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Development of PISA-like Activities using the Inquiry-based Learning Model and the Context of Religious Holidays during the Pandemic

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Abstract

This research aims to develop a PISA-type content quantity that uses the context of religious holidays during the pandemic that is valid, practical, and potentially affects mathematical literacy skills. This research uses development research with two stages: preliminary and formative evaluation. This research also uses Inquiry-Based Learning (IBL) model in the learning process. This study involved eighth-grade students aged 13-15 years of various abilities. Data collection and analysis techniques were documentation, walkthroughs, observation, interviews, and tests. The research was carried out offline and online (Zoom and WhatsApp Group (WAG)). In this study, sharing activities were produced as well as a PISA-type jumping task with content quantity characteristics in the context of religious holiday during the pandemic by the PISA 2022 framework where what needs to be considered are mathematical literacy skills and use of language that is by language standards that can be applied and well interpreted by the students. Based on the students' answers, it can be seen that the questions and activities are included in the practical category because they can be solved well by students. From the results, it can be concluded that the developed PISA-like numeracy and activity has a potential effect on mathematical literacy skills and life in the context of religious days during the pandemic. In addition, IBL model can improve students' communication skills in solving PISA-type math problems and activities.

Keywords: Development Research, Mathematics Problems, Inquiry Based Learning (IBL), Context of Religious Day in the Pandemic

Abstrak

Tujuan dari penelitian ini untuk mengembangkan soal-soal sejenis PISA dengan konten quantity menggunakan konteks hari raya pada masa pandemi yang valid dan praktis, serta berpotensi memiliki efek potensial yang mempengaruhi kemampuan literasi matematika siswa SMP. Penelitian ini menggunakan penelitian pengembangan yang memiliki dua tahapan, yaitu: *preliminary* dan *formative evaluation*. *Inquiry-Based Learning* (IBL) digunakan dalam proses pembelajarannya. Penelitian ini melibatkan siswa kelas VIII yang berusia 13-15 tahun dengan berbagai kemampuan. Teknik pengumpulan dan analisis data dilakukan secara deskriptif, yaitu dokumentasi, *walkthroughs*, observasi, wawancara, dan tes. Penelitian dilakukan secara offline dan online (menggunakan Zoom dan WhatsApp Group (WAG)). Dalam penelitian ini diberikan aktivitas sharing task dan jumping task tipe PISA dengan ciri-ciri konten quantity konteks Hari Raya pada masa pandemi menurut *framework* PISA 2022, dimana yang perlu diperhatikan yaitu kemampuan literasi matematika, menggunakan bahasa yang sesuai standar agar dapat dimaknai dengan baik oleh siswa. Berdasarkan jawaban siswa terlihat bahwa soal dan aktivitas termasuk dalam kategori praktis dikarenakan dapat diselesaikan dengan baik oleh siswa. Dari hasil tersebut, dapat disimpulkan bahwa soal dan aktivitas matematika tipe PISA yang dikembangkan berpotensi berpengaruh terhadap literasi matematika dan kecakapan hidup pada situasi hari raya di masa pandemi. Selain itu, model IBL dapat meningkatkan kemampuan komunikasi siswa dalam menyelesaikan soal dan aktivitas matematika tipe PISA.

Kata kunci: Penelitian Pengembangan, Soal Matematika, *Inquiry Based Learning (IBL)*, Konteks Hari Raya Pada Masa Pandemi

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INTRODUCTION

Mathematical literacy relates to a person's ability to solve issues by reasoning mathematically and formulating, utilizing, and interpreting mathematics in real-world settings. It consists of concepts, methods, data, and instruments for describing, explaining, and forecasting events (OECD, 2018). Therefore, mathematical literacy skills are crucial abilities for every student to have (Widianti & Hidayati, 2021).

The Indonesian mathematical literacy survey results show that the ability of students in Indonesia has not been able to compete with other countries in the world. This is a big task for Indonesia to be able to have better achievements in the future(Afriyanti et al., 2018). OECD (2016) and OECD (2019) explained that Indonesia achieved terrible results in the mathematics category. Indonesia was ranked 7th from the bottom with a score of 379 in 2018, down by 7 points from 2015, far below the OECD average of 489.

Students' poor performance is influenced by a variety of factors, including their incapacity to address problems that are not routine or require HOTs, their inability to design mathematical tasks, such as PISA-type tasks regarding language origin and structure (Zulkardi & Kohar, 2018), and the fact that most teachers can only provide limited information and practice low-level regular questions (Putri & Zulkardi, 2018). Other factors stated by (Hawa, 2014), such as having a lack of training in solving problems with PISA characteristics, and readiness in working on questions were some of the factors obtained during the research.

