Jurnal Pendidikan dan Pengajaran Guru Sekolah Dasar
(JPPGuseda)
E-ISSN : 2623-0232
P-ISSN : 2623-0941

Jurnal Pendidikan dan Pengajaran Guru Sekolah Dasar (JPPGuseda)

Vol. 08, No. 02, 20205
https://journal.unpak.ac.id/index.php/JPPGuseda/index

Development Of Interasolve-Book Learning Media for IPAS Subject in Elementary Schools

Deni Syahyadi[1], Fery Muhammad Firdaus[2], Sri Dewi Nirmala[3]
[1,3]Universitas Terbuka, Tangerang Selatan, Indonesia
[2]Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

ABSTRACT: The Independent Curriculum emphasizes the importance of student-centered learning and the development of 21st century competencies. This is in line with the development of the times that require individuals to have the ability to think critically, creatively, collaboratively, and communicate (4C). To achieve this goal, the use of innovative learning media is very relevant. InteraSolve-Book, an interactive learning media, provides opportunities for students to learn actively, and provides a better understanding for students with various learning styles in the material on ecosystem imbalance in grade V of Elementary School. This development research uses the 4D method from Tiagarajan through 4 stages: define, design, develop and disseminate. Feasibility data was obtained from linguist validation instruments, learning media experts, and learning material experts. Meanwhile, practicality data was obtained from a questionnaire of model teachers who carried out learning with IntersSolvE-Book. The feasibility level was obtained at 73.21% for language, 97.5% for media and 86.54% for learning materials. In terms of practicality, InteraSolvE-Book got a 98% result. Thus, InteraSolvE-Book has been tested to be feasible and practical to be used in learning.

Abstrak: Kurikulum Merdeka menekankan pada pentingnya pembelajaran yang berpusat pada murid dan pengembangan kompetensi abad 21. Hal ini sejalan dengan perkembangan zaman yang menuntut individu memiliki kemampuan berpikir kritis, kreatif, kolaboratif, dan komunikasi (4C). Untuk mencapai tujuan tersebut, pemanfaatan media pembelajaran yang inovatif menjadi sangat relevan. InteraSolve-Book media pembelajaran interaktif memberikan kesempatan bagi siswa untuk belajar secara aktif, dan memberikan pemahaman yang lebih baik bagi murid dengan berbagai macam gaya belajar dalam materi ketidakseimbangan ekosistem di kelas V Sekolah Dasar. Penelitian pengembangan ini menggunakan metode 4D dari Tiagarajan dengan melalui 4 tahapan: define, design, develop dan disseminate. Data kelayakan didapatkan dari instrumen validasi ahli bahasa, ahli media pembelajaran, ahli materi pembelajaran. Sedangkan data kepraktisan didapatkan dari angket guru model yang melaksanakan pembelajaran dengan IntersSolvE-Book. Tingkat kelayakan didapatkan sebesar 73,21% untuk kebahasaan, 97,5% untuk media dan 86,54% untuk materi pembelajaran. Dari sisi kepraktisan, InteraSolvE-Book mendapatkan hasil 98%. Dengan demikian, InteraSolvE-Book teruji layak dan praktis untuk dipergunakan dalam pembelajaran.

ARTICLE HISTORY
Received 01-02-2025
Revised 01-06-2025
Accepted 31-07-2025

Keywords : *InteraSolvE-Book, interactive learning media, effectiveness of learning media*.

Kata Kunci:
InteraSolvE-Book, Media pembelajaran interaktif, efektifitas media pembelajaran

Doi: http://doi.org.....
Please cite this article in APA style as: Syahyadi, D., Firdaus, F.M., & Nirmala, S.D. (2025). Development of Intrasolve-Book Learning Media for IPAS Subject in Elementary School. Jurnal Pendidikan dan Pengajaran Guru Sekolah Dasar (JPPGuseda). 8(2). 111-117.

INTRODUCTION

Education is an investment for the people of a nation to improve their standard of living that can be obtained and enjoyed by every citizen. It is said that investment is because through education there are better opportunities for the future young generation (Siregar et al., 2022). The education in question is not only about being able to read, write and count, but rather towards quality education and having excellence, so that it will be a provision in living life to face increasingly competitive global challenges (Hidayat & Abdillah, 2019). Good quality education can create a young generation that is intelligent and able to develop their abilities (Azzahra et al., 2024).

