



**ANALYSIS OF THE 2020 BEBRAS INDONESIA CHALLENGE TASKS FOR
ELEMENTARY SCHOOL LEVEL**

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Received: 2025-05-26 Accepted: 2026-02-16 Published: 2026-04-29

Abstract

Bebras Challenge (BC) is an international challenge/competition aimed at promoting computational thinking and informatics among school-age students. The implementation of BC in Indonesia has shown that elementary school students' performance is not yet optimal. This study aims to analyze the appropriateness of the difficulty level of the 2020 Indonesian BC tasks for elementary school students (SiKecil and Siaga categories), as well as to identify words that may hinder students' comprehension of the BC tasks. The research was conducted through two stages of review involving 27 BC 2020 tasks and eighteen elementary school teachers from diverse backgrounds. The teachers were asked to evaluate the level of task attractiveness, the clarity of the problem statements, the clarity of the solution explanations, and the appropriateness of the difficulty level. They were also invited to provide feedback on vocabulary that might be difficult for students to understand. The statistical analysis indicates that, overall, the difficulty levels of the tasks were appropriate for the intended age categories. However, several terms—both informatics-related and general terms such as horizontal, vertical, and intersecting—were found to potentially hinder students' comprehension of the BC tasks. Revisions to the BC tasks and their explanations were shown to improve comprehension levels for most of the problems. This study contributes by recommending the involvement of elementary school teachers in reviewing translated tasks before their nationwide implementation and by providing an evaluative basis for improving the quality of Indonesian BC tasks at the elementary school level.

Keywords: *Bebras Challenge, Bebras Task, Indonesia's Informatics Education, Primary students.*

How to cite (in APA style): Natali, V., Natalia, & Adithia, M. T. (2026). Analysis of the 2020 Bebras Indonesia challenge tasks for elementary school level. *Jurnal Pendidikan Informatika Dan Sains*, 15(1), 1–16. <https://doi.org/10.31571/saintek.v15i1.9016>

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DOI: 10.31571/saintek.v15i1.9016

INTRODUCTION

Informatics is a newly established subject within the national curriculum aimed at providing a foundation in computational thinking, a problem-solving competency that is essential in the contemporary era. This subject is also designed to foster logical reasoning, analytical skills, and data interpretation abilities required for literacy, numeracy, and scientific literacy. Furthermore, it equips students with programming skills that support modeling and simulation in computational science through the use of Information and Communication Technology (ICT) (Aditomo, 2021). Nevertheless, disparities in access to and mastery of technology in Indonesia, including limitations in



internet infrastructure and digital devices, continue to influence the quality of education (Hariro, et al., 2024).

Computational thinking (CT) refers to a problem-solving approach in which the solutions, when formulated, can be executed by a computer (Wijanto, et al., 2021). CT is developed with consideration of the inherent limitations of computational processes performed by both humans and machines. Accordingly, CT involves multiple levels of abstraction, ranging from understanding the problem to proposing solutions that are effective, efficient, and optimal. CT is intended for all individuals, not exclusively for computer scientists (Wing, 2006). (Li, et al., 2020) further argue that CT should not be exclusively associated with programming or professions in computer science. The four foundational components of CT are abstraction, algorithms, decomposition, and pattern recognition. Within the Indonesian curriculum, CT is explicitly taught through the Informatics subject at the junior and senior secondary levels. At the elementary level, CT is integrated into Indonesian Language, Mathematics, and Natural and Social Sciences (Ilmu Pengetahuan Alam dan Sosial - IPAS) (Badan Standar, 2021).

Bebras (Lithuanian for “beaver”) is an international educational community dedicated to promoting informatics and CT among school-aged students (Dagienė & Sentance, 2016). The Bebras Challenge (BC) is an annual initiative launched in 2004 to provide tasks that incorporate concepts of informatics and/or CT to students at the primary and secondary levels (Dagiene, Stupuriene, Vinikiene, & Zakauskas, 2017). Currently, BC is organized by more than 60 countries (Bebras, 2025). Indonesia joined the Bebras community and began administering the BC in 2016.

Each BC problem, referred to as a Bebras Task, is categorized according to age group and level of difficulty. The criteria for a Bebras Task include the following: it can be solved without prior formal instruction in informatics, it can be completed within three minutes, the problem statement is clearly comprehensible, and it can be solved without the use of a computer (Dagiene & Futschek, 2008). Therefore, the BC is considered an appropriate medium for introducing CT and informatics, as it aligns with the concept of unplugged computing—namely, the introduction of computing concepts without the physical use of computers (Busuttil & Formosa, 2020). The concept of unplugged computing has long been introduced in education (Caeli & Yadav, 2019). Empirical studies have demonstrated that unplugged approaches to introducing CT are effective for students (Tsarava, et al., 2017), (Delal & Oner, 2020). (Cáceres, Marcelino, El-Hamamsy, & Barroso, 2024) and (Pršala, 2024) provides evidence of the effectiveness of Bebras Tasks in introducing CT through unplugged methods.

