



Developing a PISA-Like Mathematical Problem: Using Traditional Food Context

Tria Gustiningsi¹, Ratu Ilma Indra Putri², Zulkardi³, Hapizah⁴

¹Mathematics Education, Universitas Jambi, Indonesia

^{2,3,4}Mathematics Education, Universitas Sriwijaya, Indonesia

triagustiningsi@unja.ac.id¹, ratuilma@unsri.ac.id², zulkardi@unsri.ac.id³, hapizah@fkip.unsri.ac.id⁴

ABSTRACT

Keywords:

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Mathematical Problem;
Traditional Food
Context;
Design Research.

Mathematical literacy is very important for all students. Based on the PISA results, Indonesian students' mathematical literacy skills are still low, so students need to be trained with PISA-like mathematical problem. This study aimed to produce a valid and practical PISA-like mathematical problem using the context of Palembang traditional food. Design research in the form of a development study was chosen in this study which consisted of preliminary and prototyping stages. Data collection was carried out using walk-throughs, tests, questionnaires surveys, and interviews. The research subjects were 20 eighth graders. Materials on relations and functions were delivered in this study using a personal context through the activity of purchasing Palembang traditional food. Data were analyzed descriptively. The results of this study indicated that the problem developed is valid and practical. The problem was considered valid as it was developed in accordance with the PISA framework, as well as the curriculum and materials for the eighth grade. The problem was also declared practical, meaning that it is viabel to use for students, its wording does not cause multiple interpretations, it is understandable to students, the tables and numbers used are clear, and students are interested in solving it because it is relevant to everyday life situations. The problem developed also has a potential effect on supporting students' mathematical literacy skills. This study concludes that problem that has been developed is valid, practical, and has potential effect.



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A. INTRODUCTION

Mathematical literacy is an individual's capacity to reason mathematically and formulate, employ, and interpret mathematics to solve problems in various real-world contexts (OECD, 2018). de Lange (2006) states that mathematical literacy appears as knowledge to know and apply basic mathematics in everyday life. By having mathematical literacy skills, students can solve problems in everyday life using mathematical concepts (de Lange, 2006; Kemendikbud, 2017; Putri et al., 2021; Putri & Zulkardi, 2020; Steen et al., 2007; Wardono et al., 2021). An individual who has mathematical literacy skills can perform estimation, interpret data, solve everyday problems, argue numerically, graphically, and geometrically, and communicate using mathematics Ojose (2011) Likewise, Stacey & Turner (2015) state that mathematical literacy aims to increase the understanding of real-world phenomena so that it supports decision-making in all areas of life. This shows that mathematical literacy skills are very important for all students to

possess.

Results of the Programme for International Student Assessment (PISA) showed that Indonesian students' mathematical literacy skills were still low. In 2003 and 2012 PISA surveys, mathematical literacy was the main focus Stacey & Turner (2015), and the results showed that in 2003 Indonesia was ranked the 38th out of 41 countries, while in 2012 Indonesia was ranked the 64th out of 65 countries (OECD, 2014; Widjaja, 2011). In 2009, PISA results showed that almost 80% of Indonesian students had mathematical literacy skills below level 2 (Widjaja, 2011). Stacey (2011) states that almost 70% of Indonesian students were below level 2 across all topics. In 2018, in the field of mathematics, Indonesia was ranked the 72th out of 78 countries (OECD, 2019). Ekawati et al. (2020) identified students' mathematical literacy abilities in five regions in Surabaya, and the results showed that the average score in solving high-level questions was less than 22%, while the others were at lower levels.

The low mathematical literacy of students is caused by several things, including school characteristics and the learning methods applied Fenanlampir et al. (2019), implementation of teacher-centered teaching that does not support learning to solve context-based tasks Botha et al. (2013); Wijaya et al. (2015), a lack of knowledge on the teacher's part in developing mathematical problems that support mathematical literacy Gustiningsi et al. (2022), and a lack of learning resources that provide students with opportunities to solve context-based problems (Gustiningsi & Somakim, 2021; Wijaya et al., 2015). The availability of learning resources in the form of mathematical problems that support students in solving context-based problems is one of the factors that cause low mathematical literacy.