Learning media in interactive form used in learning is still limited (Dewi & Manuaba, 2021; Juniari & Putra, 2021; Saputra & Alexon, 2023). This limitation is especially for offline learning media that can be used without internet access. The role of learning media in the learning process cannot be ignored, because the media functions as a facilitator for teachers in delivering learning materials to students (Juniari & Putra, 2021). Interesting learning media can be a stimulus for students in the learning process (Nurfadhillah et al., 2021). The lack of use of learning media makes the learning carried out by teachers feel less effective and seems boring for students. This situation makes students less challenged to do learning, making them passive, learning meaningless and they only get little knowledge. Learning media provides opportunities for students to experience firsthand the concepts learned (Wulandari et al., 2023).

The current technological developments can be utilized and maximized for the benefit of education (Kurnia & Sunaryati, 2023). With the appropriate software, learning media can be made interesting and interactive so that it can be used in learning that triggers students' activeness and their understanding of the learning material. The reality is that there are still teachers who have not been able to maximize the development of technology due to the limited abilities and human resources they have in the field of software and technology (Sadriani et al., 2023). These limitations are a challenge for other teachers who have the ability in the field of software and technology to share and participate in developing learning media that suits current needs.

As a follow-up, the researcher formulated to develop interactive learning media. This development will result in the advertising of a product in the form of InteraSolvE-Book learning media used in science subjects in grade V. The learning material used as development material is the imbalance of the ecosystem phase C in the Independent Curriculum. The resulting InteraSolve-Book is expected to improve the quality of learning and education and provide solutions to learning challenges in today's digital era.

Learning media is a container of messages, the material to be conveyed is a learning message and the goal to be achieved is the learning process (Susilana & Riyana, 2008). Thus, learning media is a tool or means to clarify learning materials so that they can be accepted and understood by students (Ibrahim et al., 2022; Pagarra et al., 2022). Learning media is all equipment used by educators as intermediaries to deliver learning materials so that they reach people who are learning correctly and effectively.

InteraSolvE-Book as a digital learning medium that can be opened/viewed using a computer or laptop has interesting information in the form of a combination of text, images, animations, audio, and videos that explain concepts, present relevant problems, and provide the necessary knowledge to facilitate students with various learning styles. InteraSolvE-Book can make complex material easier to understand and more interesting, allowing learning to be carried out with a high level of student activity.

The integration of several types of media and their interactivity in learning has a variety of very important functions. Ninghardjanti et al., (2018) stated that interactive learning media can create a more interesting learning experience to increase students' learning activity and enable teachers to be able to do meaningful and fun learning. Related to this, Lieung et al., (2021)stated that interactive learning media can also be used as an alternative to learning that is fun and stimulates learning activities and students' thinking skills. InteraSolvE-Book is an interactive learning medium that can foster students' interest in learning because they will actively learn learning materials independently and fun. The use of InteraSolvE-Book in learning can help improve learning effectiveness, increase student engagement, and support a more dynamic and adaptive approach to learning. InteraSolvE-Book can help provide information and learning materials in a more engaging and easy-to-understand way for students

This research is different from previous research that developed flip book-based interactive learning media. Flip book-based learning media that has been developed previously only integrates

text, images and videos related to learning materials. This makes the learning media look like an e-book with additional videos. InteraSolvE-Book adds an interactivity feature as a differentiator from previous developments. The interaction is in the form of comprehension questions that can be filled in directly by students, there are pip-ups explaining the material in the form of texts, images and videos as well as exercises for students to do in groups with instructions for interaction with the teacher.

InteraSolvE-Book focuses on learning in elementary schools, for example in the material on ecosystem imbalance in Grade V of elementary schools. There are not many types of learning media made for learning in elementary schools, making InteraSolvE-Book an example for further development. InteraSolvE-Book is a product that introduces new technology in learning, reduces the limitations of the use of printed books, and motivates teachers to continue to update their knowledge, especially related to technological developments. In addition, InteraSolvE-Book makes it easier for teachers to carry out learning in the classroom, increasing efficiency and interactivity in the learning process. Thus, this research not only provides innovative solutions in learning, but also opens up opportunities for improving the quality of education as a wholeWith the multimedia in InteraSolvE-Book, students can learn independently but remain actively involved in learning.

RESEARCH METHOD

This research is a type of development research (R&D) using the 4D Model, which consists of four main stages, namely: Define, Design, Develop, and Disseminate (Thiagarajan et al., 1974). This research model was chosen because it does not take too long. The stages in this method are not too complex when compared to other development models such as ADDIE (Arikunto, 2013). In addition to the advantages, this 4D development model also has weaknesses such as the stage that is carried out only up to the deployment stage and there is no evaluation, where the evaluation in question is to measure the quality of the product that has been tested before and after using the product (Anggara & Abdillah, 2019).

