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Digital student worksheets based on computational thinking with South Sumatran cultural context

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Abstract

This study aims to develop a digital Student Worksheet grounded in the cultural context of South Sumatra and based on Computational Thinking (CT) for prism material, with valid and practical criteria. The research was conducted at SMP Islam Darul Quran Hanif, grade VIII, during the 2025/2026 academic year, using a Design Research method in Development Studies through self-evaluation, expert review, one-to-one, and small-group stages. Validation by four experts indicated that the digital Student Worksheet met the criteria for very validity, with a validity percentage of 85.37%, across material, CT, numeracy, design, and language aspects. Practicality testing involving six students showed a practicality level of 86.11%, categorized as very practical in terms of effectiveness, attractiveness, and implementation. Revisions across the stages demonstrated that integrating CT indicators, instructional videos, cultural visualizations, and improved design and guidance enhanced the quality of Digital Student Worksheets. This study contributes a CT-based digital Student Worksheet that combines the South Sumatran cultural context, supporting students in understanding prism concepts more meaningfully and contextually.

Keywords: Digital Student Worksheets, Computational Thinking, Prism Material, South Sumatran Cultural

Abstrak

Penelitian ini bertujuan mengembangkan Lembar Kerja Peserta Didik (LKPD) digital berbasis *Computational Thinking* (CT) pada materi prisma dengan konteks budaya Sumatera Selatan yang valid dan praktis. Penelitian dilakukan di SMP Islam Darul Quran Hanif kelas VIII semester ganjil tahun pelajaran 2025/2026 dengan menggunakan metode Design Research tipe Development Studies melalui tahapan *self-evaluation, expert review, one-to-one, dan small group*. Hasil validasi oleh empat validator menunjukkan bahwa LKPD digital memenuhi kriteria sangat valid dengan persentase kevalidan 85,37%, ditinjau dari aspek materi, CT, numerasi, desain, dan bahasa. Uji kepraktisan pada enam peserta didik menghasilkan persentase kepraktisan 86,11% dengan kategori sangat praktis, mencakup aspek keefektifan, daya tarik, dan implementasi. Proses revisi pada setiap tahap menunjukkan bahwa integrasi indikator CT, penggunaan video pembelajaran, visualisasi konteks budaya, serta perbaikan desain dan instruksi berkontribusi pada peningkatan kualitas LKPD digital. Penelitian ini memberikan kontribusi berupa pengembangan LKPD digital berbasis CT yang secara khusus mengintegrasikan konteks budaya Sumatera Selatan, sehingga membantu peserta didik memahami konsep prisma dengan lebih kontekstual.

Kata kunci: LKPD Digital, Computational Thinking (CT), Materi Prisma, Budaya Sumatera Selatan

INTRODUCTION

Education serves as the primary foundation for shaping the quality of human resources capable of adapting to the demands of a rapidly changing era (Tambingon et al., 2025). In the era of globalization and technological advancement, education is not merely concerned with the transfer of knowledge, but also with fostering higher-order thinking skills required in the 21st century (Pare & Sihotang, 2023). Mathematics, as a core subject, plays a crucial role in developing reasoning abilities, problem-solving skills, logical thinking, and critical thinking (Mangallo & Dayadi, 2025; Miagusttin et al., 2025). However, mathematics is still frequently perceived as a complex subject by many students (Hasna et al., 2022). One branch of mathematics that often poses challenges for students is geometry (Susilo & Sutarto, 2023). The results of the Programme for International Student Assessment (PISA) 2022 indicate that the average mathematics score of Indonesian students was only about 366 points, far below the OECD average of 472 points (OECD, 2023). Furthermore, approximately 70% of Indonesian students are at level 1 or below in geometry content, reflecting their low numeracy skills, particularly in geometry-related content (Fachrudin et al., 2023). Geometry involves both calculation and estimation related to the volume and surface area of polyhedra with flat faces (Wijaya & Dewayani, 2021). Students often experience difficulties in learning three-dimensional shapes with flat faces, especially in prism-related topics (Kristantini et al., 2022). These difficulties are evident in three main aspects: understanding basic concepts, applying formulas, and visualizing three-dimensional objects (Fadilah et al., 2024).

