

Assessing SRBP-Based Instructional Materials: An Expert Judgment Approach

Muhammad Nurrahman, Sri Marmoah, Kartika Chrysti Suryandari

Universitas Sebelas Maret
muhammadfnurrahman@student.uns.ac.id

Article History

accepted 1/8/2025

approved 1/9/2025

published 1/10/2025

Abstract

The quality of elementary education is strongly influenced by the availability of instructional materials that are relevant, engaging, and aligned with learners' needs. This study aims to develop and validate a digital instructional material for Natural and Social Sciences (IPAS) based on the Scientific Reading Based Project (SRBP) approach, which integrates scientific literacy and project-based learning principles. The research employed a development methodology, involving analysis, design, development, and expert validation stages. Three groups of validators conducted expert judgment: subject-matter experts, media experts, and language experts, who covered aspects of content relevance, accuracy, visual presentation, media navigation, and linguistic quality. The results indicate that the instructional product meets the "good" category, with an average feasibility score of 79.2%. These findings suggest that the material is suitable for classroom implementation, with minor revisions needed, particularly in content accuracy, interactive language features, and visual design balance. The study concludes that the SRBP model effectively supports active, contextual, and literacy-oriented learning in elementary education. Further field testing is recommended to examine the material's practical impact on fostering 21st-century skills among students.

Keywords: *Scientific Reading Based Project (SRBP), Instructional Materials Development, Validity Assessment, Expert Judgment, Educational Material Design*

Abstrak

Kualitas pembelajaran di sekolah dasar sangat dipengaruhi oleh ketersediaan bahan ajar yang relevan, menarik, dan sesuai dengan kebutuhan peserta didik. Pengembangan bahan ajar digital berbasis Scientific Reading Based Project (SRBP) bertujuan untuk meningkatkan kualitas pembelajaran Ilmu Pengetahuan Alam dan Sosial (IPAS) di sekolah dasar melalui pendekatan berbasis literasi saintifik dan proyek. Kajian ini bertujuan untuk menguji kelayakan produk bahan ajar yang telah dikembangkan melalui validasi oleh tiga kelompok ahli, yaitu ahli materi, ahli media, dan ahli bahasa. Penelitian ini menggunakan metode penelitian pengembangan dengan tahapan analisis, desain, pengembangan, dan validasi ahli. Instrumen validasi mencakup aspek kesesuaian isi, keakuratan materi, penyajian visual, navigasi media, serta kebahasaan. Hasil validasi menunjukkan bahwa bahan ajar berada dalam kategori "baik" dengan skor rata-rata kelayakan sebesar 79,2%. Temuan ini mengindikasikan bahwa bahan ajar telah layak digunakan dengan catatan revisi minor, terutama pada aspek akurasi konten, interaktivitas bahasa, dan keseimbangan desain visual. Kesimpulan dari kajian ini menegaskan bahwa pendekatan SRBP efektif untuk mendukung pembelajaran yang aktif, kontekstual, dan berbasis literasi ilmiah di tingkat sekolah dasar. Implikasi dari penelitian ini mengarah pada perlunya uji coba lebih lanjut di lapangan guna mengukur efektivitas implementasi bahan ajar dalam meningkatkan keterampilan abad ke-21 peserta didik.

Kata kunci: *Scientific Reading Based Project (SRBP), Pengembangan Bahan ajar, Uji Validitas, Penilaian Ahli, Desain Bahan Ajar*



PENDAHULUAN

The development of digital technology has opened up tremendous opportunities in various aspects of life, including education. The concept of Industrial Revolution 4.0 encourages the presence of automation, artificial intelligence, and digital connectivity as an important part in supporting human activities. Society 5.0 expands the role of technology to become the central element in shaping social solutions based on human values. This transformation makes the learning process more open, interactive, and integrated with various data sources and across disciplines (Nastiti & Abdu, 2020). Digital devices and information-based learning models are becoming increasingly dominant and inevitable. (Dewi & Sunarni, 2024).

The direction of national education policy shows a strong commitment to these changes through the implementation of the Merdeka Curriculum. This curriculum provides space for learning that is flexible, contextual and responsive to the times. Six basic literacies, including reading, science and digital literacy, become the primary foundation for building the ability to think and act strategically (Kemendikbudristek, 2024). Project-based learning strategies and the utilization of diverse learning resources encourage a more active and meaningful learning process. The development of contextual, integrative and literacy-based teaching materials is an important effort in supporting this curriculum transformation (Izzah et al., 2020).