Zulkardi & Kohar (2018) state that one of the efforts that can be made to overcome the causes of low mathematical literacy is to develop learning resources in the form of PISA-like mathematical problems using contexts or situations of everyday life. Several studies have developed PISA-like mathematical problems using various contexts, including the context of *lego* games (Gustiningsi & Somakim, 2021), the context of the *Batik Jahe Slawe* motif (Habibi & Prahmana, 2022), context covid-19 (Nusantara et al., 2021), and the context of ASIAN games (Jannah et al., 2019; Nizar et al., 2018; Rawani et al., 2019; Yansen et al., 2019).

Another context that is close to students and can be used as a context for developing familiar problems is local wisdom (Deda & Maifa, 2021; Muslimahayati, 2020). Indonesia is a country rich in cultural diversity and local wisdom (Tamalene et al., 2014). One of the provinces in Indonesia which has rich local wisdom is South Sumatra, whose capital city is Palembang. One of the local wisdom items prevailing in South Sumatra is a Palembang traditional food named *pempek* (Kartika & Harahap, 2019). *Pempek* is widely available in various place in which food is sold, including school canteens, which allows students to develop familiarity with the activity of purchasing this traditional food. As stated by (Baka et al., 2019), learning must start from those closest to students. In addition, mathematics is a human activity (Freudenthal, 1972).

Previous studies have developed problems using the context of Timorese traditional food for proportion material Deda & Maifa (2021), designed learning using the context of Buginese traditional food for volume of solid material Busrah & Pathuddin (2021), developed problems using Palembang Traditional Food Context for ratio material Muslimin et al. (2022), but no study has developed PISA-like mathematical problems using the context of purchasing Palembang traditional food for relation and function material. Therefore, this study developed PISA-like mathematical problem using the context of Palembang traditional food for relation and function material. This study aimed to produce a valid and practical PISA-like mathematical problem.

B. METHODS

Design research in the form of development studies was chosen in this study (Bakker, 2019). The research subjects were 20 eighth graders of a Junior High School in Palembang, Indonesia. This study involved two stages, namely, the preliminary stage and the prototyping stage (Putri et al., 2021; Putri & Zulkardi, 2020; Tessmer, 1993; Zulkardi, 2002) as shown in Figure 1.