The researcher selected the content of numbers (quantity) because numerical operations are an important aspect in learning mathematics (Noviana & Murtiyasa, 2020). If a student's ability is low in the material of numbers, it will affect the sub material that exists in other PISA content. This is supported by Murtiyasa (2015) who states that quantity is the primary method for describing and measuring various objects.

From these problems, learning is needed to provide students with experience in solving PISA problems. IBL is a student-centered pedagogy that encourages students to investigate problems before receiving formal explanations and solutions (Marshall et al., 2017). We define IBL as a teaching culture and classroom practice in which students take ownership of the inquiry process (Dobber , Zwart et al., 2017; Maaß & Doorman, 2013). The instructor is accountable for directing inquiry by establishing issue scenarios and giving support, as well as coordinating student collaboration and communication in order for students to take on this responsibility (Artigue & Blomhøj, 2013; Silviani et al., 2017), and improve students' communication skills (Bayram et al , 2013).

In previous studies, several researchers have studied PISA using the context of COVID-19. These include Nusantara et al (2021a) with the COVID-19 transmission map context; Nusantara et al (2021b) designed PISA questions using the COVID-19 context; Nusantara et al (2020) use physical distancing

context; and Zulkardi et al (2020) examined how students work on problems. COVID-19 is a context that is currently a hot topic in society (Kemenkes, 2020).

In addition to the need for learning, teachers must also create contexts to solve problems using contexts related to the surrounding environment of the students' and their lives (Jannah et al., 2019). In this study, the context used was COVID-19 but focused on the atmosphere of religious holidays during the pandemic (COVID-19) because of the many rules that students must know when they want to carry out religious holiday routines during the pandemic. However, to date no one has used development of PISA-like activities using the IBL model and religious holiday pandemic context, which aims to produce activities in the form of questions that are valid, practical and have the potential to affect students' mathematical literacy abilities.

METHODS

This research was conducted face-to-face meetings and using online platforms such as Zoom and Whatsapp Group (WAG) due to COVID-19. Design research using the type of development studies was used in this study. This research consists of two stages, namely the preliminary evaluation stage and the formative evaluation stage (Bakker, 2018).

In the preliminary stage, the researchers determine and analyze the research subject. The subjects were eighth-grade secondary school students. In addition, the researchers analyzed the curriculum and math problems based on the PISA 2022 framework. Next, researchers designed instruments such as problem grids, problem cards, and scoring rubrics. Subsequently, the formative evaluation stage consists of self-evaluation, expert review, one-on-one, small group, and field test. In the small group and field stage, the IBL approach is employed as a learning model for students.

The expert review stage was carried out by sending Prototype I to experts by e-mail (mail review) who have experience in developing research on PISA problems and conducting the forum group discussion (FGD) or panel review stage by inviting validators consisting of two Sriwijaya University lecturers, doctoral students, and two postgraduate students using the Zoom application by presenting the problems that were made. Experts provided comments in terms of content, construct, and language. The 1-1 stage involved three eighth-grade students with various abilities. Students were given time to work on problems and monitored until the end by the researchers to find out the difficulties and drawbacks that existed in the problems. Comments and suggestions during the expert review or FGD and 1-1 will change the developed problems and be called Prototype II.

Next, Prototype II was tested in the small group stage to review the practicality of the PISA problems developed on six eighth-grade students who were divided into two groups, where each group consisted of various abilities. At this stage, the researcher first provided learning using the IBL model. The stages include orienting students to problems, stimulating students to formulate problems,

formulate hypotheses, collect data, test hypotheses, and make conclusions (Sanjaya, 2006). Prototype III is the name given to the results acquired at this level, which are legitimate and practical.

Furthermore, Prototype III was tested in the field to examine if the generated PISA questions had any effect on mathematical literacy skills. The IBL learning paradigm was used in the field test phase on 22 eighth-grade students. The scheme of this research method can be seen in Figure 1.