Several countries have conducted analyses of the implementation and outcomes of the BC within their respective contexts. (Bellettini, et al., 2015) for instance, examined the alignment between the difficulty levels proposed by the international Bebras committee and the actual performance of Italian BC participants. Evaluating the appropriateness of task difficulty across age categories is essential to ensure that the BC is neither perceived as excessively difficult nor overly simplistic. (Soojin, Yongju, Seulgi, Doyong, & Inkee, 2018) analyzed the results of the Korean BC to assess the CT competencies of elementary school students in Grades 3–4 and Grades 5–6.

In Indonesia, the BC (also called *Tantangan Bebras*) is organized into four age categories: *SiKecil* (up to Grade 3), *Siaga* (Grades 4–6), *Penggalang* (Grades 7–9), and *Penegak* (Grades 10–12). Pada (Natali, Natalia, & Nugraheni, 2023) reported that Indonesian students tend to experience difficulties in solving BC tasks. Nonetheless, participation in BC Indonesia has shown consistent growth, increasing from 1,553 participants in 2016 to 46,400 participants in 2024 (Indonesia, 2025). (Ayub, et al., 2021), (Tresnawati, et al., 2024), (Rulyansah, Mardhotillah, Budiarti, Authar, & Firdhausyah, 2023) indicate that BC Indonesia has been actively promoted by various stakeholders beyond major urban centers. As a result, the BC has reached a broader population and serves as a strategic platform for introducing informatics and CT to Indonesian students. Following each BC implementation, Bebras Indonesia publishes a compilation of tasks accompanied by detailed solutions.

In several BC implementations, Bebras Indonesia has reported that some students encountered difficulties in comprehending the problem statements. (Yıldırım, Yıldız, & Ateş, 2011) concluded that vocabulary knowledge significantly influences students' comprehension of written texts. Similarly, (Hanifah, Suseno, & Anwar, 2022), a study conducted in Indonesia found that 27 out of 30 elementary school students reported frequently encountering unfamiliar or difficult vocabulary in the books they read.

Drawing upon the findings of (Natali, Natalia, & Nugraheni, 2023) and (Yıldırım, Yıldız, & Ateş, 2011), the present study aims to analyze the appropriateness of BC task difficulty levels for elementary school age categories. Specifically, it seeks to determine whether students' difficulties in solving BC tasks stem from tasks that exceed their cognitive developmental level or from the presence of terminology that is linguistically challenging for elementary school students, thereby impeding comprehension. The tasks analyzed in this study are drawn from the 2020 BC. In that year, for the first time, the elementary school category in BC Indonesia was divided into two subcategories, as a six-year age span was considered too broad compared to the secondary level. These two categories were selected because SiKecil and Siaga include the youngest participants, whose vocabulary repertoire may still be relatively limited.

METHOD

Based on the formulated research objectives, an approach is required that is capable of evaluating both the conceptual and linguistic aspects of the BC tasks. The stages of this study are presented in Figure 1.

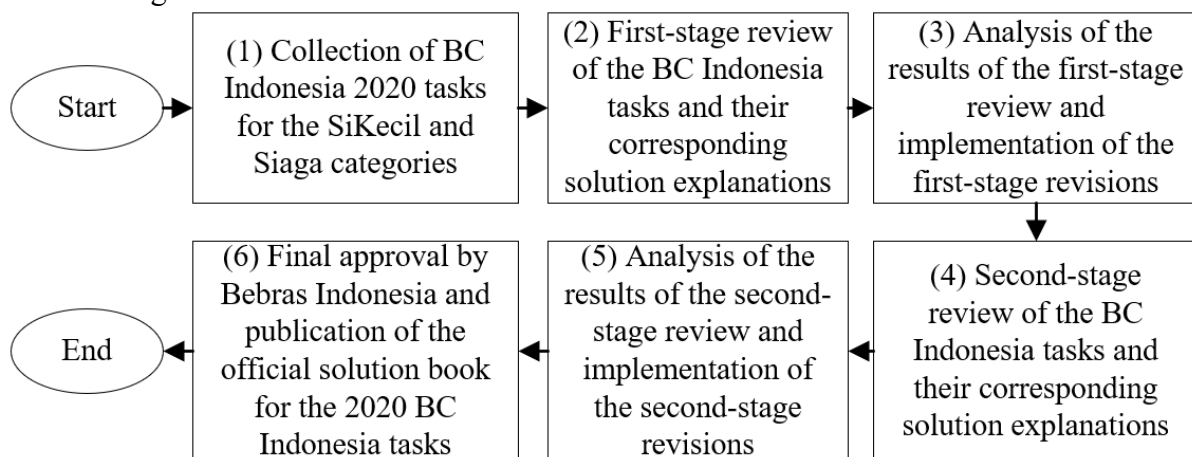


Figure 1. Research Stages

In Indonesia, the Bebras Challenge (BC) is administered in two languages, namely Indonesian and English. The following section describes each stage of the research as illustrated in Figure 1.