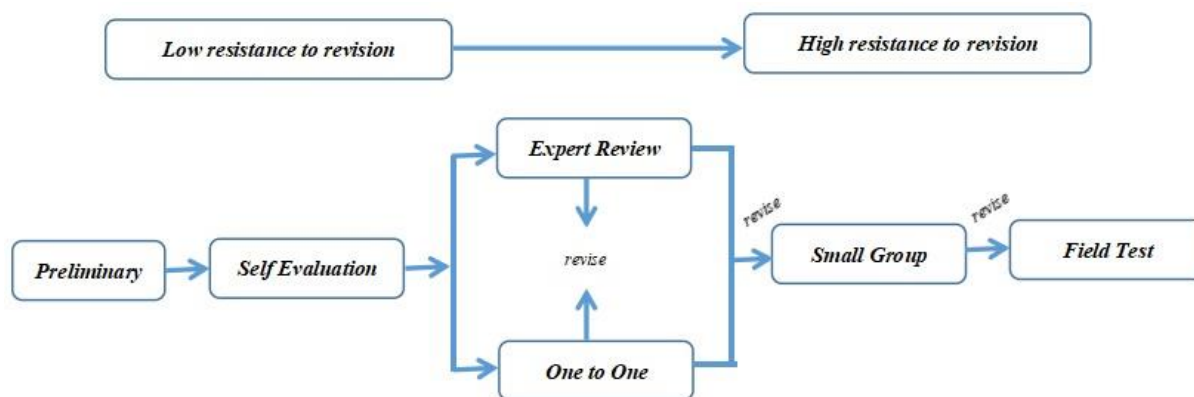


Figure 1. Prototyping Flow

In the preliminary stage, an analysis of eighth-grade materials, an analysis of the PISA framework that covers contents, contexts, levels, and mathematical processes, and PISA-like mathematical problem drafting were carried out. The first in this stage was self-evaluation. Self-evaluation was intended to evaluate the PISA-like mathematical problem draft on one's own. This draft is called Prototype I. The second step involved expert review and one-to-one tests that were conducted in parallel. At the expert review stage, prototype I was validated by experts to see the validity of the questions in terms of content and construct. In the one-to-one test stage, prototype I was tested on two students to see the practicality or usability of the problem through the test question, interviews when the students were working on the questions, and a questionnaire survey after the students completed solving the question. Then, based on expert suggestions and student answers and comments, prototype I was analyzed and revised. The revised problem is called prototype II. Afterward, prototype II was tested on five students at the small-group stage with the aim of seeing the practicality of the problem being developed. The results obtained from the trial at the small-group test stage were analyzed and revised to develop prototype III. Prototype III was subsequently tested at the field test stage on 20 students.

Data were collected using walk-throughs, tests, interviews and questionnaire survey. Walk-through was used at the expert review stage to obtain suggestions and comments from experts, while tests, interviews, and questionnaire surveys were used at the one-to-one test, small-group test, and field test stages to obtain student answers and comments on the questions being developed. The results of the tests, interviews and questionnaire survey were analyzed descriptively and then used as supporting information in the development process. The questions were said to be valid in terms of content, construct, and language during the expert review. The PISA-like problem would be considered valid in terms of content if it was in accordance with the PISA framework, it would be considered valid in terms of constructs if it was in accordance with the curriculum, and it would be considered valid in terms of language if it was in accordance with general Indonesian spelling guidelines, understandable, and non-ambiguous. The prototype would be considered practical if it could be understood by students, could be completed, and did

not cause multiple interpretations, and if it was attractive for students to complete.

C. RESULT AND DISCUSSION

The research involved preliminary and prototyping stages. The preliminary stage was a stage in which presentations were carried out to develop a problem, while the prototyping stage was a stage in which the product was developed, which consisted of self-evaluation, expert-review, one-to-one test, small-group test, and field-test.


1. Preliminary Stage




In the preliminary stage, an analysis of eighth-grade materials, an analysis of the PISA framework, and problem drafting were carried out. From the analysis of eighth-grade materials, the materials on relations and functions were selected. A PISA-like questions draft was then prepared using the change and relationship content, precisely on the materials on relations and functions, using a personal context, namely the activity of purchasing Palembang traditional food, and a mathematical process, namely to interpret.

2. Self-Evaluation Stage

At the self-evaluation stage, the draft question developed was evaluated and revised based on self-examination for a preparation for the next prototyping process. The question development was inspired by an original PISA question of 2012, which is shown in Figure 2.

MP3 PLAYERS



Music City MP3 Specialists		
MP3 player  155 zeds	Headphones  86 zeds	Speakers  79 zeds

Translation Note: The use of zeds is important to the unit, so please do not adapt "zed" into an existing currency.

Question 3: MP3 PLAYERS PM904Q03

Music City has a sale. When you buy **two or more** items at the sale, Music City takes **20%** off the normal selling prices of these items.

Jason has 200 zeds to spend.

At the sale, what can he afford to buy?

Circle "Yes" or "No" for each of the following options.

Items	Can Jason buy the items with 200 zeds?
MP3 player and the headphones	Yes / No
MP3 player and the speakers	Yes / No
All 3 items – the MP3 player, the headphones and the speakers	Yes / No

Figure 2. PISA Problem of 2012 (OECD, 2012)

As shown in Figure 2, a problem with information regarding several items for sale and an accompanying price list was provided. It is provided in the problem that Jason has 200 zeds for shopping. The question posed is about which items Jason can afford. Emulating this question, a question was then developed using the context of traditional Palembang food, as shown in Figure 3.

Pay Attention to Table 1 and Table 2.