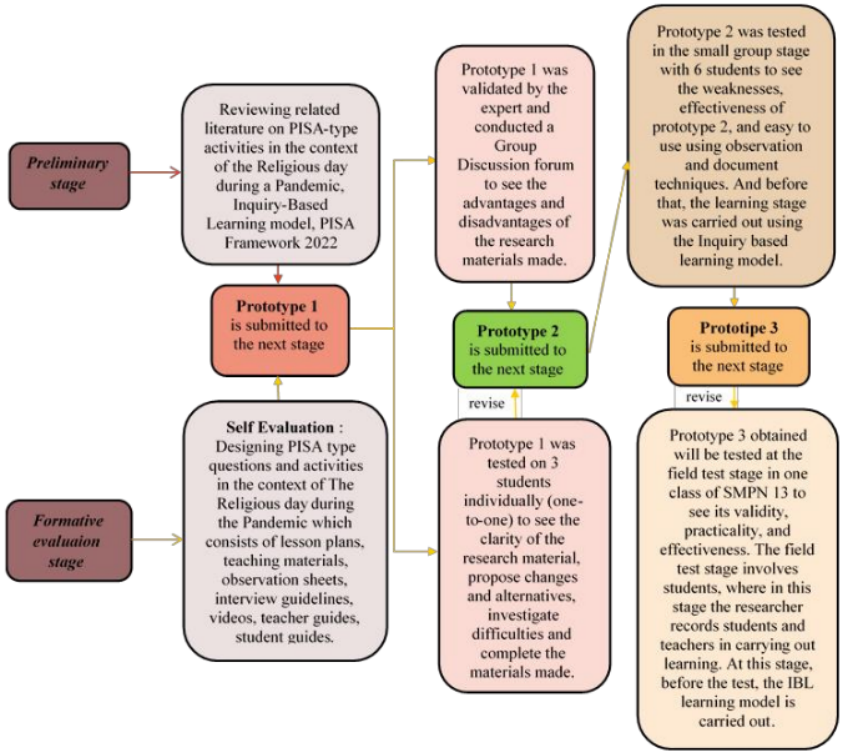


Figure 1. Schematic of the problem development research method with the IBL model

Documentation, walkthroughs, observations, interviews, and tests were used in this study to collect data. Three criteria were employed to design the issue set: validity, practicality, and efficacy (Nieveen & Folmer, 2013). The validation results from the expert review through review documents and FGD were used to determine the validity of the problems obtained at the expert review stage, including content, construction, and language. In addition, the validation results that have been analyzed were used at the small group stage by conducting observations, interviews, and reviewing documents obtained at the small group stage to assess the feasibility of these questions. If at this stage, students can understand the problem, the question is considered practical. This means the students have no trouble grasping the meaning, terms, or ways of using the instructions when looking at a problem; even if they did, they could quickly get past it. Furthermore, student test answers, observations, interviews, and questions were analyzed descriptively at the field test stage to determine the potential effect on

mathematical literacy. The PISA 2022 framework can analyze students' answering techniques based on indications and descriptions of each mathematical literacy to identify emerging mathematical literacy.

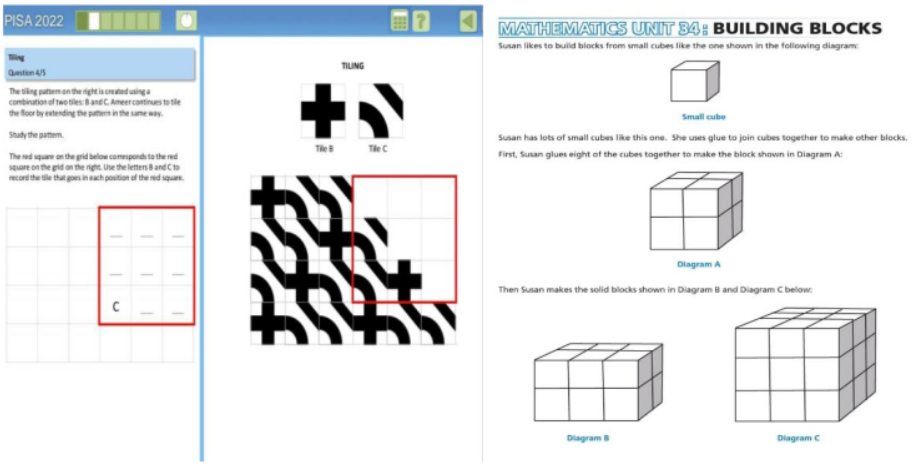
RESULTS AND DISCUSSION

This study resulted in PISA-like numeracy problems consisting of 5 question units, namely sharing task (1 unit), a jumping task (1 unit) and an evaluation task (3 units) with the context of religious holidays with content of quantity. However, the researchers focused on the sharing task as "distributing the religious holiday allowance context" and the jumping task with "online queue" representations of the development process.