1. Stage (1) commenced with obtaining formal permission from Bebras Indonesia to use the 2020 BC Indonesia tasks, specifically for the SiKecil and Siaga categories, as research material. The required materials included not only the tasks administered during the Indonesian BC implementation but also the complete versions provided by the international Bebras organization. During the BC implementation in Indonesia, participants are only able to access the problem description, the question, and the answer options (for multiple-choice or multiple-answer items). In contrast, the full international Bebras Task versions include detailed explanations for each item. The output of Stage (1) was a draft book containing the 2020 BC tasks along with their solution explanations translated into Indonesian.
2. Stage (2) involved a review conducted by the internal Bebras Indonesia team, who had previously served as reviewers for the official BC Indonesia solution books from 2016 to 2019.
3. Based on the findings from Stage (2), revisions were carried out by the researcher in Stage (3).

4. In Stage (4), a further review was conducted on two versions of the 2020 BC task manuscript: (a) the initial draft produced in Stage (1), consisting of unrevised tasks and explanations, and (b) the revised version resulting from Stage (3). One of the primary objectives of this stage was to determine whether the revised version was more appropriate for elementary school students.

Stage (4) involved eighteen elementary school teachers from various schools, including both those with an informatics background and those without. The teachers were divided into four groups: (a) reviewers of the unrevised SiKecil draft, (b) reviewers of the unrevised Siaga draft, (c) reviewers of the revised SiKecil draft, and (d) reviewers of the revised Siaga draft.

The reviewers of the unrevised and revised drafts were assigned separately to avoid potential bias or stigma suggesting that the revised version would necessarily be superior to the original, which might have influenced survey ratings. The teachers were not informed whether the draft they received was the revised or unrevised version. This procedure was implemented to preserve the objectivity of the survey results. Some teachers volunteered to review both the SiKecil and Siaga categories. A teacher was permitted to review more than one age category, depending on their willingness.

5. Based on the results of Stage (4), statistical analyses were conducted to examine the level of task attractiveness, appropriateness of task difficulty, clarity of problem statements, and clarity of solution explanations. The statistical analysis aimed to compare the quality of the book before and after revision. Additionally, Stage (5) revealed that a considerable number of words and phrases were insufficiently comprehensible for elementary school students. A second round of revisions was therefore undertaken, incorporating feedback and comments from the teacher reviewers.
6. In Stage (6), the finalized draft of the 2020 BC Indonesia task book was submitted to Bebras Indonesia for final review and formal approval for publication under the name of Bebras Indonesia.

Through this procedure, both quantitative and qualitative evaluation data were obtained. These data were subsequently analyzed to identify patterns in the appropriateness of task difficulty and potential linguistic barriers. The results of this analysis are presented in the following section.

RESULTS AND DISCUSSION

This section presents the research findings, including analyses of task difficulty, level of attractiveness, clarity of problem statements, and the identification of vocabulary that may potentially hinder students' comprehension. The discussion is based on the results obtained from the research stages illustrated in Figure 1.

Results of the Collection of BC Indonesia Tasks for the SiKecil and Siaga Categories, First-Stage Review, and Revision

At this stage, twelve tasks were successfully collected for the SiKecil category and fifteen tasks for the Siaga category. These tasks originated from various countries, including United States, Solomon Islands, Uruguay, Iceland, Canada, Lithuania, Hungary, Switzerland, Ireland, India, Latvia, Slovakia, Belgium, Portugal, and Pakistan. All Bebras Tasks from these countries were presented in a standardized format, as illustrated in Figure 2.

Each task consists of several components: (1) the body, which provides the problem description; (2) the question or challenge; (3) answer options or an interactivity description; (4) the answer explanation; (5) "It's Informatics," which outlines the informatics concept underlying the task; (6) Keywords and Websites, offering references for further study; (7) Wording and Phrases, providing clarification of specific terms when necessary; (8) comments, containing notes from international review processes; and (9) Graphics and Other Files as well as Authors and Contributors (including graphics), which identify image sources, task authors, and contributors (e.g., graphic designers).

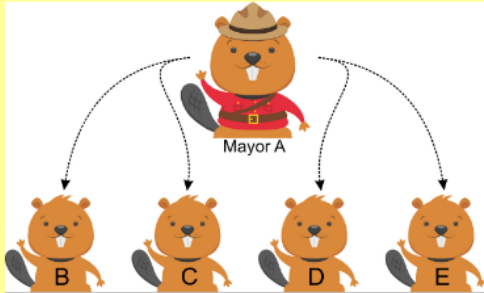
2020-PK-08-eng Whispering					
6yo–8yo: ■	8yo–10yo: hard	10yo–12yo: medium	12yo–14yo: easy	14yo–16yo: easy	16yo–19yo: ■
Answer Type: Multiple-Choice					
Categories (click to choose):			<input type="checkbox"/> computer processes and hardware <input type="checkbox"/> communication and networking <input type="checkbox"/> interactions, systems and society		
<input checked="" type="checkbox"/> algorithms and programming data <input checked="" type="checkbox"/> data structures and representations					
Body					
					