Table 1. Price list of *Pempek*

All kinds of <i>pempek</i>	Price (IDR)
Pempek kapal selam besar	8,000
Pempek kapal selam kecil	3,000
Pempek Lenjer	3,000
Pempek Ada'an	3,000
Pempek Kulit	3,000
Pempek Keriting	3,000
Pempek Model	7,000
Lenggang Panggang	10,000
Lenggang Goreng	10,000
Rujak Mie	10,000
Tekwan	7,000

Table 2. Price list of Drinks

All kinds of Drinks	Price (IDR)
Es Campur	10,000
Es Kacang Merah	7,000
Es Jeruk	7,000
Jeruk Panas	7,000
Teh Botol	4,000
Es Teh	4,000
Es Teh Manis	4,000
Teh Manis Panas	4,000
Air Mineral Botol	3,000
Air Mineral Gelas	1,000
Es Timun	8,000
Es Teh Tawar	2,000
Teh Tawar Panas	2,000
Batu Es	1,000

Budi will buy food and drink with the price list shown in Table 1 and Table 2. What menu item can Budi choose if he prepares no more than IDR 13,000 in cash?

Figure 3. The developed PISA-Like problem

As shown in Figure 3, the problem developed involves a menu of some Palembang foods sold for various prices, and the question "what menu item can Budi choose if he prepares no more than IDR 13,000 in cash?". This question aims to enable students to interpret, estimate, and make decisions about what menu item to choose from a menu list. The draft question resulting from the self-evaluation stage is called prototype I.

3. Expert review and One-to-One Stages

Prototype I was validated by experts at the expert review stage. Experts provided comments and suggestions on the validated question. The expert advice on the prototype I is as follows: (1) a question providing menu items and asking students to assess whether the items are appropriate should be provided; (2) questions to confirm whether students understand that this problem is a function problem or not should be added; (3) The question has been in accordance with eight-grade materials in the curriculum; and (4) the question is in accordance with the PISA framework. Simultaneously, prototype I was tested on two students in the one-to-one test stage. Based on students' answers in the test, interview, and questionnaire survey, the students were confused by the clause "he prepares no more than IDR 13,000 in cash". Students asked whether the clause means "Budi only has IDR 13,000 to buy food and drinks." It can be seen that ambiguity existed in the sentence used. Therefore, the students did not work on the problem right away, but asked for confirmation of the correct meaning of the problem first.

Based on the suggestions, responses, and comments from experts and students, the question was analyzed and revised. The revision made to prototype I included the following: (1) a question providing menu items and asking students to assess whether these items are appropriate or not was added; (2) a question whether the menu and price list are a function was added; and (3) the clause "he prepares no more than IDR 13,000 in cash" was revised into "he only has IDR 13,000 in cash". This revised problem is called prototype II (see Figure 4).

Pay Attention to Table 1 and Table 2.

Table 1. Price list of *Pempek*

All kinds of <i>pempek</i>	Price (IDR)
Pempek kapal selam besar	8,000
Pempek kapal selam kecil	3,000
Pempek Lenjer	3,000
Pempek Ada'an	3,000
Pempek Kulit	3,000
Pempek Keriting	3,000
Pempek Model	7,000
Lenggang Panggang	10,000
Lenggang Goreng	10,000
Rujak Mie	10,000
Tekwan	7,000

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Es Campur	10,000
Es Kacang Merah	7,000
Es Jeruk	7,000
Jeruk Panas	7,000
Teh Botol	4,000
Es Teh	4,000
Es Teh Manis	4,000
Teh Manis Panas	4,000
Air Mineral Botol	3,000
Air Mineral Gelas	1,000
Es Timun	8,000
Es Teh Tawar	2,000
Teh Tawar Panas	2,000
Batu Es	1,000

Budi will buy food and drink with the price list shown in Table 1 and Table 2. What menu item can Budi choose if he only has IDR 13,000 in cash?

If Budi choose to buy four pieces of "pempek keriting" and his drink is a cup of mineral water, is Budi's choice correct? Describe your reason.

Is the relationship between the money owned by Budi and the menu items he chose called a function?