Today's learning models are evolving to encourage mastery of 21st century skills, such as critical thinking, creativity, collaboration and communication. Various approaches are implemented to align the learning process with these demands. Scientific Reading Based Project (SRBP) is a relevant approach, as it combines scientific text comprehension with contextualized project activities (Suryandari, 2019). A number of studies have shown that this learning model can contribute to the improvement of science literacy and higher order thinking skills (Suryandari et al., 2019).

The availability of teaching materials that support the integration of scientific literacy and contextual approaches is beginning to receive wider attention. Recent studies have shown progress in the development and application of project-based approaches in science education. Kurt & Akoglu (2023) noted that the application of project-based learning (PBL) in science education continues to increase, although some still focus on learning design. The importance of developing teaching materials, especially at the primary and secondary levels, which are still relatively limited. (Fitzgerald & Evans, 2024; Megawati, 2024). The initial study in this study found that of the 12 science teaching material documents analyzed, four contained deep reading literacy activities and two of them included comprehension-based project activities. This finding provides an opportunity for further development to strengthen teaching materials to align with the principles of the Merdeka Curriculum.

The feasibility of teaching materials can be improved through a professional validation process by relevant experts. Validation includes aspects of content, language, and media as quality assurance in terms of substance and technical aspects. Expert validation is an important component in effective instructional development. (Gutiérrez-Castillo et al., 2023). Assessments from experts provide valuable input to improve the materials to suit user needs.

Validated teaching material products have an excellent opportunity to make a positive contribution to learning. Validation allows the development of teaching materials to be carried out in a directed and targeted manner. Approaches such as SRBP have the potential to be stronger if accompanied by a systematic validation process by competent parties, so that product quality is truly maintained.

Several studies support the effectiveness of the SRBP approach and expert validation in the development of teaching materials. Suryandari et al. (2021) articulated that SRBP is feasible to implement to improve critical and creative thinking. Zaturrahmi

et al. (2024) found that SRBP-based biophysics modules were able to train students' critical thinking skills. Sofiyan et al., (2020) showed that project-based teaching materials validated through the ADDIE model were effective in improving HOTS and students.

This study aims to develop and assess the validity of teaching materials based on Scientific Reading Based Project through assessments from material, language, and media experts. The assessment process is carried out using instruments that are prepared based on eligibility indicators according to their respective fields. The results of this study are expected to contribute to producing quality, integrative teaching materials, and in accordance with the spirit of the Merdeka Curriculum.

METODE

This research is a type of research and development (R&D) that uses the five-stage ADDIE development model: Analyze, Design, Development, Implementation, and Evaluation. The ADDIE model is a systematic framework for designing and validating learning instruments (Adeoye et al., 2024). The focus of this research is on the development and initial validation stages of teaching materials based on Scientific Reading-Based Project (SRBP). The research used a descriptive quantitative design, with the aim of obtaining an overview of the level of validity of teaching materials based on expert assessments using standardized instruments (Shakeel et al., 2023).

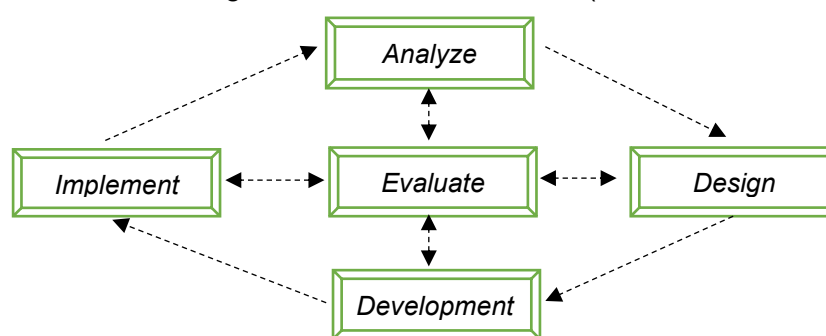


Figure 1 ADDIE's Model

The subjects in this study were validators who were selected by purposive sampling based on their field of expertise. The experts consisted of: Material experts, who come from the field of science education and have academic backgrounds and experience in curriculum development and science teaching materials; Linguists, who have competence in linguistics, educational language, and analysis of the readability of educational texts; Learning media experts, who have expertise in media design, learning technology, and the development of multimedia-based teaching tools or educational visuals.

The data collection technique was carried out through a validation sheet instrument developed based on aspects of instructional feasibility, including: content suitability, language accuracy, and visual quality of the media. Each aspect has an assessment indicator arranged in the form of a closed questionnaire with a 5-point Likert scale, namely: 1 (significantly less), 2 (less), 3 (enough), 4 (good), and 5 (very good). Each expert is asked to provide an assessment of the teaching material components in accordance with their field of expertise.