<p>New information about wood prices got into Beaver's town and only the beaver mayor A knows it at the moment. He needs to share it with his four counselors, but, because of strict safety reasons and ranks involved, there are certain rules:</p> <ul style="list-style-type: none"> • Beaver C has to find out BEFORE beaver D. • Beaver B has to find out AFTER beaver C. • Beaver D has to find out AFTER beaver B. • Beaver E has to find out AFTER beaver D. <p>Before means anytime before, doesn't have to be exactly the beaver that found out before him.</p>					
Question / Challenge					
What is the correct order in which the information passes to all the counselors, without breaking the rules?					
Answer Options / Interactivity Description					
A) B, C, D, E	B) C, D, B, E	C) C, B, D, E	D) C, D, E, B		

Figure 2. Partial View of Bebras Task in International Template

In the 2020 BC Indonesia solution book, the sections included were the body, question/challenge, answer options/interactivity description, and answer explanation. All sections were translated into Indonesian. The first-stage review identified several issues requiring revision, such as excessively long sentences that could be difficult for elementary school students to comprehend. Revisions were also made to the answer explanation section. Initially, this section closely followed the explanation provided in the international version. However, the first-stage review indicated that some explanations were likely to be challenging for elementary students. Consequently, the answer explanations for each task were revised to provide more detailed step-by-step reasoning and to employ vocabulary more appropriate to elementary-level students. The outcome of this stage was a revised draft of the solution book that had undergone internal review.

Results of the Second-Stage Review of the 2020 BC Indonesia Solution Book

The second-stage review was conducted by distributing a survey to eighteen elementary school teachers. For each task, teachers were asked to respond to the questions presented in Table 1.

Table 1. Survey Questions in Phase Two Review

No	Question	Answer Options
1	Level of task attractiveness	Not interesting Less interesting Interesting Very interesting
2	The question is easy to understand	Disagree Less disagree Agree Strongly agree
3	Answer explanation is easy to understand	Disagree Less disagree Agree Strongly agree
4	Suitability of difficulty level	Disagree Less disagree Agree Strongly agree

In addition to closed-ended questions, the survey included short-answer items asking teachers to identify “words that may not be understood by students” and to provide suggestions for improving those terms. Examples of survey responses are presented in Table 2.

Table 2. Example of Survey Response Results in Phase Two Review

No	BC Code	Title	Level of task attractiveness	The question is easy to understand	Answer explanation is easy to understand	Suitability of difficulty level	Words that are difficult for students to understand	Suggestions for improvement
1	2020-SK-04	Where it can Fly?	Interesting	Agree	Agree	Agree	horizontal, vertikal (horizontal, vertical)	explanation of horizontal lines (horizontal/left-right) and vertical lines (top to bottom)
2	2020-US-03	Zoo Animals	Interesting	Less agree	Agree	Agree	-	explanations with pictures can be included with explanations of animal names
3	2020-UY-01	Footprint	Interesting	Agree	Agree	Agree	-	-
4	2020-IS-02	Teddy Bear Hunt	Interesting	Agree	Agree	Agree	menelusuri (walking along)	Explanations of “walking along the route” can be added with descriptions of the route or

No	BC Code	Title	Level of task attractiveness	The question is easy to understand	Answer is easy to understand	Suitability of difficulty level	Words that are difficult for students to understand	Suggestions for improvement
5	2020-CA-01	Skyline	Interesting	Agree	Agree	Agree	Directions of the road taken. didaftarkan (listed)	Explanation of the word listed can be replaced with the word sorted
6	2020-LT-10	Dotted Blocks	Interesting	Agree	Agree	Agree	trailer	the word trailer can be replaced with the word additional carrier/carriage

For data analysis purposes, the response options in the survey were converted into numerical values: 1 for “not interesting/disagree,” 2 for “less interesting/less agree,” 3 for “interesting/agree,” and 4 for “very interesting/strongly agree.”

Survey Result for SiKecil Category

Figure 3 shows the results for the suitability of the statement “Level of task attractiveness”.

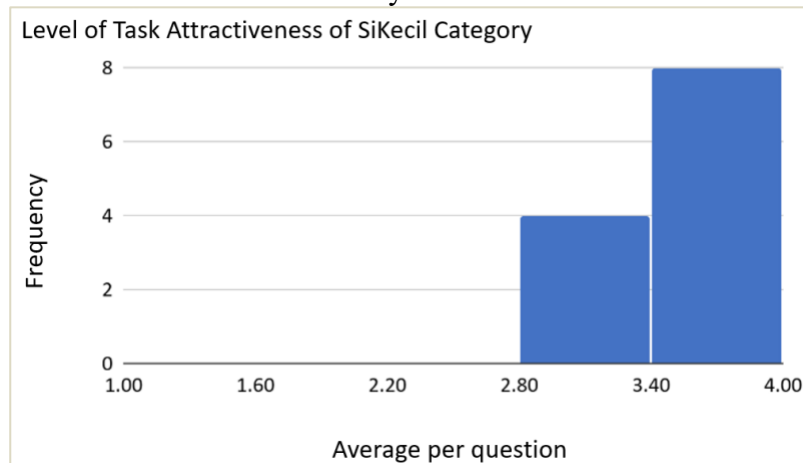


Figure 3. Survey Result for “Level of Task Attractiveness” SiKecil Category

The statistical summary of the attractiveness level of the SiKecil category questions is as follows: average: 3.5; standard deviation: 0.2; minimum: 3.3; maximum: 3.8.