Figure 4. Prototype II

4. Small-Group Test Stage

At the small-group test stage, prototype II was tested on five students. Students were asked to complete the test questions that were developed. They were asked to answer some questions orally while working on the problem to explore their ways of thinking in solving the problem. After the test was completed, the students were asked to fill out a questionnaire containing questions regarding the clarity of the information provided in the problem they were working on, such as the clarity of the sentences used in the problem, the clarity of the tables used in the problem, and the clarity of the numbers used in the problem, as well as information about how they felt about the questions they were working on. At this stage, the students expressed that they could clearly understand the meaning of the questions, had no confusion nor had multiple interpretations of the questions, found the tables and numbers used as clear, and took interest in working on the questions because the questions were relevant to everyday life. On this consideration, revision of prototype II was considered unnecessary. The result obtained from this stage is called prototype III.

5. Field Test

Prototype III was tested on 20 students at the field test stage. One of the students' answers to the first question about which food Budi can choose from the menu with only IDR 13,000 available in cash is as follows.

maka budi akan membeli makanan yang harganya Rp 3.000
 4 buah misalnya pempek keriting dan air mineral
 Rp 1.000 jadi jika dijumlahkan pempek keriting
 $Rp\ 3.000 \times 4\ buah = Rp\ 12.000$ dan air mineral
 gelas Rp 1.000 maka Rp 12.000 +
 $Rp\ 1.000 = Rp\ 13.000$ uang Budi yang sebesar
 Rp 13.000 cukup untuk membeli pempek keriting
 4 buah dan air mineral

Translated to English:

Budi can buy four pieces of food priced at IDR 3,000, for example, “pempek keriting”, plus mineral water that is priced at IDR 1,000. If we multiply IDR 13,000 by four pieces of “pempek keriting” and add it to IDR 1,000 for one cup of mineral water, then we get IDR 13,000. Budi’s cash of IDR 13,000 is enough to buy four pieces of “pempek keriting” and one cup of mineral water.

Figure 5. Answer to the first question by a student with the initials SI

As shown in Figure 5, SI chose a *pempek* item in the menu that is priced at IDR 3,000 for each piece, and he suggested that Budi buy four pieces of it plus one cup of a drink at IDR 1,000. Thus, Budi’s cash is enough to buy the food and drink because the total price for the food had enough money to buy the food and drinks because the total price for the food and drink is IDR 13,000. SI could choose the right menu items for the amount of cash Budi has. Other answers are shown in Figure 6.

- pempek kapal selam besar dan jeruk panas Rp 8.000
 Rp 4.000 = 12.000 ✓
 - lenggang goreng dan air mineral botol Rp 10.000
 Rp 3.000 = 13.000 ✓
 - pempek keriting + pempek adaan + pempek kulit Rp 3.000
 Rp 3.000 = 9.000 ✓
 - tekwan dan es teh Rp 7.000
 Rp 4.000 = 11.000 ✓
 Alasan nya = karena menu diatas sesuai dengan uang yang
 disiapkan budi ✓

Translated to English:

“Pempek Kapal Selam besar” and hot orange drink = IDR 8,000 and IDR 4,000 = IDR 12,000

Fried “lenggang” and bottled mineral water = IDR 10,000 and IDR 3,000 = IDR 13,000

“Pempek keriting” + “pempek adaan” + “pempek kulit” = IDR 3,000 + IDR 3,000 + IDR 3,000 = IDR 9,000

“Tekwan” and iced tea = IDR 7,000 and IDR 4,000 = IDR 11,000

The combinations of menu items above were chosen because they were affordable to Budi with his cash.

(a)

Menu yang bisa dipilih Budi :

- 1 lenggang panggang (Rp10.000) dan 1 Air mineral botol (Rp 3.000)
- 3 pempek kapal selam kecil (Rp9.000) dan 1teh botol (Rp4.000)
- 4 pempek kulit (Rp 12.000) dan 1 air mineral gelas (Rp1.000)

pak Budi dapat memilih salah satu menu diatas karena cukup dengan uang yang dimiliki Pak Budi.