As a basis for decision making, the assessment results were then converted into a percentage and categorized based on the following intervals:

Table 1 Test Result Decision Making

No.	Score Interval	Criteria	Judgment
1	$81\% < \text{score} \leq 100\%$	Very good	No Need for Revision
2	$61\% < \text{score} \leq 80\%$	Good	Minor Revision
3	$41\% < \text{score} \leq 60\%$	Enough	Revision
4	$21\% < \text{score} \leq 40\%$	Less	Revision
5	$0\% < \text{score} \leq 20\%$	Very Less	Revision

This category is used to determine the extent of the feasibility of teaching materials and the form of improvement needed before further implementation in learning.

The data from the validation results were analyzed quantitatively descriptively by calculating the average score of each indicator and aspect, which was then converted into a validity level category using score interpretation guidelines. The results of this analysis are used as a basis for revising and improving teaching materials before they are used in trials or learning implementation.

HASIL DAN PEMBAHASAN

Produk yang Dihasilkan

Produk yang dihasilkan dalam penelitian ini berupa bahan ajar IPAS berbasis Scientific Reading Based Project (SRBP) yang dikembangkan dalam bentuk digital interaktif. Bahan ajar ini dirancang untuk mendukung pembelajaran IPAS di sekolah dasar dengan mengintegrasikan literasi sains dan aktivitas berbasis proyek. Produk yang dikembangkan dapat diakses secara digital melalui [uns.id/SRBP-Based Modul](https://uns.id/SRBP-Based_Modul), sehingga memudahkan guru maupun peserta didik dalam penggunaannya.



Figure 2 Sampul Modul Ajar berbasis SRBP



Figure 3 Halaman Pembuka



Figure 4 Halaman Panduan Praktis Pembelajaran



Figure 5 Halaman Sajian Materi Bencana Alam

Visually, the product has a **front and back cover** with an illustrative and proportional design that displays IPAS characters, while providing attraction for students. The initial section is equipped with a **table of contents** that is systematically compiled, making it easier for the reader to understand the flow and scope of the material. In the core part, **the teaching material** is presented through scientific readings combined with visual illustrations and equipped with simple project instructions that are contextual to daily life. Through this combination, students not only gain factual knowledge, but are also trained to think critically, creatively, and be able to relate science concepts to the reality around them.

In addition, this product is enriched with **interactive digital features** that provide a more engaging and enjoyable learning experience. The navigation is clearly and simply, supported by a selection of typography and color combinations that are comfortable to look at. The product also presents supporting media in the form of images, illustrations, and sounds to enrich understanding and increase students' motivation to learn. All of these aspects make SRBP-based IPAS teaching materials not only feasible in terms of content, but also attractive in design and applicability in digital learning.

Validation Test Results

IPAS teaching material products based on Scientific Reading Based Project (SRBP) are designed by paying attention to three main aspects of media feasibility, namely the size of teaching materials, cover design, and content design. The size aspect of teaching materials includes the suitability of the dimensions of teaching materials with ISO standards and their proportions to the content of the material. The cover design of teaching materials is evaluated through three indicators: layout, typography, and illustrations. The assessment of the layout includes the harmony of the composition of visual elements on the front and back cover, the centering of the view, and the proportional balance between text and images. Meanwhile, the typography of the cover is assessed from the readability and consistency of the selection of type and font size. Illustrations on the cover are assessed for their relevance to the material and their ability to reveal the character of the objects presented. Furthermore, the content design of teaching materials includes content layout, content typography, and digital application aspects. Content layout assesses the consistency of text and visual element placement, margins, title structure, and pages. Content typography evaluates readability, suitability

of font size and type with education level, and clarity of information hierarchy. Meanwhile, application aspects include clarity of navigation, digital visual comfort (color, layout, font), and quality of supporting media such as images and sound.

Table 2 Recapitulation of Product Validation Test Results by Media Experts

No.	Aspect	Rating Scale				
		Score Obtained $\sum ni$	Maximum Score $\sum ni$	Value (%)	Criteria	Judgment
1.	Teaching Material Size	8	10	80%	Good	Minor Revision
2.	Teaching Material Cover Design	58	75	77,3%	Good	Minor Revision
3.	Teaching Material Content Design	80	100	80%	Good	Minor Revision
4.	Development Application	50	65	76,9%	Good	Minor Revision
Total Score		196	250	78,4%	Good	Minor Revision

The table above shows the results of the product feasibility test of IPAS teaching materials based on Scientific Reading Based Project (SRBP) which obtained a final score of 78.4% with Good criteria, so it is in the category worth using with minor revisions. The assessment was carried out based on four main aspects. The size aspect of teaching materials received a score of 80% with Good criteria. The cover design of teaching materials received a score of 77.3%, also in the Good category. The content design aspect of teaching materials scored 80% with Good criteria, while the development application aspect scored 76.9% which was also in the Good category. These results illustrate that the teaching materials developed have met the eligibility standards in terms of appearance and content, but a slight improvement is still needed to be more optimal in the implementation of learning.