Students' difficulties arise because learning tends to emphasize memorization of formulas rather than conceptual understanding (Utami & Fitrianna, 2021). One proposed solution to address this issue is the development of digital Student Worksheets based on Computational Thinking (CT). In line with the demands of 21st-century learning, instructional materials are needed that not only deliver content but also enhance students' problem-solving and reasoning abilities (Putri et al., 2022). The digital Student Worksheets developed in this study are designed using the Canva application (Wahyuni et al., 2024). Canva is an online graphic design platform that can be easily accessed via web or mobile devices, providing various editing tools and unique templates that enable users to create professional designs to support technology-based learning (Lestari, 2023; Siregar et al., 2022). The use of Canva as a platform for developing digital Student Worksheets allows learning materials to be presented in a visual, interactive, and responsive manner (Shavira Nur Annisa et al., 2025). The resulting Digital Student Worksheets are published on a website accessible via a browser (Husen et al., 2025). In the development of digital worksheets, CT serves as an approach that guides students in solving problems systematically (Amalia & Husna, 2022).

CT encompasses the process of formulating problems and designing effective and efficient solution strategies (Nurohman et al., 2022). The integration of CT helps teachers and students develop a positive mindset by connecting mathematics to everyday life and addressing complex problems (Kaup, 2019; Rahmawati et al., 2025). Integrating CT into mathematics learning not only enhances logical, mathematical, and technological skills but also fosters character traits such as confidence, openness, tolerance, and environmental awareness (Kalelioglu et al., 2016). This aligns with the Merdeka Curriculum, which integrates CT across subjects, including mathematics (Rahmawati et al., 2025). Digital student worksheet presents activities structured according to four CT indicators: decomposition, pattern recognition, abstraction, and algorithms (Bhagat & Dasgupta, 2021; Rahmania, 2022). At the same time, these activities are designed to meet numeracy indicators, such as using numbers and mathematical symbols in everyday contexts, analyzing information in various forms, and interpreting analysis results to make appropriate decisions (Han et al., 2017). The digital Student Worksheet also incorporates the cultural context of South Sumatra, namely the architecture of traditional Ulu houses and Palembang's distinctive carved cabinets. The selection of this cultural context is based on its relevance to the taught material, as well as an effort to introduce local culture to students (Solihin & Rahmawati, 2024). The roof architecture of traditional Ulu houses resembles a triangular prism, while Palembang carved cabinets represent rectangular prism shapes (Agustian et al., 2025)

Previous studies on digital Student Worksheets, CT, and the South Sumatra context have been conducted by several researchers. Ostian et al. (2023) developed an interactive CT-based digital Student Worksheet using the context of traditional games from South Sumatra. Furthermore, Septiana et al. (2024) developed a Student Worksheet with the context of brengkes tempoyak from South Sumatra, oriented toward CT. Marina et al. (2025) developed a CT-based Student Worksheet grounded in the local wisdom of Musi Banyuasin to support numeracy skills. Based on the literature review, no study has been found that simultaneously integrates CT, digital Student Worksheet, and the cultural context of South Sumatra in teaching surface area and volume of prisms; thus, this study addresses that gap. In addition, the digital Student Worksheet developed in this study is designed to support students' numeracy skills, in line with the Merdeka Curriculum, which emphasizes literacy and numeracy as fundamental competencies in learning. Therefore, the development of the digital Student Worksheet not only refers to CT indicators but also adapts numeracy indicators. However, in this study, the potential effects of the developed digital Student Worksheet on students' numeracy skills have not yet been tested, leaving its effectiveness as an area for further research.

RESEARCH METHOD

This study employed Design Research of the Development Studies type, which aims to develop research-based solutions for complex educational problems through systematic analysis, design, and evaluation of interventions (Akker et al., 2013). The study developed a CT-based digital Student Worksheet on prismatic solids that incorporates the cultural context of South Sumatra. The research subjects were Grade VIII students of SMP Darul Quran Hanif in the 2025/2026 academic year. The research procedure consisted of two main stages: a preliminary stage and a prototyping stage. The preliminary stage included an analysis phase, in which the researcher examined student characteristics, learning needs, and the demands of the Merdeka Curriculum to determine the suitability of the Student Worksheets to be developed. This analysis served as the basis for designing student worksheets that align with students' abilities, needs, and contextual backgrounds.