Figure 4 shows the result for “The question is easy to understand” question.

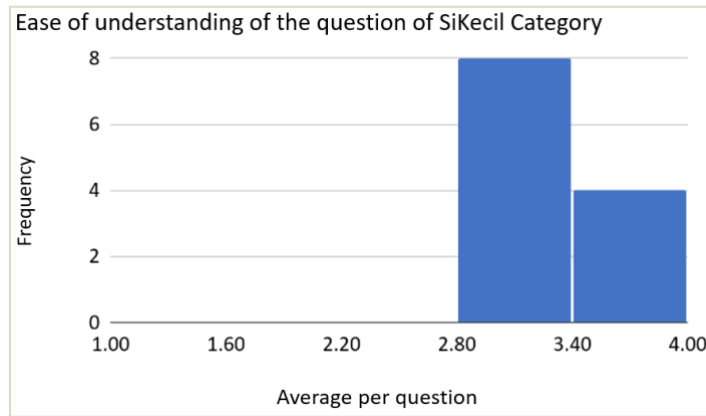


Figure 4. Survey Result for Ease of Understanding of the question SiKecil Category

The statistical summary of ease of understanding of the question of the SiKecil category questions is as follows: average: 3.175; standard deviation: 0.32; minimum: 2.8; maximum: 3.7.

Figure 5 shows the result for “Answer explanation is easy to understand” question.

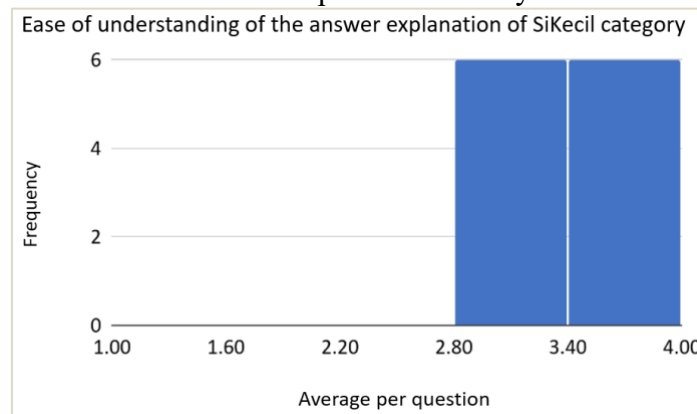


Figure 5. Survey Result for Ease of Understanding of the Answer Explanation SiKecil Category

The statistical summary of ease of understanding of the “answer explanation of the SiKecil category questions is as follows: average: 3.3; standard deviation: 0.2; minimum: 2.9; maximum: 3.6.

The results for the “Suitability of difficulty level” in the SiKecil category are shown in Figure 6.

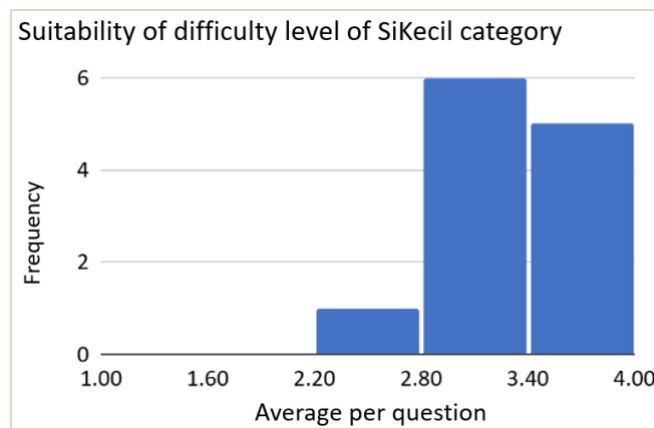


Figure 6. Survey Result for Suitability of difficulty level of SiKecil Category

The statistical summary of suitability of difficulty level in the SiKecil category questions is as follows: average: 3.28; standard deviation: 0.3; minimum: 2.7; maximum: 3.7.

The statistics presented in Figures 3 through 6 indicate that, in general, there are no issues with the selection of questions for the SiKecil category. The questions are appropriate for BC Indonesia participants up to Grade 3 of elementary school. Based on the results of the first-stage review, three questions were revised in the sections concerning the question explanations and the answer explanations. The changes in the level of question comprehension and the level of comprehension of the answer explanations can be seen in Table 3 and Table 4.