Preliminary Stage

The early stage includes student analysis, curriculum analysis, PISA questions, and design analysis. The researchers devised the problem by evaluating and studying existing mathematics PISA issues. The researchers build the problem for the sharing task, which employs the scenario of the religious holiday during the pandemic, by thinking about the "tilling" questions from the PISA mathematics framework 2022 (draft). Using the backdrop of holidays during the pandemic, the researchers created the question of "distributing religious holiday allowance". Because there must be a distance between people during a pandemic, this question asks about the arrangement of chairs that can be occupied. The concept of a number pattern can be used to overcome this difficulty. This problem currently has three questions. Question 1 asked, " Fill in the tables below with a cross and shade in black!" Question 2 asked, " Use the letters A and B to show the contents of the red box above!" and Question 3 asked, " How many seats can and cannot be occupied and from the red table above?". Level 2 and 3 is the predicted problem level. The problem set includes a problem grid, a problem card, and a scoring rubric termed the initial prototype at the preliminary stage. The formative evaluation step begins after the original prototype has been designed. Figure 1 is the original PISA problems which was further developed using the context of the religious holidays during the pandemic in this study.

The jumping task is based on the "building blocks" of the 2009 PISA problem, which asks how many cubes are there in a specific cube image. The researchers created the "online queue" math problem based on these issues and set it in the context of religious holidays during the pandemic. This problem currently has four questions. Question 1 asked, "How much is the difference in call time from one client to the next?" Question 2 asked, "From the information above, calculate the nth formula?" Question 3 asked, "When was serial number B0147 called?" and Question 4 asked, "How many customers may be served in a day?". This challenge was created with a Higher Other Thinking Skill (HOTS) difficulty level in mind.



(a) (b)

Figure 2. The original PISA problems

Figure 2(a) is the original PISA problem in the PISA mathematics framework 2022 (draft) which was developed into "distributing the religious holiday allowance context". Figure 2(b) is the original 2009 PISA problem using "building blocks", which was expanded to become an "online queue" for religious holidays during the pandemic. The two original PISA questions were developed using the context of religious holidays during the pandemic.

Formative Evaluation Stage

Self-evaluation is the first step in the formative evaluation process. The researchers examine and evaluate the initial prototype from the preliminary stage. Defects and errors were discovered based on the features that constituted the prototype's focus in content, context, and language. Prototype I is the end outcome of this step.

In the next step, experts validated Prototype I through an email review, which involved sending a set of completed Prototype I to a lecturer with experience in research and development of PISA questions and convening a review panel with two Sriwijaya University lecturers, doctoral students, and master students who had also researched PISA question development.

Stages 1–1 were also carried out with the help of three eighth-grade students with varying abilities. AA, NH, and MP were the three students. The researchers observed and discovered the flaws in the questions and how each student responded and comprehended the problem during these two stages. Table 1 describes comments from Prototype I.

Table 1. Comments from experts and students

Validators	Comments/Responses	Response Revise
	Sharing Task	
Expert Review	• Need to add additional images next to or below it. • Look for better image quality • Highlight the red squares in the pattern, as they are less visible.	• Added a picture above. • Image fixed.
Panel Review	• Check again whether the pattern is appropriate. • Image is corrected because it is not clear. • In each activity, the questions must be related, made from the easiest first.	• The pattern has been adjusted to the image placement. • Confusing words are given an explanation.
Student	• The red box is not clear as to which box to mark	
	Jumping Task	
Expert Review	• Information must be added to mean constant or the same length of time. • Corrected sentence structure.	• Added constant or fixed word. • Fixed as expert advice.
Panel Review	• The image should be centered for a better fit. • The activities that appear on the jumping task should be reduced because jumping tasks are to see how children's thinking skills are different from sharing tasks.	• Image is centered. • Number of questions changed from four to one.
Student	• Because there is leftover time, it is confusing whether to round up or down.	• The number on the clock is changed to make it easier for students to calculate.

Comments/responses from the expert review stage and 1-1 are used as a reference to improve Prototype I. The results of the improvement of Prototype I are called Prototype II. Prototype II is valid based on comments/responses from expert reviews and 1-1 in terms of content, construct, and language. Prototype II was declared valid by a qualitative description in terms of content in terms of core competencies and basic competencies 3.1/4.1 for eighth-grade, in terms of constructs of the characteristics of eighth-grade students according to the PISA 2022 Mathematical Framework and in terms of language where the questions written must follow the Indonesian Spelling System General Guidelines (EYD in Bahasa) and the sentences should not be confusing (Zulkardi, 2002).

The valid Prototype II was tested on six eighth-grade students in the small group stage, namely TA and RA (high ability), NO and UA (medium ability), and AS and RO (low ability). At this stage,

the six students were separated into two groups, one for each of their abilities. This stage was done face-to-face by applying the IBL learning model. Table 2 describes the steps in IBL learning.