The activities in the digital Student Worksheets were structured around Computational Thinking (CT) indicators: decomposition, pattern recognition, abstraction, and algorithms. They were also designed to facilitate the development of students' numeracy skills. In addition, the digital Student Worksheets incorporated cultural contexts such as traditional houses and handicrafts typical of South Sumatra. The prototyping stage followed a formative evaluation flow, which consisted of self-evaluation, in which the researcher assessed the initial product prior to validation; expert review, involving evaluations by expert validators in terms of content, numeracy, CT, design/appearance, and language; one-to-one evaluation, conducted with three students to examine the clarity of instructions and initial difficulties; and small group evaluation, conducted with six students to determine the practicality of the product and to refine it further. The formative evaluation flow is presented in **Figure 1.**

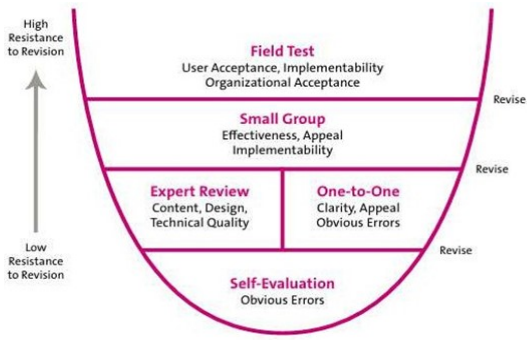


Figure 1. ***Formative Research*** **(Akker et al., 2013)**

The instruments used in this study comprised two questionnaires: a validity questionnaire and a practicality questionnaire for the digital Student Worksheets. The validity questionnaire was used to assess the quality of the product based on expert judgments. In contrast, the practicality questionnaire was used to examine the ease of use, attractiveness, and effectiveness of the digital Student Worksheets based on students' responses. The validity questionnaire was administered to four expert validators with expertise in mathematics education, instructional design, numeracy, and CT. The instrument was developed using a five-point Likert scale (1–5) and consisted of 23 statement items grouped into six assessment aspects, as presented in **Table 1.**

Table 1. Assessment Aspects and Indicators of the Validity Instrument

Aspect	Indicators
Content (Material)	Alignment of the material with the Learning Outcomes (Capaian Pembelajaran/CP) of Phase D in the Merdeka Curriculum.
	Alignment of the material with the learning objectives.
	Logical sequence and systematic presentation of the material.
	Alignment of instructional videos with the learning objectives.
	Conceptual accuracy of prismatic solids in accordance with mathematical principles and free from misconceptions.
	Relevance of the South Sumatra traditional house context to the prism material.
Numeracy Skills	Use of numbers, units, or mathematical symbols to solve problems.
	Presentation of information in the form of tables, graphs, diagrams,or images.
	Ability to guide students in identifying important information from data.
	Ability to encourage students to conclude from the results of data analysis.
	Ability to facilitate students in making predictions or decisions based on data.
Computational Thinking (CT)	Guiding students to perform decomposition (breaking down problems).
	Providing information that enables students to identify patterns.
	Encouraging students to focus on relevant information and disregard irrelevant information (abstraction).
	Assisting students in organizing problem-solving steps in a structured manner (algorithm).
Design/Layout	Neat and attractive layout.
	High-quality images and videos that support understanding of the material.
	Attractive colors and design while maintaining readability.
	Completeness of components (title, objectives, usage guidelines, activities).
Language	Clarity, conciseness, and readability of usage instructions.
	Sentences are unambiguous and free from multiple interpretations.
	Language is simple and easy for students to understand.
	Grammar conforms to the rules of the Indonesian Spelling System (EYD, 5th Edition).

The practicality questionnaire was administered to students during the small group stage. This questionnaire employed a five-point Likert scale (1–5) and consisted of 12 statement items, grouped into three aspects, as presented in **Table 2.**

Table 2. Aspects and Indicators of Practicality Instrument

Practicality Aspect	Indicators
Effectiveness	Ease of understanding the material for students through the digital Student Worksheets.
	Students' ability to complete tasks independently and collaboratively.
	Encouraging discussion activities and collaboration among students.
	The clarity of the language makes it easy to understand.
Attractiveness	Students' interest in the design of the digital Student Worksheets.
	Increasing students' enjoyment and learning motivation.
	Students' interest in Computational Thinking activities.
	Students' interest in the images and videos presented.
Implementation	Ease of use according to the instructions, with minimal teacher assistance.
	Students' ability to complete activities within the allocated time.
	Alignment of the activities with the learning conducted by the teacher in class.
	Ease of access via devices such as smartphones or laptops.