The results of this study show alignment with the views of Asnidar et al. (2024) that emphasized that contextually and interactively designed media and teaching materials are able to encourage the development of 21st century skills such as critical thinking, creativity, collaboration, and communication. IPAS learning based on Scientific Reading Based Project (SRBP) utilizes teaching materials that have been systematically validated not only as a medium for delivering information, but also as a vehicle for forming reflective thinking and problem-solving skills based on real issues. Appropriately designed teaching materials can activate learner engagement, facilitate information exploration, and strengthen understanding through a challenging and meaningful learning process.

The feasibility test of the product development of digital teaching materials based on Scientific Reading Based Project (SRBP) by media experts aims to evaluate visual integrity, aesthetics, and media suitability with instructional design principles. The aspect of the size of teaching materials that obtained a score of 80% indicates that the dimensions of teaching materials have been ergonomically designed, both for digital and print use. The suitability of margins, the ratio between text and images, and portability in the context of using elementary school students are key elements in this assessment. Spatial efficiency in teaching materials has an influence on learning comfort and information absorption, as suggested by universal design principles for basic education (Yang et al., 2024).

The cover design of the teaching materials, which scored 77.3%, shows a visual performance that is quite effective in attracting attention while representing the content. Validation showed that the visual layout and typography choices were in accordance with

the principles of readability and initial visual appeal. However, evaluators suggested improving the visual composition to achieve a balance between text elements and illustrations to support learners' affective engagement. This is in line with the visual engagement theory in digital learning, where interface design directly contributes to learning motivation (Yang, 2023).

Assessment of the content design of teaching materials shows a good level of acceptance with a score of 80%. Systematic information structure, layout consistency, and typography readability are indicators of the strength of this teaching material. However, some aspects, such as visual hierarchy and graphical data presentation, still need strengthening to clarify the flow of information and facilitate students' conceptual understanding. According to multimedia learning theory, a well-organized presentation of information in the form of text and visuals can improve memory retention and knowledge transfer (Mayer, 2024).

The application aspect of the development scored 76.9% with a good category. These results indicate that the digital teaching materials have met basic interactivity and navigation standards in the context of self-directed learning. However, the evaluation also highlighted the importance of improving the quality of the user interface, such as the clarity of the navigation buttons, the responsiveness of the display, and the integration of audiovisual support media. This aspect is crucial given that the success of digital media is determined by its ability to create an immersive learning experience that does not overload students' cognition (Mayer, 2024).

In general, media expert validation shows that the SRBP-based digital teaching materials have fulfilled the visual, technical, and aesthetic elements well, although minor revisions are still needed. Minor adjustments to the appearance, such as the balance between text and visuals, interface navigation, and layout consistency, will improve student learning comfort. This finding reinforces the opinion of Gasper & Simpson (2021) who stated that the success of the module depends heavily on the harmony between design and content. In addition, Dahlia, (2025) also confirmed that teaching materials developed scientifically with a visual educational approach are able to strengthen student participation and facilitate understanding of concepts through an attractive and intuitive display. shows that SRBP-based teaching material products have fulfilled the visual, design, and technical aspects well even though they still require minor revisions. This supports the findings of Budiarsa et al. (2024) who stated that the success of module development is strongly influenced by the integration of media and aesthetic elements to support students' motivation and absorption of the material. Therefore, minor improvements to the display elements will strengthen the effectiveness of teaching materials as independent and contextual learning media.

IPAS teaching material products based on the Scientific Reading Based Project (SRBP) have been validated from the aspect of material feasibility by experts, focusing on three main aspects, namely the suitability of the content of the material with learning outcomes, the accuracy of the material, and the completeness of learning support materials. The first aspect includes the integration between the content of teaching materials and learning outcomes in the IPAS curriculum, which is presented by linking concepts, definitions, and examples to the context of Socio-Scientific Issues (SSI). This aims to make the material more relevant and meaningful to students.

Table 3 Recapitulation of Product Validation Test Results by Material Experts

No.	Aspect	Skala Penilaian				
		Score Obtained $\sum ni$	Maximum Score $\sum ni$	Value (%)	Criteria	Judgment
1.	The suitability of	9	10	90%	Good	Minor Revision

	the material description to the learning outcomes					
2.	The accuracy of the material	29	40	72.5%	Good	Minor Revision
3.	Learning support materials	32	40	80%	Good	Minor Revision
Total Score		70	250	77.8%	Good	Minor Revision

According to the results of the material expert validation, the aspect of the suitability of the material description with the learning outcomes obtained the highest score of 90%, indicating that the material was aligned with the expected learning objectives. The accuracy of the material scored 72.5%, indicating a need to update or adjust the content to be more conceptually correct. Meanwhile, the aspect of learning support materials scored 80%, indicating that complementary elements such as images, illustrations, and examples are sufficiently supportive, although they can still be further strengthened to enrich learners' understanding.