Table 2. IBL steps and its activities

Step	Details of Learning Activities
Orientation	• The teachers can provide direct direction or guidance so that students can practice using their minds or orient their thoughts on a problem to be solved.
Formulate the problem	• Students are expected to be able to formulate their problems, and this aims to increase students' learning motivation. Teachers are not recommended to formulate problems, and the teacher's task is only to provide topics to be studied and encourage students to formulate problems.
Formulate a hypothesis	• The teachers offers a series of questions to urge students to develop temporary solutions or a variety of viable solutions to an issue they are studying.
Collecting data	• The teachers encourages students to find the required information by asking questions. Furthermore, it frees students to discuss and exchange opinions.
Test the hypothesis	• Teachers provide opportunities for students to prove the truth of the answers given not only based on arguments but must also be supported by data found and can be accounted for.
Formulate conclusions	• Students draw conclusions about their findings based on hypothesis testing outcomes.

At the small group stage and IBL learning, it was discovered that students can discover an issue, understand the questions contained in the problems, and could read the meaning of the pictures. At this stage, when students are given time to discuss, there is a conversation between students in one of the groups, the students even ventured to ask questions that were confusing to the researcher, and this is one of the goals of IBL learning according to (Artigue & Blomhøj, 2013) namely IBL are activities that involve students in investigating; asking questions; to see what is already known; and consult reference books and other sources of information. Other activities include preparing studies; assessing what is already known in terms of experimental evidence; collecting, analyzing, and interpreting data with instruments; proposing answers, explanations, and theories; and communicating the results.

(*Note: R = Researcher; SL = Student Low; SM= Student Medium; SH= Student High*)

SL : *For the jumping task, resting time is not included in the count. Does that mean we must first find the number of people from 08.00-12.00?. So what is next? Can you explain?*

SM : *Yes, it seems so. First search from 08.00 to 12.00, then look again from 12.45 to 16.00. Is that right?*

SH : *I think so too, because at 11.00 there were already 60 people, so first look at how many minutes it takes for people then search from 11.00-12.00. I just search from 12:45 to find out what time the number 125 was called? Is that right, ma'am?*

R : *The answer is more or less like what you said earlier.*

From this stage, in the sharing tasks the pictures were corrected so that when the students saw them, they immediately understood the meaning of the question and words that were confusing to the students were given explanations. An improvement was seen on the jumping task. The three activities on the questions were removed because they were considered too many, and the jumping questions were identical to unrelated questions and one of the pictures was deleted because it was considered unimportant to the students. If the questions are interrelated, then it is considered the same as a matter of sharing tasks. For jumping tasks, students are expected to think more to practice mathematical literacy skills.

At this stage, six students with high, medium, and low abilities can understand the meaning of the question, where each student answered in various ways but attained the same final result. This can be interpreted that questions with the context of religious holidays during the pandemic were easy to understand and have various answers from students, so the questions are practical (Zulkardi, 2002). The revised problem is called Prototype III, which will subsequently be put to the test in the field. The Prototype III sharing task results can be seen in Figure 3.

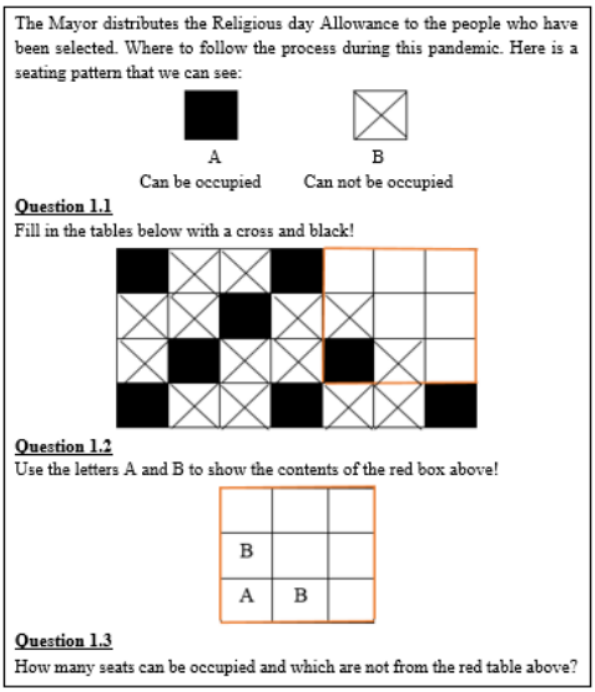


Figure 3. Prototype III of the sharing task (Distributing religious holiday allowance context)

The results of Prototype III of the jumping task can be seen in Figure 4.