The data analysis techniques in this study were applied to two types of data, namely digital Student Worksheets validity data and digital Student Worksheets practicality data. The validity analysis was conducted by calculating the validation scores provided by expert validators using the following formula:

$$V_a = \frac{T_{sa}}{T_{sh}} \times 100\%$$

Keterangan :

V_a : Validation score

T_{sa} : Total empirical score (score obtained from validators)

T_{sh} : Maximum total score (expected score)

To determine the final validation score from the experts, the following formula was used:

$$\bar{V}_a = \frac{\sum_{i=1}^{n} v_{a_i}}{n}$$

Description :

$\bar{V}_a$: Average expert validation score

V_{a_i} : Average expert validation score

n : Number of validators

After the calculation, the results were categorized based on the validity assessment criteria, as shown in **Table 3**.

Table 3.Validity Criteria

Interval	Criteria
85% $< \underline{V}_a \leq$ 100%	Very Valid
75% $< \underline{V}_a \leq$ 85%	Valid
60% $< \underline{V}_a \leq$ 75%	Fairly Valid
50% $< \underline{V}_a \leq$ 60 %	LessValid
0% $< \underline{V}_a \leq$ 50 %	Invalid

The practicality analysis was conducted to determine the level of ease of use and students' acceptance of the developed product. The practicality score was calculated using the following formula:

$$V_P = \frac{T_{sp}}{T_{sh}} \times 100\ \%$$

Description:

V_P : Respondent score
T_{sp} : Total empirical score from respondents
T_{sh} : Maximum total expected score

To determine the final practicality score, the following formula was applied:

$$\bar{V}_P = \frac{\sum_{i=1}^{n} V_{pi}}{n}$$

Description:

$\bar{V}_P$: Average respondent score
V_{pi} : Practicality score from each respondent
n : Number of respondents

After the calculation, the results were categorized according to the practicality assessment criteria, as presented in **Table 4**.

Table 4. Practicality Criteria

Interval	Criteria
85% $< \bar{V}_P \leq$ 100%	Very Practical
75% $< \bar{V}_P \leq$ 85%	Practical
60% $< \bar{V}_P \leq$ 75%	Fairly Practical
50% $< \bar{V}_P \leq$ 60 %	Less Practical
0% $< \bar{V}_P \leq$ 50%	Not Practical

RESULTS AND DISCUSSION

Preliminary Stage

Analysis Phase

The analysis phase consisted of curriculum analysis, student analysis, and learning material needs analysis at SMP Islam Darul Quran Hanif. The purpose of this phase was to identify students' learning difficulties and to prepare appropriate instructional materials. The analysis indicated that students had difficulty understanding the concepts of surface area and volume of prisms. Most students relied on memorizing formulas without comprehending the underlying concepts. In addition, students faced challenges in solving problem-based questions. The school's curriculum is the Merdeka Curriculum, which emphasizes students' problem-solving skills. Therefore, instructional materials that support conceptual understanding and problem-solving related to prisms are required. As a solution, the researcher developed a CT-based digital Student Worksheets for prismatic solids that incorporates the cultural context of South Sumatra. Subsequently, the researcher proceeded to the design stage.

Design Phase

The researcher designed the digital Student Worksheets using the Canva application. The design process considered both content aspects, aligned with the learning objectives, and technical aspects, such as background design, images, font size, and font type, to support effective content delivery. The digital Student Worksheets were designed by integrating problem scenarios aligned with Computational Thinking (CT) indicators. After designing the learning activities, the researcher developed the user interface using Canva. The appearance of Prototype I on laptop and smartphone devices is shown in **Figure 2**.

Figure 2. Display of the Digital Student Worksheets

Figure 3. Problem Scenario in the Digital Student Worksheets

Figure 3 presents an activity on prismatic solids, adapted to the cultural context of South Sumatra's traditional houses, namely Rumah Ulu and Rumah Kilapan. **Figures 4** and **Figures 5** illustrate problem-solving activities using the Computational Thinking steps.