Table 3. Comparison of the Level of Understanding of the Revised Task in the SiKecil Category

Task Title	Average before Revision	Average after Revision	Difference
Where it can Fly?	3.2	3.8	0.6
Street	2.8	2.8	0.0
Pancake	2.8	3.2	0.4

Table 4. Comparison of the Level of Ease of Understanding of Answer Explanation in the SiKecil Category

Task Title	Average before Revision	Average after Revision	Difference
Where it can Fly?	3.2	3.8	0.6
Street	3.2	2.6	-0.6
Pancake	3.2	3.6	0.4

Based on Tables 3 and 4, the findings indicate that, overall, the revisions contributed to an improvement in the level of comprehension of both the questions and their corresponding answer explanations. However, for the item entitled “Street” the post-revision score showed a decline. Further examination revealed a typographical error in the street name describing the location of the house, which led to ambiguity. This error was subsequently corrected prior to the publication of the solutions manual.

Survey Results for the Siaga Category

Figure 7 shows the results for the suitability of the statement “Level of task attractiveness”.

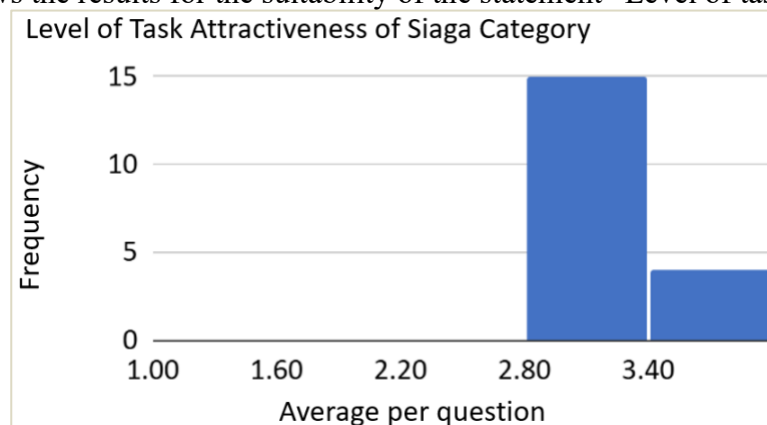


Figure 7. Survey Result for “Level of Task Attractiveness” Siaga Category

The statistical summary of the attractiveness level of the Siaga category questions is as follows: average: 3.3; standard deviation: 0.22; minimum: 3; maximum: 3.75.

Figure 8 shows the result for “The question is easy to understand” question.

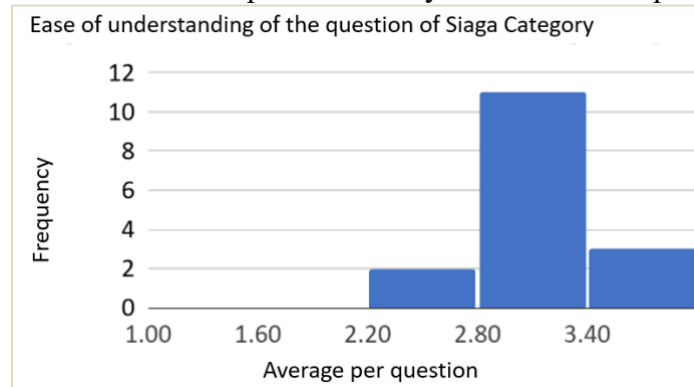


Figure 8. Survey Result for Ease of Understanding of the question Siaga Category

The statistical summary of ease of understanding of the question of the Siaga category questions is as follows: average: 3.1; standard deviation: 0.29; minimum: 2.625; maximum: 3.5.

Figure 9 presents the survey results on “Answer explanations are easy to understand” question.

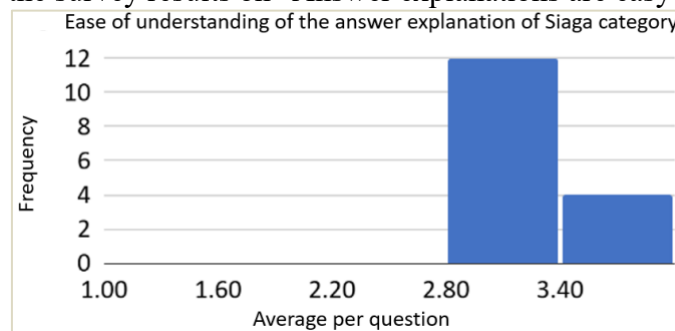


Figure 9. Survey Result for Ease of Understanding of the Answer Explanation Siaga Category

The statistical summary of ease of understanding of answer explanation of the Siaga category questions is as follows: average: 3.23; standard deviation: 0.2; minimum: 2.875; maximum: 3.623.

The results for the “Suitability of difficulty level” in the SiKecil category are shown in Figure 10.

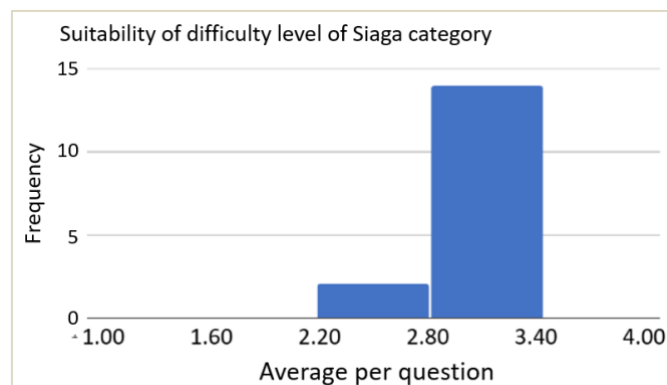


Figure 10. Survey Result for Suitability of difficulty level of Siaga Category

The statistical summary of suitability of difficulty level in the Siaga category questions is as follows: average: 3.07; standard deviation: 0.18; minimum: 2.75; maximum: 3.375.