This assessment is in line with the findings of Rahmawati & Suryandari (2023), which emphasize the importance of appropriately designed learning materials to support the achievement of competencies and the active involvement of learners. Good materials are not only accurate, but should also be able to direct learners to think critically and engage in meaningful learning processes that are in line with 21st-century characteristics.

The feasibility test of digital teaching materials based on the Scientific Reading Based Project (SRBP) by material experts was carried out to evaluate the suitability of content for learning outcomes, scientific validity, and the usefulness of supporting materials. This validation process plays an important role in ensuring that the content of teaching materials is not only informative but also pedagogically and contextually relevant for elementary school students. The assessment was conducted by IPAS experts who understand the principles of preparing materials based on scientific literacy and thematic-integrative approaches.

The validation results showed that the suitability of the material description with the learning outcomes reached a score of 90%, indicating that the content preparation was in line with the applicable curriculum indicators. This reflects that the SRBP approach successfully accommodates the learning needs of elementary school students through the presentation of structured, applicable, and scientific exploration-based content. In accordance with the findings of Shi et al. (2023), mapping learning outcomes in digital teaching materials determines the effectiveness of instructional interventions at the basic education level.

In the aspect of material accuracy, the score of 72.5% indicates that although most of the content is scientifically valid, there is still room to strengthen the integration of the latest scientific sources and avoid potential misconceptions. This is in line with the opinion of Wijaya et al., (2024), who stated that content accuracy is critical in developing the science literacy of elementary school children, especially in contextual materials such as environmental change and disaster mitigation.

The supporting material aspect scored 80%, indicating that the teaching materials have included adequate media and additional learning resources such as images, videos, and interactive links. The availability of these elements helps build a multimodal learning experience that can increase students' interest and understanding of the

material. Research by Tugtekin & Dursun (2022) emphasizes the importance of integrating interactive media in digital teaching materials to improve learners' attention, motivation, and cognition.

Overall, the final score of 77.8% indicates that the SRBP-based digital teaching materials have been declared feasible by the material experts, with some recommendations for improvement in the aspects of content accuracy and visual-informative complementarity. This validation is an important indicator that teaching materials are not only feasible in terms of substance, but also able to function as a reflective, exploratory, and real-life context-based learning tool. This finding strengthens the argument that feasibility testing by material experts is a crucial stage in the development of innovative and sustainable teaching materials (Kusworo & Rahayu, 2020).

The feasibility test of linguist validators for project-based learning entrepreneurship learning module products. The product feasibility test of linguist validators consists of 6 assessment indicators including straightforward, communicative, dialogical and interactive assessments, suitability for the level of student development, conciseness and cohesiveness of thought flow, and the use of terms, symbols or icons. The following is a recapitulation of the results of the material expert validation test which can be seen in Table 4.

Table 4 Recapitulation of Product Validation Test Results by Language Experts

No.	Aspect	Score Obtained $\sum ni$	Maximum Score $\sum ni$	rating scale		Criteria	Judgment
				Value (%)			
1.	Straightforward	17	20	85.3%	Good		No Need for Revision
2.	Communicative	9	10	91.2%	Very Good		No Need for Revision
3.	Dialogic and Interactive	7	10	73.7%	Good		Minor Revision
4.	Suitability to the developmental level	8	10	81.9%	Good		No Need for Revision
5.	Coherent flow of thought	7	10	78.6%	Good		Minor Revision
6.	Use of terms, symbols, and icons	8	10	79.4%	Good		Minor Revision
Skor Total		56	70	79.9%	Good		No Need for Revision

Based on the results of the validation of six linguistic aspects, a total score of 79.9% was obtained, which is included in the "good" category. The most prominent aspect is communicative, with a score of 91.2%, indicating that the material has been able to convey messages clearly and easily understood. Meanwhile, the dialogic and interactive aspects still need to be improved because they obtained the lowest score of 73.7%, indicating that the delivery of the material has not fully encouraged the active participation of students. In general, these results show that the materials have been organized with a pretty good language structure, although there is still room for improvement in the interactivity and flow of thinking aspects.

This finding is in line with Handayani's research Handayani (2024), which emphasizes that the quality of language in teaching materials plays an important role in improving the readability and understanding of students' concepts, mainly when the preparation of materials is carried out communicatively and in accordance with children's

cognitive development. The preparation of straightforward and communicative materials is the main requirement to support the effectiveness of the learning process.