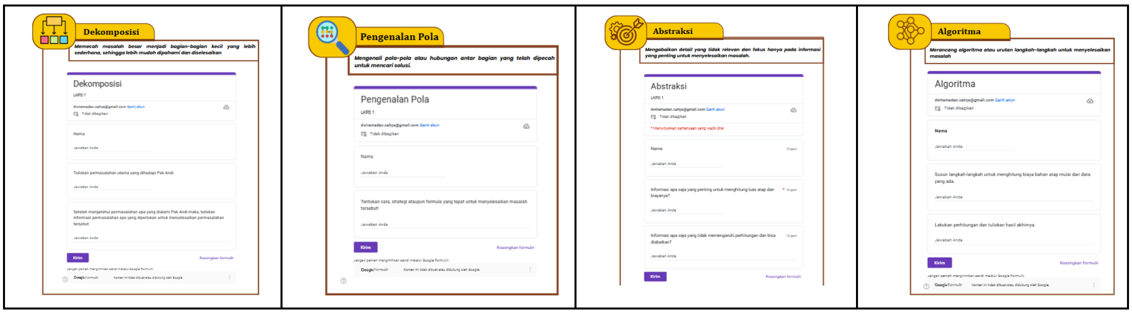


Figure 4. Computational Thinking Activities for Prism Surface Area

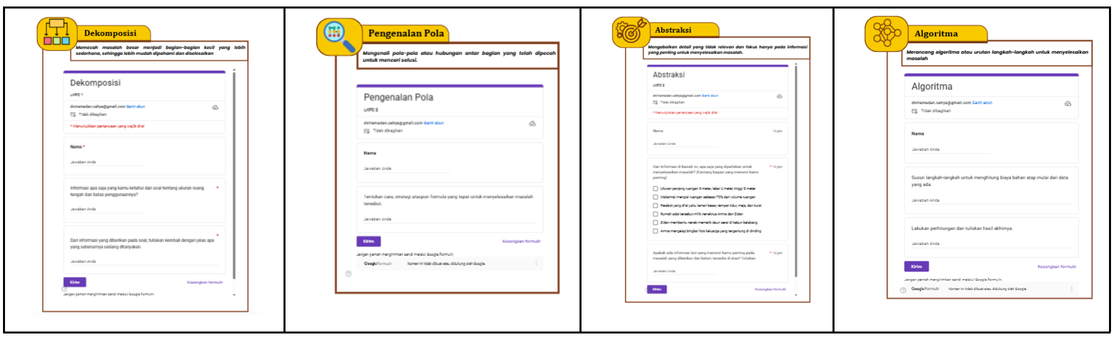


Figure 5. Computational Thinking Activities for Prism Volume

Prototyping Stage

Self Evaluation

The researcher, together with the research team, conducted a self-evaluation of the developed digital LKPD. The primary focus was to identify potential weaknesses or obvious errors from the researcher's perspective. This evaluation aimed to identify initial shortcomings before external parties conducted further assessments. Revisions at this stage included refining the learning objectives using the ABCD model and improving the grammatical quality of the digital Student Worksheets.

Expert Review

After the self-evaluation stage, the digital Student Worksheets were reviewed by four experts in mathematics education. The evaluation focused on content, construct, and language aspects for each developed prototype. The validation process was conducted both offline and online, and the experts' feedback served as important input for subsequent revisions. **Table 5** lists the validators and their areas of expertise.

Table 5. List of Validators in the Expert Review Stage

No	Validator	Affiliated Institution	Expertise / Research Experience
1	ASM	State Islamic University Raden Fatah	Development of Computational Thinking (CT)-based Student Worksheets
2	RA	State Islamic University Raden Fatah	Research on strengthening junior high school students' numeracy skills
3	DO	State Islamic University Raden Fatah	Development of Computational Thinking (CT)-based Student Worksheets
4	AW	State University of Surabaya	Development of digital mathematics Student Worksheets in geometry content

The validators involved in this study came from two higher education institutions. Three validators (ASM, RA, and DO) were lecturers from UIN Raden Fatah Palembang, while one validator (AW) was from Universitas Negeri Surabaya. In terms of expertise, ASM and DO specialized in the development of CT-based Student Worksheets and contributed to the evaluation of CT integration. RA had research experience in strengthening numeracy skills among junior high school students and in supporting numeracy assessment. Meanwhile, AW had expertise in developing digital mathematics Student Worksheets in geometry, providing valuable input regarding content suitability, digital design, and overall presentation quality. The combination of institutional backgrounds and expertise ensured a comprehensive and objective validity assessment.