The following is a chart of the stages of 4D development adopted from the stages based on the opinion of Winaryati et al., (2021):

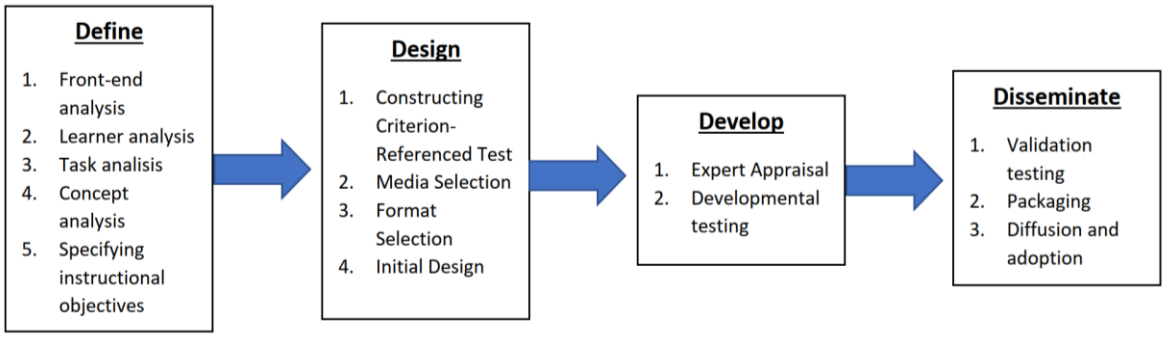

Figure 1. 4D development stage chart

The research data came from 3 validators consisting of linguists, media experts and learning experts. Data was also obtained from 3 grade V elementary school teachers model teachers in learning, all elementary school teachers in cluster 5 of Nanggung District and class V students in 3 different schools. The schools that are the subject of the study are Pasir Peuteuy State Elementary School with 20 students in class V, Handayani State Elementary School with 9 students in class V and Rancabakti State Elementary School with 16 students in class V. Sample selection was carried out using Cluster Random Sampling. Cluster random sampling is the determination of samples based on the location or population area (Fadjarajani et al., 2020) by also considering Stratified Random Sampling (Wibawa et al., 2020).

In this development research, several instruments were used for data collection. The instrument is in the form of an expert validation sheet for linguists, learning media experts and learning material experts to test the feasibility of the developed learning media. Another instrument is a questionnaire given to model teachers to find out the practicality of using InteraSolvE-Books in learning. The scoring criteria in the expert validation instrument and questionnaire are as follows:

Tabel 1. Score Criterion

Score	Category
1	Very less
2	Less
3	Good
4	Excellent

The data obtained from expert validation instruments, teacher questionnaires and student questionnaires were analyzed using descriptive statistics to obtain average values which were then converted into percent. The formula used in the calculation is as follows:

$$Persentase = \frac{((SB\ x\ 4) + (B\ x\ 3) + (K\ x\ 2) + (SK\ x\ 1))}{\text{Number of item x 4}} X\ 100\%$$

Information:
SB = Excellent
B = Good
K = Less
SK = Very less

Each expert validation score and questionnaire are compared with a table of validity criteria to obtain a validity score.

Table 2. Criteria for validity and practicality

No.	Criterion	Level of Validation/Practicality
1	00,00 % - 25 %	Very unfeasible (unusable)
2	25,01 % - 50 %	Not feasible (unusable)
3	50,01 % - 75 %	Feasible (can be used with revision)
4	75,01 % - 100 %	Very feasible (can be used without revision)

FINDINGS AND DISCUSSION

The validity analysis was carried out based on score data obtained from experts after testing the InteraSolvE-Book. The feasibility test is carried out by experts with the aim of obtaining the results of evaluations, feedback, and recommendations from expert validators, so that the learning media developed can become a quality product and suitable for use in learning activities (Marlinda & Hanim, 2023). In line with this, (Sugiyono, 2013) stated that the validity test (feasibility) is a process to test the suitability of a research instrument, which if declared valid (feasible), means that the instrument can measure the variable in question precisely. The results of the analysis for the three categories are shown in table 3.