The feasibility test by linguists on digital teaching material products based on the Scientific Reading Based Project (SRBP) focused on evaluating language as an important element in the readability and effectiveness of communication of learning materials. This assessment includes six aspects, namely straightforwardness, communicative, dialogic-interactive, suitability for the level of development of learners, orderliness of thought flow, and the use of terms, symbols, and icons. The evaluation was conducted by experts with competence in the field of basic education linguistics who understand the rules of language in the context of pedagogy.

The straightforwardness aspect obtained a score of 85.3%, indicating that the presentation of language in teaching materials is quite effective in conveying messages directly, simply, and not wordily. Straightforwardness is an important fundamental element in helping learners understand information quickly without linguistic barriers. The use of declarative sentences and simple sentence structures is considered capable of facilitating an efficient reading process.

In the communicative aspect, teaching materials obtained the highest score of 91.2%. This indicates that the message in the teaching materials can be conveyed well through language that is clear, focused, and easy to understand. The success in this aspect shows that the preparation of materials considers the principle of educational communication, namely, language as a tool to build mutual understanding between writers and readers. According to Abdykhalykova et al. (2025), the use of communicative language in digital teaching materials increases interest in reading and accelerates concept mastery.

However, the dialogical and interactive aspects received the lowest score of 73.7%, which indicates that the text preparation still lacks active participation of students in the form of open questions or invitations to think. Interactivity is an important element in active learning, especially in the SRBP approach, which demands learners' reflective engagement with the reading content. As stated by Saripudin (2023), text that contains dialogic and interactive elements can stimulate learners' critical thinking skills and curiosity.

Overall, the total score of 79.9% from the linguist test shows that the teaching materials have met the criteria of good language and are suitable for use with minor revisions. Improvements are suggested in the section concerning the logical flow of paragraphs and the cohesiveness between one idea and another. This validation is in line with the view of Alakrash & Razak (2021) that the success of digital teaching materials is not only determined by content and visuals, but also by an effective language structure in supporting student learning.

Generally, the results of the product feasibility test of digital teaching materials based on the Scientific Reading Based Project (SRBP) from the three aspects of material, media, and language show that these teaching materials are in the "good" category and are suitable for use as learning resources in elementary schools. Validation by material experts confirms that the content is in accordance with the learning outcomes, although strengthening the accuracy of scientific content is still needed. In terms of media, the visual appearance and presentation structure support independent learning, but some components, such as design balance and digital interface navigation, need to be improved. Meanwhile, the linguistic aspect shows the quality of communicative and straightforward language, although interactivity in the text still needs to be improved to make it more dialogic. Considering these results, this teaching material can be widely used in primary school IPAS learning, provided that minor revisions are made in accordance with the notes on each validation aspect.

SIMPULAN

The results of this study indicate that IPAS digital teaching materials based on the Scientific Reading Based Project (SRBP) are declared suitable for use based on validation by three groups of experts, namely material, media, and language experts. The overall assessment of the three aspects resulted in a "good" feasibility category, with an average score ranging from 77% to 80%. The material aspect is considered to be in accordance with the learning outcomes and contextual needs of elementary school students, although strengthening is still needed in terms of the accuracy of information and supporting materials. The media aspect shows that the visual design and presentation structure have met the instructional design principles, but revisions are needed on the balance of the layout and navigation of the digital interface. Meanwhile, from the linguistic aspect, this teaching material has been communicative and easy to understand, but still needs an increase in text interactivity to encourage active participation of students.

The implications of the results of this study indicate that the SRBP approach has significant potential in encouraging contextualized, scientific literacy-based IPAS learning and strengthening students' critical thinking skills. Integrating scientific reading activities and project-based exploration, students are expected to build a deeper understanding and increase active learning engagement. The success of this teaching material also shows that the development of digital media that is systematically validated is able to produce products that are relevant to 21st-century learning needs.

As a recommendation, it is necessary to conduct a readability test and limited testing of students and teachers to measure the factual effectiveness of this teaching material in real learning settings. In addition, further research is recommended to explore the effect of using SRBP teaching materials on increasing creativity, scientific literacy, and collaborative skills of students quantitatively through experimental designs. Further studies can also expand the implementation of the SRBP model in various other subjects to test the flexibility of this approach in shaping learning that is transformative and oriented towards contextual problem solving.