During the pandemic, the buying and selling process is mainly done via online shops, marketplaces, or e-commerce. To welcome Eid al-Fitr, I bought clothes through an online shop. When I checked the money at the ATM, it turned out that the balance was insufficient. Finally, I paid through the bank teller using cash. When he came to the bank, it turned out that the bank implemented a queuing system via a barcode connected to WhatsApp.

The picture above is a QR Code and service queue number at a bank. Risa entered WAG by scanning the QR code at 11.00 WIB right at the queue number B0060 was called. Service time is considered to have a constant (fixed) distance.
Information:
Operational Hours: 08.00 - 16.00 WIB
Break Time: 12.00 -12. 45 PM
Question
At what time was serial number B0125 called?

Figure 4. Prototype III of the jumping task (Online Queue Context)

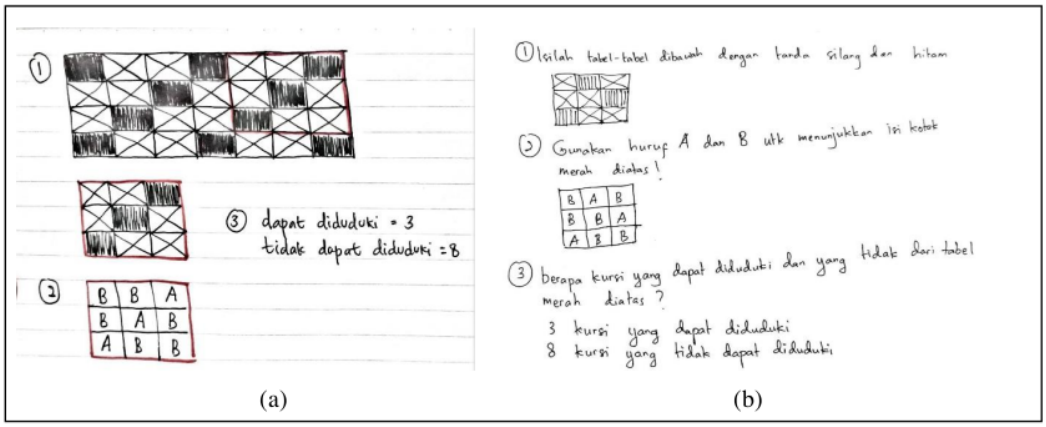
Figure 3 describes the activity of sharing tasks. This activity has three questions. The context used is "Distributing the Religious Holiday Allowance." This context is closely related to the religious holidays because on every religious holiday the distribution of allowances is the most awaited by every worker, children and everyone else who celebrates it. The level of the three questions is at level 2 or 3.

Figure 4 describes the jumping task. This question has only one question. The context used is "online queue." This context is used because there is an increasing trend of people doing online shopping during religious holidays during the pandemic and many people make payments using bank tellers. Banks implemented online queues using WhatsApp Groups to encourage people to avoid crowds during the pandemic. This question is a matter of HOTS.

The given activity of sharing and jumping task uses quantity content. In this activity, the core competencies and basic competencies used are contained in the 2013 curriculum, namely 3.1/4.1. In working on the activity, students work collaboratively, which is done face-to-face in the small group stage and utilizes the Zoom application during the field test stage.

Potential Effects of Sharing and Jumping Task

The valid and practical Prototype III field test was used to see how it would affect students' mathematical literacy skills. 22 eighth-grade studens were used as research subjects at this stage, and the student answers can be seen in Figure 5.



Translated into English :

3. Can be occupied : 3
   Can not be occupied : 8

Translated into English

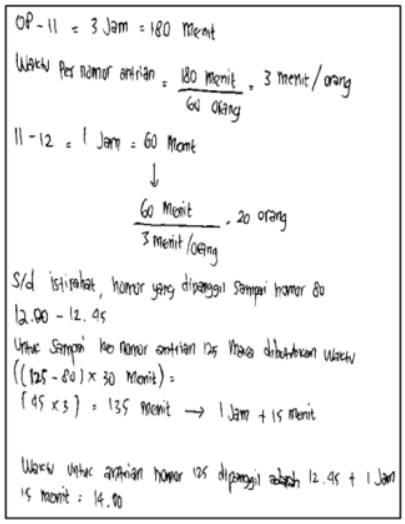
1. Fill in the tables below with a cross and black!
2. Use the letters A and B to show the contents of the red box above!
3. How many seats can be and cannot occupied from the red table above?
   3 seats that can be occupied
   8 unoccupied seats

Figure 5. Students' sharing task answer (Distributing religious holiday allowance context)

There were only 18 students that received full credit for the sharing task, while one student received half credit, and three students did not receive any credit. Figure 5 shows the answer sheets for two students.