Translated to English:
 The combinations of menu items that can be chosen by Budi are as follows:
 1 piece of grilled "lenggang" (IDR 10,000) and 1 bottle of mineral water (IDR 3,000)
 3 pieces "pempek kapal selam kecil" (IDR 9,000) and 1 bottle of tea (IDR 4,000)
 4 pieces of "pempek kulit" (IDR 12,000) and 1 cup of mineral water (IDR 1,000)
 Mr. Budi can choose one of the menu item combinations above because they are affordable to Mr. Budi with his money.

(b)

Figure 6. Answers of students who wrote down several menu combinations

As shown in Figure 6, students wrote several menu item combinations consisting of foods and drinks whose total prices are affordable to Budi with his money. In Figure 6 (a) it can be seen that the student wrote down four menu item combinations to choose from, consisting of one combination whose total price is exactly IDR 13,000 and two combinations whose total prices are less than IDR 13,000 each. However, the third combination consists of only foods, namely "pempek keriting", "pempek adaan", and "pempek kulit", and the student did not choose any drink, even though it is informed in the problem that "Budi wants to buy food and drink". The student was able to solve the problem well, but they were not careful in checking the answer. On the other hand, as shown in Figure 6 (b), the student was able to solve the question properly and correctly, in which case they wrote down several menu combinations consisting of foods and drinks whose total prices are each IDR 13,000. In the second question students were asked to assess whether Budi's choice is correct or not. Some answers to the second question of the students are shown in Figure 7.

Pilihan budi sudah tepat karena

Pempek Keriting	3.000	
	3.000	
	3.000	
	3.000	
air mineral gelas	1.000	+
	<u>13.000</u>	

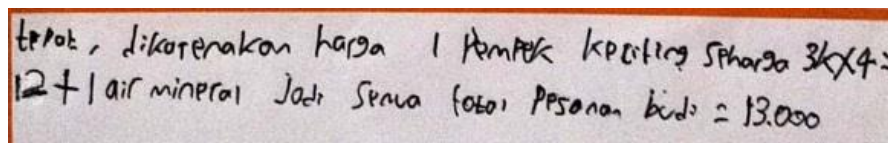
4 buah Pempek keriting = Rp 12.000
 1 buah air mineral gelas = Rp 1.000
 Rp 13.000 +

ya sudah tepat karena jumlah harga menu yang dipilih Pak Budi cukup dengan uang yang dimiliki Pak Budi.

<p>Translated to English: Budi's choice is right because</p> <table border="0"> <tr> <td>Pempek keriting</td> <td>3.000</td> </tr> <tr> <td></td> <td>3.000</td> </tr> <tr> <td></td> <td>3.000</td> </tr> <tr> <td></td> <td>3.000</td> </tr> <tr> <td>A cup of mineral water</td> <td><u>1.000+</u></td> </tr> <tr> <td></td> <td>13.000</td> </tr> </table>	Pempek keriting	3.000		3.000		3.000		3.000	A cup of mineral water	<u>1.000+</u>		13.000	<p>Translated to English: 4 pieces of "pempek keriting" = IDR 12,000 1 cup of mineral water = <u>IDR 1,000 +</u> IDR 13.000</p> <p>Yes, it is correct because the total price of the menu items chosen by Mr. Budi is affordable with the money that Mr. Budi has.</p>
Pempek keriting	3.000												
	3.000												
	3.000												
	3.000												
A cup of mineral water	<u>1.000+</u>												
	13.000												
(a)	(b)												

Figure 7. Student answers to the second question

As shown in Figure 7, both students answered that Budi's choice of four pieces of "pempek keriting" and one cup of mineral water was right. Figure 7 (a) shows that the student computed $3,000 + 3,000 + 3,000 + 3,000 + 1,000 = 13,000$ by tiered addition to prove that the total price of the menu items that Budi has chosen is affordable with the money he has. Likewise, in Figure 7 (b) the student did tiered addition by multiplying the price of one food item by the number of pieces of the food item Budi has bought ($\text{IDR } 3,000 \times 4 = \text{IDR } 12,000$) and adding it to the price for 1 cup of mineral water ($\text{IDR } 1,000$), which gave a total price of $\text{IDR } 13,000$. In Figure 7, it can be seen that the students could solve the question correctly. Another answer to the second question is shown in Figure 8.