Table 3. Validation Results

Validation Type	Percentage	Validation Rate
Language	73,21%	Feasible (can be used with revision)
Media	97,50%	Very feasible (can be used without revision)
Learning Materials	86,54%	Very feasible (can be used without revision)

The results of the validity analysis of InteraSolve-Book show that this interactive digital book has met most of the set criteria. In terms of language, InteraSolve-Book is considered worthy of use with several minor revisions, with a score of 73.21%. However, both in terms of media and learning materials, InteraSolve-Book is considered very feasible to use without revision, obtaining scores of 97.5% and 86.54%, respectively. This indicates that overall, the media design, word selection, and materials presented in InteraSolve-Book have met the set standards and can support the learning process effectively. The use of easy-to-understand language, the addition of interesting videos and visuals to InteraSolve-Book is very helpful for students in understanding complex concepts. In addition, the integration of interactive elements such as questions/questions in the InteraSolve-Book can increase students' active involvement in the learning process. With high validity, InteraSolve-Book has the potential to improve student learning achievement in science subjects. The results of this research can be the basis for the development of other interactive learning media that are more complex and adapted to diverse learning needs.

The results of the analysis indicate that InteraSolvE-Book possesses high validity in terms of language, media, and learning materials, which signifies that this interactive digital book has fulfilled the necessary standards to serve as an effective learning medium. This high validity reflects that the materials presented are linguistically appropriate, pedagogically relevant, and technically well-structured to support student learning. In particular, its application to the topic of ecosystem imbalance demonstrates how digital media can help bridge the gap between abstract ecological concepts and students' concrete understanding. This finding aligns with the views of Pagarra et al. (2022) and Ibrahim et al. (2022), who emphasized that instructional media functions as an essential bridge between teachers and students, facilitating the achievement of learning objectives by enhancing clarity and engagement. Thus, the presence of InteraSolvE-Book is not merely an alternative but a strategic solution for teachers in delivering science material more effectively.

Alongside validity, the practicality aspect of InteraSolvE-Book was also tested through teacher responses collected via questionnaires during both product trials and experimental class implementation. The practicality analysis covered essential criteria, such as ease of navigation, relevance of content to the curriculum, visual design quality, and adaptability to classroom learning. The findings revealed that 98% of teachers rated the e-book as very practical, signifying that it is both user-friendly and efficient to integrate into existing teaching practices. Based on established criteria (Table 2), this level of practicality confirms that the product can be directly applied in learning contexts without requiring further revisions, thereby ensuring its readiness for wider educational use.

According to Milala et al. (2022), practicality in learning media reflects the extent to which the product is accessible and beneficial for both teachers and students, making learning more meaningful, engaging, enjoyable, and creativity-oriented. The high practicality rating of InteraSolvE-Book therefore indicates its success in supporting not only smooth implementation but also more dynamic interactions in the classroom. With its interactive features, the e-book encourages students to be active participants in the learning process rather than passive recipients of information. Teachers also benefit from the practicality of this medium, as it reduces preparation time, provides structured content, and offers flexibility in delivery.

Furthermore, the use of InteraSolvE-Book is highly relevant to current educational demands that emphasize student-centered learning and the integration of digital literacy into classroom practices. By combining interactive content, attractive visuals, and clear navigation, this digital book promotes a learning environment where students can explore concepts independently while still guided by structured learning objectives. Such an approach supports the development of critical thinking, problem-solving, and scientific inquiry skills, which are essential components of 21st-century education.

Thus, the research findings show that InteraSolvE-Book has met the standards of validity and practicality, making it feasible to be used as a learning medium that not only enhances the understanding of complex concepts but also promotes active and meaningful learning experiences. Its successful application in teaching ecosystem imbalance material demonstrates its potential to be more widely implemented across various subjects and educational levels. For further development, it is recommended that additional research be conducted to evaluate its effectiveness in improving student learning outcomes and to examine its adaptability in diverse learning contexts to ensure the sustainability of its positive impact.

CONCLUSION

This research focuses on the development of interactive learning media to improve the quality of education, especially in science subjects. By utilizing technology, researchers created the InteraSolve-Book, an interactive digital book designed for the material of ecosystem imbalances in the Independent Curriculum. This media is expected to overcome learning challenges in the digital era, such as the lack of interesting learning media and the limited ability of teachers to develop their own media. Thus, InteraSolve-Book is expected to increase student involvement in the learning process and provide practical solutions for teachers in presenting more effective learning materials. The results of the analysis show that InteraSolve-Book has met the criteria of validity and practicality to be used as a learning medium. Based on the assessment of language, media, and learning materials, InteraSolve-Book is declared very feasible to use without revision. This means that this interactive digital book has been compiled with easy-to-understand language, attractive media design, and relevant learning materials. In addition, the results of the questionnaire from teachers

show that InteraSolve-Book is very practical and effective in the learning process. Thus, InteraSolve-Book can be an effective tool for teachers in conveying subject matter and increasing student involvement in the learning process.

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