Figure 5a shows the students who have communication skills and representative abilities. This is based on the indicators of communication skills, which is writing a process to obtained a solution (Jannah et al., 2019). This statement can be seen in students who write down the procedures for determining which seats can be occupied and which seats cannot. This process can also be viewed from the pictures made by students in the empty box based on the existing picture patterns. The picture is also a representative ability that the students have—their steps in recreating the picture to show the answer strategy. While Figure 5b shows that the results of the student's answering strategy can generate communication skills because they can write down some parts of the seats correctly, and their answers also symbolize students' representative abilities because students can change the image of another symbol. However, students' communication skills were considered lacking because they answered incorrectly for several seats.

Figure 5b depicts the students incorrectly answered activity one and activity two because students were too focused on the pictures and tables in the sharing task, and it led them to not focus on counting the number of seats. This is by Zulkardi et al. (2020) and Nusantara et al. (2021b), who argues that students only focus on seeing additional information on the questions but not on the questions themselves, and they take a long time to understand the questions.



Translated into English:

$08 - 11 = 3 \text{ hours} = 180 \text{ minutes}$

$\text{Time per queue number} = \frac{180}{60}$

$= 3 \text{ minutes / person}$

$11 - 12 = 1 \text{ hour} = 60 \text{ minutes}$

$\frac{60 \text{ menit}}{3 \text{ menit/orang}} = 20 \text{ people}$

until the break, number called was up to number 80

12.00 – 12.45

to get to the queue number 125 it takes the time

$((125 - 80)\text{x } 30 \text{ minutes}) = (45 \text{ x } 3)$

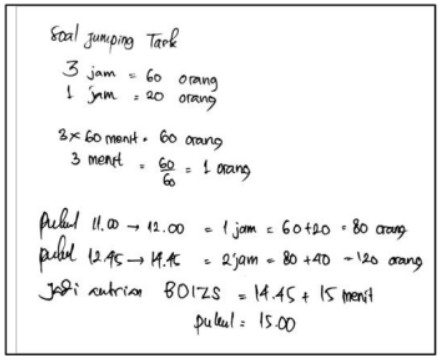
$= 135 \text{ minute}$

$\rightarrow 1 \text{ hour} + 15 \text{ minutes}$

the time it takes to call queue number 125 is

Figure 6. Student A's answer for the jumping task (Online queue context)

Figure 6 shows the results of student A's answers. In the picture, it can be seen that student A has communication skills. This is because the student wrote down every process of the problem to reach the expected solution, and in the end, student concluded the results obtained mathematically. This is called the communication ability of the student. However, from student A's answer, there was an error in the calculation. The error was found in the 135-minute section made by the student that 135 minutes = 1 hour 15 minutes. However, the correct answer for 135 minutes is 2 hours 15 minutes. Overall, the answer is in line with what the researcher expected.



Translated into English:

Jumping task

3 hours = 60 person

1 hours = 20 person

$3 \times 60 \text{ minutes} = 60 \text{ person}$

$3 \text{ minutes} = \frac{60}{60} = 1 \text{ person}$

$11.00 \text{ o'clock} \rightarrow 12.00 = 1 \text{ hour}$

$= 60 + 20 = 80 \text{ person}$

$12.45 \text{ o'clock} \rightarrow 14.45 = 2 \text{ hour}$

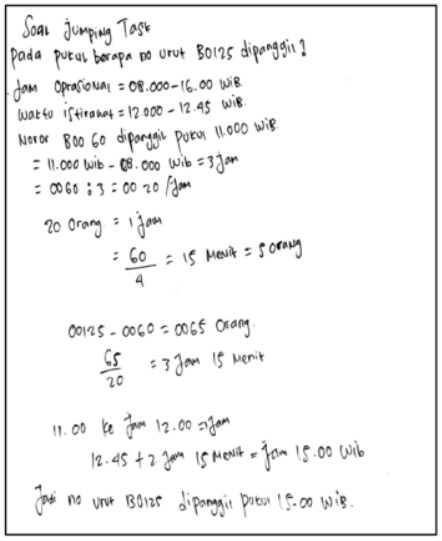
$= 80 + 40 = 120 \text{ person}$

so queue b0125 = $14.45 + 15 \text{ minutes} =$ 15.00 o'clock

Figure 7. Student B's jumping task answer (Online queue context)

Figure 7 shows student B's answer for the jumping task. It can clearly be seen that the student's answers are very concise but challenging to understand because the steps made were not detailed and

do not contain explanations; this is in contrast to Figure 6, where each section had a description of that section. Figure 7 also shows that student B has communication skills because they continue to write down the process for their answer and the conclusions given were correct. Student B's answer was also exact and what was expected by the researcher.