Table 6. Experts' Comments and Revision Decisions

Initials	Comments and Suggestions	Revision Decisions
ASM	Add technical usage instructions at the beginning of the Student Worksheets.	Added technical usage instructions at the beginning of the Student Worksheet
	Improve the selected context to match the content/material better.	Revised the context to better align with the content/material.
	The problem questions are monotonous; make them more engaging and guide students according to computational thinking processes.	Redesigned the questions to be more varied and to guide students in applying Computational Thinking.
RA	Integrate the video into the problem and focus on one concept to be explained.	Embedded the video within the activity to facilitate problem-solving.
	Further analyze the chosen context, clarify the intended objects, and construct nets based on the context.	Added contextual visualizations and presented nets of the selected objects/ context
DO	Revise the questions to train students' Computational Thinking skills better.	Revised the questions to encourage Computational Thinking more strongly.
	Remove explicit terms such as decomposition, pattern recognition, abstraction, and algorithms from the Student Worksheets, allowing students to engage in CT implicitly.	The terms were retained to introduce Computational Thinking terminology to students.
AW	Adjust the dimensions in the Student Worksheets problems to make them more realistic, Some forms and videos were not accessible and need to be checked.	Revised the problem dimensions to be more realistic, Fixed the videos and forms to ensure accessibility for students.

Based on **Table 6**, the experts' feedback covered several key aspects, including technical quality, content relevance, and integration of Computational Thinking. From a technical perspective, the experts recommended adding detailed usage instructions at the beginning and ensuring that all links, videos, and forms were accessible. From a content perspective, they emphasized the need to better align the cultural context with prism concepts and to add visualizations of object nets to clarify the relationship between local context and geometric concepts. Regarding CT aspects, the experts suggested that the questions should more strongly encourage students to apply computational thinking processes such as decomposition, pattern recognition, abstraction, and algorithms. Although one expert suggested omitting explicit CT terminology, the researcher retained these terms to introduce Computational Thinking concepts to students.

Table 7. Validity of the Digital Student Worksheets

Aspect	V1	V2	V3	V4	Mean	Validity(%)
Material	4.00	4.33	4.00	4.50	4.21	84.17
Computational Thinking	3.80	4.60	4.40	5.00	4.45	89.00
Numeracy	4.00	4.75	4.25	4.00	4.25	85.00
Design	4.80	4.60	3.80	4.20	4.35	87.00
Languange	4.00	4.33	3.67	4.33	4.08	81.67
Average	4.12	4.52	4.02	4.41	4.27	85.37
Category	Very Valid					

The material aspect obtained a score of 84.17%, indicating alignment with curriculum outcomes and relevance to prism concepts, although some cultural contexts required refinement. The CT aspect achieved the highest score (89.00%) due to systematic integration of CT indicators, despite differing opinions regarding explicit terminology. The numeracy aspect scored 85.00%, reflecting its effectiveness in fostering numeracy skills, although some measurements needed adjustment to be more realistic. The design aspect scored 87.00% due to attractive visuals and straightforward navigation, despite minor technical issues. The language aspect received the lowest score (81.67%) due to issues with sentence effectiveness and consistency in terminology. Overall, the average validity score of 85.37% placed the product in the very valid category. These findings are consistent with previous studies. Dalimunthe et al. (2025) reported a validity level of 88%, while Al-Hafizha et al. (2025) Reported an average validity of 93.7%, indicating consistent quality across similar studies.

One-to-one

Three students were involved in the initial trial based on their communication openness and analytical ability.

Figure 6. One-to-One Evaluation Implementation

Students were asked to review the digital Student Worksheets and provide qualitative feedback. **Table 8** summarizes the difficulties encountered.

Table 8. Students' Difficulties at the One-to-One Stage

No	Student Difficulties	Revision Decisions
1	Students had difficulty understanding the questions in the activities	Revising the questions to better guide students in solving the problems in the activities
2	Students experienced difficulties playing and pausing the videos, as well as adjusting the audio volume.	Uploading the videos to YouTube and embedding them directly into Canva to make it easier for students to play, pause, and adjust the audio volume.