Based on the survey results, the level of comprehension of the Siaga category questions is slightly lower than that of the SiKecil category. Nevertheless, the average scores remain above three, indicating that survey respondents agree the questions are still understandable for BC Indonesia participants in Grades 4 to 6 of elementary school. The perceived difficulty of the questions is also considered appropriate for the Siaga age group. Similarly, no significant issues were observed regarding the attractiveness of the questions or the clarity of their answer explanations.

For the Siaga category, six questions were revised following the first-stage review. The evaluation of changes in question comprehension between the pre-revision and post-revision versions is presented in Table 5.

Table 5. Comparison of the Level of Understanding of the Revised Task in the Siaga Category

Task Title	Average berfore Revision	Average after Revision	Difference
Calendar	3.00	2.80	-0.20
Where it can Fly?	3.00	3.20	0.20
Bowls	2.30	3.40	1.10
Polly's Pet	2.67	3.00	0.33
Whispering	3.00	3.20	0.20
Towns dan Highways	3.30	3.00	-0.30

The assessment of changes in the comprehension of the question explanations between the pre-revision and post-revision versions is presented in Table 6.

Table 6. Comparison of the Level of Ease of Understanding of Answer Explanation in the Siaga Category

Task Title	Average berfore Revision	Average after Revision	Difference
Calendar	3.00	3.00	0.00
Where it can Fly?	3.00	3.80	0.80
Bowls	2.30	3.60	1.30
Polly's Pet	2.30	3.20	0.90
Whispering	2.67	3.20	0.53
Towns dan Highways	3.30	3.00	-0.30

Based on Tables 5 and 6, the revisions generally improved the level of understanding of both the questions and their explanations in the Siaga category. However, two items in Table 5—"Calendar" and "Towns and Highway"—as well as the item "Towns and Highway" in Table 6, exhibited a decline in scores. The discussion regarding these decreases is provided in the following section.

Analysis of the Language Used in the BC Indonesia 2020 Questions for the SiKecil and Siaga Categories

This study was initially intended to analyze the use of computer science terminology in the BC Indonesia questions, such as stack (*tumpukan*), queue (*antrian*), and data sorting (*pengurutan data*). However, after the survey was distributed, it was found that there were other words, beyond computer science terms, that were difficult for elementary school participants to understand. Several examples of words that were challenging for students, along with suggested improvements from teachers, are presented in Table 7.


Table 7. Examples of Terms Difficult for Elementary School Students and Recommended Revisions (the Words and Suggestions are given in Indonesian)

No	Task Title	Difficult Words/Terms	Revision Suggestion
1	Where it can Fly?	Horizontal, vertikal	Penjelasan garis horizontal (mendatar/kiri-kanan) dan garis vertikal (atas ke bawah) Ditambahkan keterangan untuk kata horizontal (mendatar), vertikal (tegak lurus)
2	Zoo Animals	petak beririsan	Kotak Berpotongan
3	Bear Selection	opsi	Pilihan
4	Dotted Blocks	<i>trailer</i>	Pengangkut/gerbong tambahan
5	Teddy Bear Hunt	menelusuri	Penjelasan menelusuri jalan dapat ditambahkan dengan keterangan kata rute atau arah jalan yang dilewati

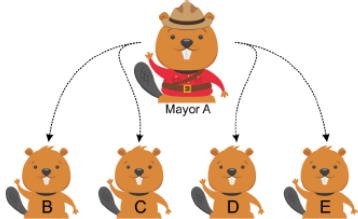
Based on Table 7, it was found that even after the first-stage review, several errors and terms that were difficult for BC Indonesia participants at the elementary school level remained. This may have contributed to the decreases in scores observed in the teacher survey results, as reported in Tables 3 through 6. These findings indicate that the appropriateness of the difficulty level is not determined solely by the complexity of the computer science concepts, but is also influenced by the accompanying linguistic factors.

BC Indonesia 2020 Question Discussion Book

This section presents sample pages from the book produced through this research, shown in Figures 11(a) and 11(b). The book includes sections containing the question description, Challenge, multiple-choice options (if applicable), the correct answer under “Correct Answer” along with an explanation of how the answer was derived, the question author listed under “Authorship,” and licensing information under “License.” The book can be freely downloaded from the Bebras Indonesia website to serve as a learning resource for anyone in need. The published book reflects the revisions made during the second-stage review, based on suggestions and improvements provided by teachers.


