet cards) framework based on the guidelines for preparing teaching materials published by RISTEKDIKTI (2017). Furthermore, to determine the edugame (quartet cards) layout, the activities carried out

by the researcher were choosing the type of letters font size, margins, spacing, paper size, and page numbering. The study process is in line with the theory put forward by Daryanto, 2013 that design and development of edugame (quartet cards) should pay attention to several points such as: format, organization, attractiveness, font size, spacing, and consistency. In addition, the researchers also selected reference books related to the topic of snacks for school children (PJAS) and prepared an edugame assessment instrument (quartet cards) in terms of the feasibility aspect of the material, media and student acceptance responses.

The development of edugame (quartet cards) fulfilled self-instruction aspect, namely there were learning objectives, learning materials presented in sub-activities, a summary of the subject matter, assignments, illustrations and examples and there were also feedback to find out the level of mastery of the materials. In self-contained aspect, the material for disciplinary parenting on reproductive health presented in the edugame (quartet cards) had been adjusted to the competencies divided into 6 learning activities namely learning activity 1 on tips for choosing healthy snacks, learning activity 2 on learning characteristics of healthy snacks, learning activity 3 on the dangers of unhealthy snacks, learning activity 4 on chemical contamination, learning activity 5 on physical contamination, and learning activity 6 on biological contamination. In stand alone aspect, the developed edugame (quartet cards) could stand alone. This is indicated by the existence of activities in edugame (quartet cards) that students could do without needing or using other teaching materials. In addition, the edugame (quartet cards) developed was user friendly since it was easy to use.

#### **Feasibility of Edugame (quartet cards) regarding "Snacks for School Children"**

The feasibility assessment of edugame (quartet cards) in this study was determined by three criteria, namely validity, practicality and effectiveness. The validity of edugame (quartet cards) developed was known based on the assessment of material experts and media expert. The edugame (quartet cards) validity assessment was carried out before the researchers conducted a trial of the edugame (quartet cards) among elementary school students. Based on the assessment of material experts in terms of the feasibility aspects of content, presentation, and language, the overall mean X value was on a scale of 5 ( $X>4.2$ ) which involved in a very good category or the edugame was declared very feasible.

Access to edugame (quartet cards) regarding snacks for school children made it easier for teachers, students and parents to find appropriate and correct and practical information. Such finding is in line with the study conducted by Sumarno (2011) which revealed that edugame (quartet cards) was one of the effective learning media that could foster study habits, responsibility and positive behavior. Student assertive behavior is a skill that can be learned and developed. Therefore, designing edugame (quartet cards) acts as an alternative to be applied to develop such assertive behavior. Some study findings that discussed learning strategies using edugame (quartet cards) showed that there were positive outcomes.

The study finding is also supported by a study conducted by Fauzan A (2012) that education was the key to the success of a country and became capital in the development of human resources. Many efforts are being made by various parties to improve the quality of human resources through innovative programs for the world of education, one of which is the development of interactive learning support tools/media. The position of learning media is very important in assisting the learning process for both students and teachers since learning media can be a means of delivering information as well as a tool to overcome the limitations of space and time as well as sensory limitations and make the learning atmosphere more fun, interactive and interesting.

#### **Student Acceptance Responses towards Edugame (quartet cards) "Snacks for School Children"**

The practicality and attractiveness of edugame (quartet cards) was determined based on the results of the student response questionnaire. Based on student response questionnaire, the aspects of convenience, attractiveness and efficiency obtained an overall mean X value on a scale of 5 ( $X>4.2$ ) which included in a very good category. Thus, it can be concluded that edugame (quartet cards) regarding snacks for school children was well accepted by students. Therefore the edugame (quartet cards) developed was quite practical for students to use.

The attractiveness of the edugame (quartet cards) product regarding snacks for school children was based on its layout that applied a variety of colors. In addition, the images used supported the presentation of the materials and the presentation of practice questions and evaluation could also construct students' conceptual understanding. Interesting learning using edugame (quartet cards) could motivate students in changing attitudes and behaviour

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since students were interested to always repeat reading, by looking at the variations in the images on the edugame (quartet cards).

Assessment based on the student responses in small groups obtained very good category with very feasible conclusion. Therefore, this edugame (quartet cards) could be applied for supporting the learning process. This edugame (quartet cards) regarding snacks for school children contained material supported by the presence of still images and cartoon images as needed. Playing information quartet cards could make student learning activities less boring and more fun. The study finding is in accordance with the study conducted by Kholisho YN (2017) which showed that there was an increase in student learning interest after intervention using edugame (quartet cards). Such increase could be observed in students' attitudes that were enthusiastic in working on learning projects.

The innovation of developing edugame (quartet cards) regarding snacks for school children was self-compiled by the researchers based on the interpretation of the interview results which was further distributed on hard files to various schools. Appropriate and precise information may become a means and can facilitate student learning. Edugame (quartet cards) is a form of learning efficiency so as to achieve educational goals. Edugame (quartet cards) was designed in a language that was easily understood by students according to their level of knowledge. Edugame (quartet cards) was arranged as attractively as possible, and could be used systematically and independently to achieve the learning objectives that had been set. Besides that, with an attractive design and according to the characteristics of students, edugame (quartet cards) could increase and direct students' attention during learning. This is reinforced by the theory about the benefits of learning media, namely making learning activities more attractive to students so as to foster learning motivation.

## LIMITATION OF THE STUDY

There were several limitations of this study. The implementation of edugame (quartet cards) trial was not performed so that the effectiveness was not described. Furthermore, this research did not assess the evaluation of edugame (quartet cards) development due to limited research time. This study was only conducted until design development as well as design and development of edugame (quartet cards) due to limitations regarding time and manpower.

## CONCLUSION AND RECOMMENDATION

### Conclusion

The study was conducted using the R&D (Research and Development) method through the ADDIE model consisting of: Analysis, Design, Development, Implementation, and Evaluation.

### Recommendations

Further research is needed by involving large groups of respondents to determine the user acceptance response in a larger group. In addition, there should be further research regarding the final product improvement of edugame (quartet cards) regarding "snacks for school children (PJAS)". Based on student acceptance responses, it was found that edugame was very well accepted by students. Such finding indicated that Schools may implement education by using Edugame (quartet cards) regarding "Snacks for School Children (PJAS)". It is even more efficient if the edugame is applied for all students. Our sincere gratitude is delivered to the Head of the Education Office, to the principal of State Elementary School in Perhentian Raja Sub-District, Kampar District, Midwifery Study Program of UNPAD, Nutritionists and Media expert and all parties who have supported and assisted the completion of this study.

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