At this stage, students had difficulty answering the activity questions and needed clarification. Technical issues were also reported, particularly difficulties in pausing videos and adjusting audio volume. Feedback from the expert review and one-to-one evaluation was integrated to produce Prototype II, with revision decisions summarized in **Table 9.**

Table 9a. Revision Decisions at the Expert Review and One-to-One

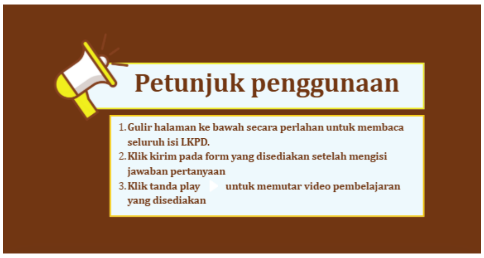
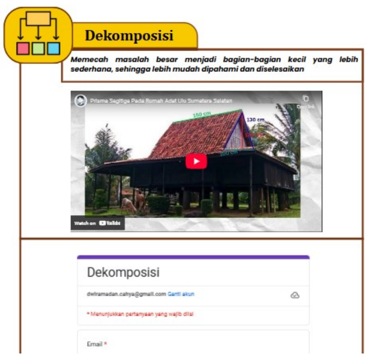
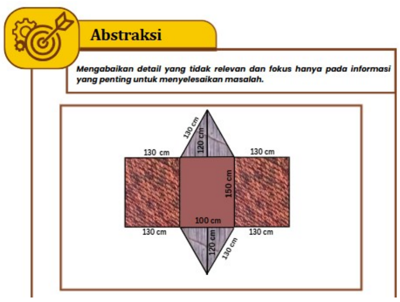
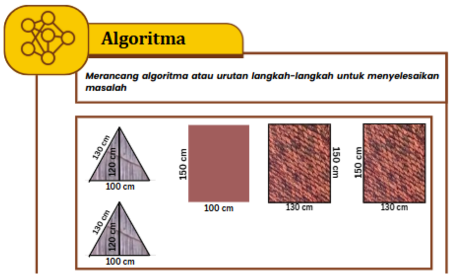
No	Prototype I	Prototype II
1	Usage instructions were placed after the cover page. 	Usage instructions were moved to the beginning and presented as a collapsible button.  
2	No video guidance was provided in the activities. 	Video guidance was added to the activities. 

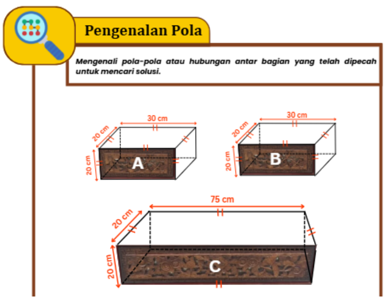
Table 9b. Revision Decisions at the Expert Review and One-to-One

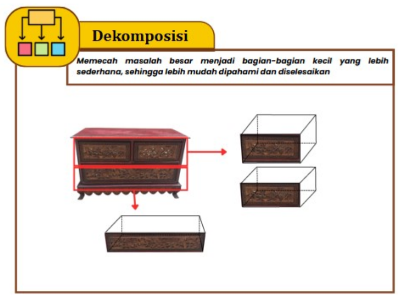
No	Prototype I	Prototype II
3	The prism volume activity was considered inconsistent with the concept of volume.	The prism volume activity was revised by changing the problem context to reflect the prism volume concept better.

No	Prototype I / Prototype II
4	Prototype I Contextual visualization was not provided; only images were presented, with no explicit explanation. Prototype II Contextual visualization was added, including the presentation of nets derived from the selected objects/context.









No	Prototype I	Prototype II
5	Instructional videos were brutal to pause and adjust in volume.	Videos were uploaded to YouTube and embedded into the digital Student Worksheets to allow easier pausing and volume adjustment.

Small Group

Figure 7. Small Group Implementation

Prototype II was tested with six students of varying abilities in **Figure 7**. Students followed the instructions, solved problems, and completed the practicality questionnaire.