Translated into English:
Jumping task
At what time is serial number B0125 called?
Operational hour = 08.00 – 16.00
Time off = 12.00 – 12.45
Number B0060 is called at 11.00 WIB
= 11.00 WIB – 08.00 WIB = 3 hours
$= \frac{60}{3} =$ 20/hour
20 people = 1 hour
$= \frac{60}{4} = 15$ minutes $=$ 5 person
$00125 - 0060 = 0065$
$\frac{65}{20} =$ 3 hours 15 minutes
11.00 to 12.00 o'clock
12.45 + 2 hours 15 minutes = 15.00 WIB
So, serial number B0125 is called at 15.00

Figure 8. Student C's answer jumping task (Online Queue Context)

Figure 8 shows the results of student C for the jumping task. The picture was a complete answer. In terms of organized answers, each section was given information so that the student can be said as to have high communication skills in contrast to student A in Figure 7, who also has a description of each answer. Student C has no errors in their calculations, and the answer is very accurate.

For the jumping task there were only three students who received full credit, six students received half credit, and 13 students did not receive any credit. We can also record the mathematics literacy skills of 22 children. This proves that the jumping task is a HOTS question and less than 50 per cent of students were correct in answering the question.

From the three results, it can be clearly seen that the three students have communication skills, but none of them has representational abilities. From the three students' answers, it is clear that IBL learning is applied very well by the students. The students could even answer questions at HOTS levels, which prove that IBL learning can increase students' interest in learning mathematics. This is in line with research (Silviani et al., 2017), which concluded that IBL can increase students' demand for learning mathematics.

Almost all students in the jumping task concentrated on supporting facts rather than answering the question. Students spend more time understanding the sentences in the questions than identifying key information about the question (Nusantara et al., 2021b). According to (Zulkardi et al., 2020),

students are primarily interested in the question's description rather than the subject matter. This causes them to make errors during the computation procedure. Students' comments during the research process consider the question difficult because they were not familiar with PISA-type mathematical literacy questions. This is reinforced by the argument of (Afriyanti et al , 2018; OECD, 2016; 2019), which states that the mathematical literacy ability of students in Indonesia is in a low category compared to other countries.

Based on the two questions, it can be concluded that students have more dominant communication skills than representation skills. This is because students can explore answers using the IBL model. After all, one of the goals of the IBL model is to improve students' communication skills (Bayram et al., 2013). Another thing that makes students' communication skills exceed their representative abilities is to make students enthusiastic about solving a problem, because according to Jannah et al. (2019), an indicator of communication skills is writing a process to come up for a solution to a problem.

The IBL model is visible in the students' answers for the jumping task. Figure 6, Figure 7, and Figure 8 show the results of the IBL model. The answer of the three students show different processes and the results are what the researcher expects. The IBL model helps students explore their answers by guiding students to ask questions if they have difficulties. This challenges the students and makes them enthusiastic in solving the problems in the questions. This is reinforced by (Artigue & Blomhøj, 2013), which state that students are led to discuss with friends or ask the teachers if there is something they do not understand.

Analysis of the student answers revealed that the use of the context of religious holidays during the pandemic in PISA-type mathematical problems could potentially affect mathematical literacy skills (communication, mathematization, representation, argumentation, and reasoning) by using problem-solving strategies and symbolic, formal, technical and operational language. This finding agrees with (Putri & Zulkardi, 2020), which argue that choosing the proper context allows students to use their abilities to solve problems. The use of the context of religious holidays during the pandemic affects the students' life skills in dealing with different routines of religious holidays during this pandemic. For example, students understand that the distribution of religious holiday allowances can be done with the condition that they keep their distance, and buying Eid clothes can still be done during this pandemic. This is so that students stay away from crowds, one of which is by shopping online, and payments can also be made at the bank using an online queue.

CONCLUSION

The study produced a valid and practical PISA-like activities. The developed items are quantity content exploration that focuses on number pattern material, using questions and activities called jumping tasks and sharing tasks. The sharing task is a low-level question with three activities in the

question, while the jumping task is a HOTS question. The situation given is religious holidays during the pandemic that includes a social context. When problems are used to improve mathematical literacy skills, they can have an impact. The learning model used is in the form of an IBL model. This learning model helps students work on problems because the IBL model encourages students to explore their answers, ask questions, discuss and train their communication skills. Communication skills are the dominant mathematical literacy skills that arise because students work with processes in solving problems. This is reinforced by the use of the IBL learning model because one of the goals of IBL is so that students can be motivated in learning and practicing communication skills.

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