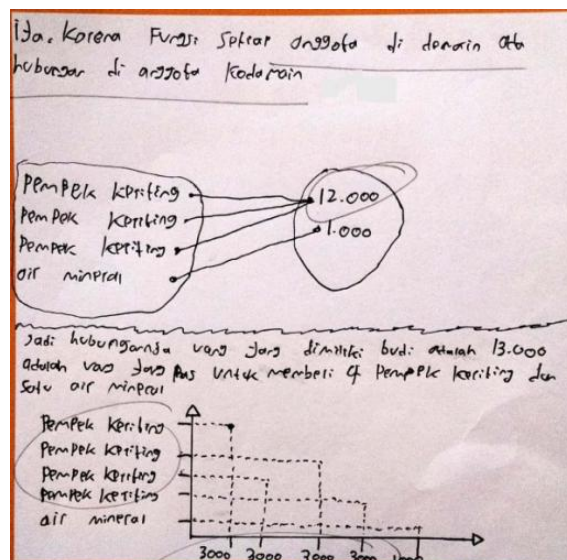


Translated to English:

It is correct, because the price of 1 piece of "pempek keriting" is $3K \times 4 = 12 + 1$ cup mineral water, so all of Budi's orders = $\text{IDR } 13,000$.

Figure 8. Another answer to the second question

As shown in Figure 8, the student also answered that Budi's choice is correct, explaining it by multiplying the price of one piece of "pempek keriting" by the number of pieces of the food and adding it with the price of one cup of mineral water. The interesting thing from this answer is that the student used the letter "K" to denote thousands; they wrote 3K to denote 3,000. This shows that the students used the information they had collected before to complete the second question. Then, students were asked to answer the third question asking whether the relationship between price and available menu items is a function. One student's answer is provided in Figure 9.



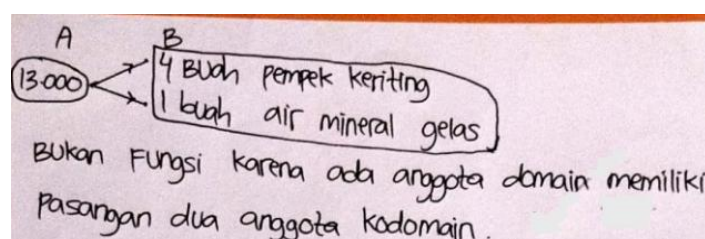
Translated to English:

Yes, because every member in the domain has a relationship with a member in the codomain.

So, the relationship is as follows: Budi has $\text{IDR } 13,000$, which is the right amount of money to buy four pieces of "pempek keriting" and one cup of mineral water.

Figure 9. An answer to the third question by a student with the initials MF

In Figure 9, it can be seen that the student answered that the relationship between price and the menu items chosen by Budi is a function. The students made an arrow diagram with the domain members being "pempek keriting" and mineral water and the codomain members being 12,000 and 1,000. If seen from the arrow diagram, the students matched one domain member to a codomain member correctly and stated that this relationship is a function, but they wrote "pempek keriting" three times in the domain. Likewise, in the Cartesian diagram, the student wrote "pempek keriting" and the price 3,000 each four times. It can be seen that the students understood the concept of function but still had a problem in expressing it in form of an arrow diagram or a Cartesian diagram. Another answer is shown in Figure 10.



Translated to English:

It is not a function because any domain member has a pair of two codomain members.

Figure 10. An answer to the third question by a student with the initials NF

As shown in Figure 10, the student answered that the relationship between the money owned by Budi and the menu items he chose is not a function because there are domain member that are paired with more than one codomain members. It can be seen that the students understood the concept of function, so they could draw an arrow diagram of the relationship between a domain member, 13,000, and codomain members, four pieces of "pempek keriting" and one cup of mineral water, and determined that the relationship is not a function.