DAFTAR PUSTAKA

- Abdykhalykova, A. M., Beisembayeva, Z. B., & Nurzhanova, A. N. (2025). The Role of Digital Authentic Texts In Communicative Language Teaching (CLT). *The Bulletin*, 414(2). <https://doi.org/10.32014/2025.2518-1467.909>
- Adeoye, M. A., Wirawan, K. A. S. I., Made Shania Satya Pradnyani, & Nyoman Intan Septiarini. (2024). Revolutionizing Education: Unleashing the Power of the ADDIE Model for Effective Teaching and Learning. *JPI (Jurnal Pendidikan Indonesia)*, 13(1), 202–209. <https://doi.org/10.23887/jpiundiksha.v13i1.68624>
- Alakrash, H. M., & Abdul Razak, N. (2021). Technology-Based Language Learning: Investigation of Digital Technology and Digital Literacy. *Sustainability*, 13(21), 12304. <https://doi.org/10.3390/su132112304>
- Asnidar, A., Safriana, S., Jalil, S. M., Sakdiah, H., & Zahara, S. R. (2024). Development of E-Modules on Problem-Based Learning to Enhance Students Science Literacy. In *Asian Journal of Science Education* (Vol. 6, Issue 1, pp. 134–144). <https://doi.org/10.24815/ajse.v6i1.35887>
- Barut Tugtekin, E., & Dursun, O. O. (2022). Effect of animated and interactive video variations on learners' motivation in distance Education. *Education and Information Technologies*, 27(3), 3247–3276. <https://doi.org/10.1007/s10639-021-10735-5>
- Budiarsa, I. W., Utamia, D. G. S. A. M., & Sari, N. W. A. Y. (2024). Optimization of Dance Education Through Creative Media: Integration Of Text, Video, And Audiovisuals In The Educational Process. *Proceeding Bali-Bhuwana Waskita: Global Art Creativity Conference*, 4, 214–223. <https://doi.org/10.31091/bbwp.v4i1.482>

- Dahlia, S. (2025). The way teachers visualize science material is related to the quality of students' understanding. *SEARCH: Science Education Research Journal*, 3(2), 112–118. <https://doi.org/10.47945/search.v3i2.1492>
- Dewi, Z. R., & Sunarni, S. (2024). Peran Literasi Digital dalam Implementasi Kurikulum Merdeka: Adaptasi dan Transformasi di Era Digital. *Jurnal Ilmu Manajemen Dan Pendidikan*, 4(1), 9–14. <https://doi.org/https://doi.org/10.30872/jimpian.v4i1.2916>
- Fitzgerald, M. S., & Evans, K. B. (2024). Integrating Digital Tools to Enhance Access to Learning Opportunities in Project-based Science Instruction. *TechTrends*, 68(5), 882–891. <https://doi.org/10.1007/s11528-024-00975-w>
- Gaspar, R., & Simpson, P. (2021). Module design, delivery and assessment for large student numbers. In *Organisation Studies and Human Resource Management* (pp. 77–90). Routledge. <https://doi.org/10.4324/9780429262937-7>
- Gutiérrez-Castillo, J. J., Palacios-Rodríguez, A., Martín-Párraga, L., & Serrano-Hidalgo, M. (2023). Development of Digital Teaching Competence: Pilot Experience and Validation through Expert Judgment. *Education Sciences*, 13(1), 52. <https://doi.org/10.3390/educsci13010052>
- Handayani, S. (2024). A Meta-Analysis of Students' Perceptions on the Readability of Learning Materials in TEFL Classes: Are Original Textbooks Effective? *International Journal of Education and Humanities*, 4(3), 266–273. <https://doi.org/10.58557/ijeh.v4i3.237>
- Izzah, S. N., Sudarmin, S., Wiyanto, W., & Prasetyo, A. (2020). The Development of Science Learning Document Grounded on STEM-Approach Integrated Ethnoscience. ... on Science and <https://doi.org/10.2991/assehr.k.200620.111>
- Kemendikbudristek. (2024). *Permendikbudristek No 12 Tahun 2024*. <https://peraturan.bpk.go.id/Details/281847/permendikbudristek-no-12-tahun-2024>
- Kurt, G., & Akoglu, K. (2023). Project-based learning in science education: A comprehensive literature review. *Interdisciplinary Journal of Environmental and Science Education*, 19(3), e2311. <https://doi.org/10.29333/ijese/13677>
- Kusworo, K., & Rahayu, P. Y. (2020). Analisis Validitas Isi Produk Pengembangan Modul Pembelajaran Kewirausahaan Berbasis Project Based Learning. *Jurnal Madani: Ilmu Pengetahuan, Teknologi, Dan Humaniora*, 3(2), 228–237. <https://doi.org/10.33753/madani.v3i2.124>
- Mayer, R. E. (2024). The Past, Present, and Future of the Cognitive Theory of Multimedia Learning. *Educational Psychology Review*, 36(1), 8. <https://doi.org/10.1007/s10648-023-09842-1>
- Megawati, R. (2024). Integration of Project-Based Learning in Science, Technology, Engineering, and Mathematics to Improve Students' Biology Practical Skills in Higher Education: A Systematic Review. *Open Education Studies*, 6(1). <https://doi.org/10.1515/edu-2024-0049>
- Nastiti, F., & Abdu, A. (2020). Kajian: Kesiapan Pendidikan Indonesia Menghadapi Era Society 5.0. *Edcomtech Jurnal Kajian Teknologi Pendidikan*, 5(1), 61–66. <https://doi.org/10.17977/um039v5i12020p061>
- Rahmawati, R., & Suryandari, K. C. (2023). Application Augmented Reality for Science Learning: Improving Critical Thinking Toward Elementary Student. *United International Journal for Research & Technology (UIJRT)*, 04(07), 276–282. <https://uijrt.com/paper/application-augmented-reality-for-science-learning>
- Saripudin, M. (2023). Deeper learning, dialogic learning, and critical thinking: research-based strategies for the classroom. *Educational Review*, 75(3), 587–588. <https://doi.org/10.1080/00131911.2022.2028416>
- Shakeel, S. I., Al Mamun, M. A., & Haolader, M. F. A. (2023). Instructional design with ADDIE and rapid prototyping for blended learning: validation and its acceptance in the context of TVET Bangladesh. *Education and Information Technologies*,