Berbisik

SIAGA (SD)
 2020-PK-08



Informasi harga balok kayu yang terkini hanya disampaikan ke Bapak Walikota yaitu Mayor A. Ia perlu membagikan informasi tersebut ke 4 anak buahnya, tapi karena alasan keamanan, harus mengikuti beberapa aturan:

- Bebras C harus tahu SEBELUM bebras D
- Bebras B harus tahu SETELAH bebras C.
- Bebras D harus tahu SETELAH bebras B.
- Bebras E harus tahu SETELAH bebras D.

SEBELUM artinya waktu sebelumnya, tidak harus yang urutannya persis sebelumnya.

Tantangan:
 Mana urutan informasi yang akan sampai ke anak buah tanpa menyalahi aturan tersebut?

Pilihan Jawaban:

A. C, D, E, B
 B. C, D, B, E
 C. C, B, D, E
 D. B, C, D, E






Jawaban yang tepat:
 C

Penjelasan:
 Pada aturan pembagian informasi terdapat dua kata kunci, yaitu SEBELUM dan SETELAH. Pada setiap aturan, terdapat dua nama bebras, yaitu bebras1 dan bebras2. Sebagai contoh: pada aturan "Bebras C harus tahu sebelum bebras D", artinya bebras1 adalah bebras C, bebras2 adalah bebras D. Kita dapat menyelesaikan persoalan ini dengan:

1. Jika kalimat aturan menggunakan kata SEBELUM, yaitu bebras1 SEBELUM bebras2, maka kita akan meletakkan bebras1 di sebelah kiri bebras 2.
2. Jika kalimat aturan menggunakan kata SETELAH, yaitu bebras1 SETELAH bebras2, maka kita akan meletakkan bebras1 di sebelah kanan bebras 2.

Berdasarkan cara tersebut, berikut adalah penjelasan urutan penyampaian informasi untuk bebras B, C, D, dan E.

Figure 11a. Part of the 2020 BC Indonesia Question Discussion Book, Siaga Category

Kalimat	Ilustrasi
Bebras C harus tahu SEBELUM bebras D	
Bebras B harus tahu SETELAH bebras C	
Bebras D harus tahu SETELAH bebras B	
Berdasarkan tiga kalimat sebelumnya, kita dapat menentukan posisi anak buah Mayor A	
Bebras E harus tahu SETELAH bebras D	

Jawaban yang benar adalah C, B, D, E.

Jawaban A melanggar aturan Bebras D harus tahu SETELAH bebras B.
 Jawaban B melanggar aturan Bebras D harus tahu SETELAH bebras B.
 Jawaban D melanggar aturan Bebras B harus tahu SETELAH bebras C.

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Figure 11b. Part of the 2020 BC Indonesia Question Discussion Book, Siaga Category

The research findings, indicating that the overall difficulty level of the questions aligns with the participants' age categories, suggest that the low performance of elementary school students in BC Indonesia is not solely attributable to the complexity of the computer science concepts being tested. This observation aligns with the study by Bellettini et al. (2015), which emphasized the importance of analyzing the appropriateness of question difficulty based on participant characteristics. In the context of this study, although the questions met the Bebras Task criteria as formulated by Dagiene & Futschek (2008), linguistic factors were shown to play a significant role in comprehension. Thus, these findings extend previous research by demonstrating that conceptual appropriateness of difficulty does not necessarily guarantee question understandability if linguistic aspects are not fully adapted to participants' language development.

Furthermore, the identification of common terms such as horizontal, vertical, and intersecting as comprehension barriers reinforces the findings of Yıldırım et al. (2011), who reported that vocabulary proficiency strongly affects text comprehension. This is also consistent with Hanifah et al. (2022), who noted that Indonesian elementary students frequently encounter vocabulary that is difficult to understand in reading materials. In the context of Bebras, which is designed as a broad and inclusive tool for developing computational thinking (Wing, 2006; Li et al., 2020), these results underscore that successful implementation depends not only on the conceptual design of the questions but also on linguistic adaptation that matches students' cognitive and literacy development stages. Therefore, involving elementary school teachers in the translation review process is not merely a technical editorial step but a pedagogical strategy to bridge the gap between international design standards and the local literacy context.

CONCLUSION

Based on the research conducted, it was found that the selection of questions and their difficulty levels for the 2020 Bebras Indonesia SiKecil and Siaga categories are generally appropriate for the target age groups. It was also observed that the translation of BC Indonesia questions from English, carried out by the Bebras Indonesia Question Team, which consists of university lecturers, resulted in the use of terms that remain difficult for elementary school students to understand. Words that are not understood by participants can potentially prevent them from answering the questions correctly.

The results of this study provide recommendations for improvement, namely involving teachers as reviewers of the translated questions prepared by the Bebras Indonesia Question Team before they are used in the national BC Indonesia competition. Furthermore, it is suggested that similar studies be conducted with the inclusion of student respondents.

ACKNOWLEDGMENT

The author would like to express gratitude to the former Chair of Bebras Indonesia (Inggriani Liem), Chair of Bebras Indonesia (Adi Mulyanto), and the National Bebras Indonesia Team for granting permission to conduct this research.

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