Based on the results of the research, it can be seen that the questions developed are valid and practical. A product is considered valid in term of content if it is developed in accordance with knowledge or science, and it is considered valid in terms of construct if it is developed in a way that is logical and consistent with design (Nieveen et al., 2006; Van den Akker et al., 2007). Based on expert comments, the questions developed are in accordance with the PISA framework: they cover the content of relation and function involving a personal context, that is purchasing traditional Palembang food, and the mathematical process of interpretation. This shows that the questions developed are valid in terms of content. They are also in accordance with the materials for eighth grade and with the curriculum used. This shows that the questions developed are constructively valid. In addition, the practicality of the questions is seen from the questions' applicability and ease of use to students (Nieveen, 1999; Nieveen et al., 2006; Van den Akker et al., 2007). In the one-to-one test, small-group test, and field-test stages, students were asked to work on several questions, interviewed, and asked to fill out a questionnaire. In the small-group test and field-test stages which were the final stage of the prototyping process, students were found to be able to understand the questions well, the images used to illustrate the problem were helpful to students in deriving information, the numbers used in the problem were not complicated to students, students were not confused about the sentences used in the questions, the sentences did not cause multiple interpretations, and students were interested in working on the questions because they were relevant everyday life situations. This shows that the questions developed are practical.

The PISA-like questions were developed using the context of Palembang traditional food. This is by the statement of (Baka et al., 2019) that learning must start from something close to students. Likewise, (Freudenthal, 1972) states that mathematics is a human activity and is close to students. Developing PISA-like questions in the context of traditional foods such as "pempek", "tekwan", and "lenggang" could draw students' interest and give students a sense that the problem often occurs in their lives because they often encounter traditional food in the school canteen or other eateries close by.

The questions developed meet the indicators of the mathematical process of interpretation. Interpretation is related to how effective a student is at contemplating mathematical solutions or conclusions, interpreting them in the context of real-world problems, and determining whether the results or conclusions are reasonable or useful (Gustiningsi, Putri, Zulkardi, & Hapizah, 2022; Gustiningsi, Putri, Zulkardi, Sari, et al., 2022; OECD, 2018). In this study, students were given a problem regarding what menu items Budi can choose if he only has IDR 13,000 in cash. Using this problem, students are asked to interpret and make decisions or solutions by considering the available information. They are also asked whether the choices made by Budi are correct. Students are asked to evaluate their answers using the information provided. The last question asks students to evaluate whether the problem provided reflects the material of function. Students are also asked to interpret the problem and evaluate it.

Based on students' answers, it appears that the questions developed could bring up students' interpreting abilities. Students were able to interpret the first question and make a list of menu item combinations that Budi could choose with the money he has by calculating the total prices of these menu item combinations and ensuring that each of them is equal to or below IDR 13,000. Answering the second question, students were able to evaluate their first answer by calculating the total price Budi must pay to buy "pempek keriting" and mineral water. It also appears that the students were able to determine whether this conclusion was reasonable. Finally, based on the answer to the third question, students were able to interpret the concept of function. The students' being able to interpret and solve the developed problem that goes well with everyday life situation using their mathematical concepts means that they have mathematical literacy skills. OECD (2019) states that mathematical literacy is a person's ability to reason mathematically and to formulate, use, and interpret mathematics to solve problems related to everyday life.

D. CONCLUSION AND SUGGESTIONS

The PISA-like mathematical problem with the context of Palembang traditional food produced is qualitatively valid and practical. The problem was declared valid in terms of content as it is in accordance with the PISA framework: it has content on change and relationship, it uses a personal context, namely purchasing traditional Palembang food, and it involves a mathematical process, namely interpreting. The problem was declared constructively valid because it is in accordance with the curriculum and with the material for the eighth grade. The problem was also said to be practical, which shows that the questions could be used by students, the sentences in the questions did not lead to multiple interpretations, the questions were understandable by students, the tables and numbers in the questions were clear, and students were interested in working on the questions because they were appropriate with everyday life situations. It was found in this study that the PISA-like questions that were developed using the context of purchasing traditional Palembang food were able to raise students' mathematical literacy abilities. The developed PISA-like problem can be used by teachers in the classroom to train students' thinking skills. Future researchers are suggested to develop other PISA-like problems using the

traditional Palembang food context for other materials or develop other PISA-like problems using the context of traditional foods of other regions, whether they be in Indonesia or overseas.

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