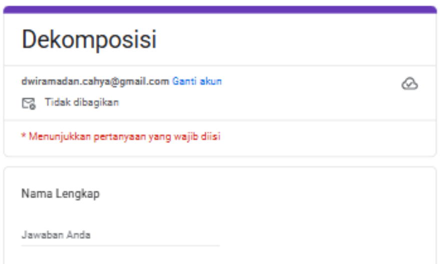
Table 10. Small Group Students' Comments and Suggestions

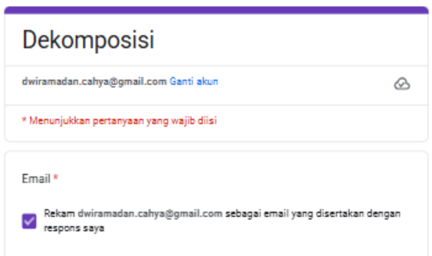
No	Student	Comment
1	DW	The Student Worksheets are easy to complete and enjoyable.
2	MK	The Student Worksheets pique my interest in learning.
3	AH	I have just learned that Computational Thinking can be applied in mathematics.
4	NHA	The Student Worksheets include instructional videos that help me understand the material.
5	DA	I understand the material more easily using the Student Worksheets.
6	AKP	The videos make it easier for me to understand the material.

Their comments, summarized in **Table 10**, indicate that the digital Student Worksheets were easy to use, engaging, and motivating. One student stated that this was their first exposure to applying CT in mathematics learning. Based on student feedback about repetitive name entry in Google Forms, the researcher revised the form to automatically collect email addresses, resulting in Prototype III (**Table 11**).

Table 11. Revision Decisions at the Small Group Stage

Prototype II	Prototype III
Students were required to enter their full names in the Google Form repeatedly.	The Google Form was revised to automatically collect email addresses, allowing names to be recorded without repeated manual entry.





The results of the practicality questionnaire are presented in **Table 12.**

Table 12. Practicality of the Digital Student Worksheet

No	Assessed Aspect	Mean Score	Practicality (%)
1	Effectiveness	4.29	85.83
2	Attractiveness	4.29	85.83
3	Implementation	4.33	86.67
Average		4.28	86.11
Practicality Category		Very Practical	

The practicality test results indicate that the CT-based digital Student Worksheets fall into the very practical category, with an average score of 86.11%. Each assessed aspect's effectiveness (85.83%), attractiveness (85.83%), and implementation (86.67%) achieved high and relatively consistent scores. The high effectiveness score suggests that students perceived the digital Student Worksheets as easy to use and helpful in understanding CT-based problem-solving steps. The attractiveness aspect also received a high score, as the digital Student Worksheets are supported by engaging visual design, integration of South Sumatra cultural context, and the inclusion of instructional videos that enhance students' motivation and engagement. In terms of implementation, the highest score was achieved because students found the instructions easy to follow, the navigation of the digital Student Worksheets clear, and all digital components accessible after the revision process.

The practicality test results show that the CT-based digital Student Worksheets achieved an average score of 4.28, with a practicality level of 86.11%, placing it in the very practical category. This finding is consistent with the study by Niswandia et al. (2024), which reported an average practicality score of 90.89%, is also categorized as very practical. Similarly, the results align with the study by Ostian et al. (2023) This obtained a practicality score of 86.25%, likewise classified as very practical. Therefore, the practicality level of the digital Student Worksheets in this study is consistent with previous findings, indicating that the CT-based digital Student Worksheets are highly feasible and suitable for instructional practice.

CONCLUSION

This study developed CT-based digital Student Worksheets that incorporate the cultural context of South Sumatra to teach the surface area and volume of prisms. Based on the development process through self-evaluation, expert review, one-to-one, and small group stages, the digital LKPD was categorized as very valid (85.37%) and very practical (86.11%). These results indicate that the product meets feasibility standards in terms of content, design, language, and CT- and numeracy-based activity structure. The activities were designed to integrate CT indicators: decomposition, pattern recognition, abstraction, and algorithms, while simultaneously facilitating students' numeracy skills. The use of South Sumatra cultural contexts helped students relate prism concepts to real-life objects, making learning more meaningful and contextual. However, this study has limitations, including a limited number of participants and the absence of large-scale effectiveness testing, particularly regarding improvements in students' numeracy skills. Additionally, the cultural context focused solely on South Sumatra and does not represent Indonesia's cultural diversity. Future studies are recommended to conduct effectiveness testing in real classroom settings, involve larger and more diverse samples, and explore the development of CT- and numeracy-based digital Student Worksheets for other geometry topics or different regional cultural contexts.

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