- 28(6), 7601–7630. <https://doi.org/10.1007/s10639-022-11471-0>
- Shi, Y., Yang, H., Dou, Y., & Zeng, Y. (2023). Effects of mind mapping-based instruction on student cognitive learning outcomes: a meta-analysis. *Asia Pacific Education Review*, 24(3), 303–317. <https://doi.org/10.1007/s12564-022-09746-9>
- Sofiyan, S., Amalia, R., & Suwardi, A. B. (2020). Development of mathematical teaching materials based on project-based learning to improve students' HOTS and character. *Journal of Physics: Conference Series*, 1460(1). <https://doi.org/10.1088/1742-6596/1460/1/012006>
- Suryandari, K. C. (2019). *Pengembangan model Scientific Reading Based-Project (SRBP) pada pembelajaran konsep dasar IPA untuk memberdayakan keterampilan berpikir kritis dan kreatif mahasiswa PGSD* [Universitas Sebelas Maret]. <https://digilib.uns.ac.id/dokumen/detail/77045/Pengembangan-model-Scientific-Reading-Based-Project-SRBP-pada-pembelajaran-konsep-dasar-IPA-untuk-memberdayakan-keterampilan-berpikir-kritis-dan-kreatif-mahasiswa-PGSD>
- Suryandari, K. C., Rohkmaniyah, & Chamdani, M. (2019). Analysis of Student Responses for Scientific Reading Based Project (SRBP) Model: Using Rasch Modeling. *The 2nd International Conference on Science, Mathematics, Environment, and Education AIP*, 020120(2194), 020120–020121–020120–020126. <https://doi.org/https://doi.org/10.1063/1.5139852>
- Suryandari, K. C., Rokhmaniyah, & Wahyudi. (2021). The Effect of Scientific Reading Based Project Model in Empowering Creative Thinking Skills of Preservice Teacher in Elementary School. *European Journal of Educational Research*, 10(3), 1329–1340. <https://doi.org/https://doi.org/10.12973/eu-jer.10.3.1329>
- Wijaya, I., Suryaningsih, N. M. A., & ... (2024). Socio Scientific Issue (SS1) Approach as a Momentum to Instill Cultural Literacy and Scientific Literacy Through Natural Science Learning. *Jurnal Pendidikan* <https://jpmipa.fkip.unila.ac.id/index.php/jpmipa/article/view/96>
- Yang, J. (2023). Visual Communication Design for Mobile Learning Apps: User Interface Usability and Learning Engagement. *Comunicar*. <https://doi.org/10.58262/V32I78.19>
- Yang, M., Duha, M. S. U., Kirsch, B. A., Glaser, N., Crompton, H., & Luo, T. (2024). Universal design in online education: A systematic review. *Distance Education*, 45(1), 23–59. <https://doi.org/10.1080/01587919.2024.2303494>
- Zaturrahmi, Nurpatri, Y., Muliani, D. E., Indrawati, E. S., & Putra, I. A. (2024). Validitas Modul Biofisika Berbasis Model Scientific Reading Based Project (SRBP) Untuk Meningkatkan Kemampuan Berpikir Kritis Mahasiswa. *Schrodinger*, 5(1), 49–57. <https://doi.org/https://doi.org/10.30998/sch.v5i1.10988>