LIVEWORKSHEET-ASSISTED IPAS E-LKPD DEVELOPMENT TO IMPROVE LEARNING OUTCOMES OF CLASS V STUDENTS SD NEGERI 064990 MEDAN JOHOR

Ruspiana Hutagaol [a*)], Wildansyah Lubis [a)], Sugiharto [a)]

[a)] *State University of Medan, Medan, Indonesia*

[*)*)]*Corresponding Author: hruspiana@gmail.com*

Abstract. This research aims to develop an e-LKPD IPAS assisted by *liveworksheets* that is effective in improving the learning outcomes of grade V students of SD Negeri 064990 Medan Johor. This type of research is Research and Development (R&D) using the 4D development model, which consists of four stages: (1) Define; (2) Design; (3) Development; and (4) Dissemination. The findings of this study are: The effectiveness of e-LKPD IPAS was evaluated by the results of the gain test of 0.69 included in the "Very High" category which shows that e-LKPD IPAS has a high level of effectiveness in improving learning outcomes. It concluded that the results of this study are that the liveworksheet-assisted e-LKPD IPAS that *was* developed is effective in improving student learning outcomes in the IPAS Class V subject of SD Negeri 064990 Medan Johor.

Keywords: e-LKPD IPAS; liveworksheet; development.

I. INTRODUCTION

Education plays a fundamental role as a fundamental pillar in nation building, because education produces individuals who are intelligent, insightful, and able to actively contribute to society. Through quality education, students can acquire knowledge, skills, and values that are essential for life. Therefore, the Indonesian government continues to reform its education system, including curriculum development. Transition from Curriculum 2013 to Curriculum 2014IndependenceCurriculum is a strategic effort to address contemporary challenges and encourage flexible, contextual, and student-centered learning.[1]. Education is also a deliberate effort to create a learning environment that allows students to explore their potential and develop moral intelligence, character, and active citizenship, as outlined in Law No. 57 of 2021.

In this curriculum, Social Sciences and Natural Sciences are integrated into a new subject called IPAS (Knowledge and Social Sciences), aiming to foster critical thinking and environmental and social awareness from an early age[2] However, the implementation of IPAS in elementary schools, especially in Class V SD Negeri 064990 Medan Johor, still faces significant challenges.

Initial observations made by researchers show that student learning outcomes in science subjects are relatively low. In the last three semesters, with an average score of 64,65,68 Minimum Completeness (KKTP), with an average

score of 70. Interviews with teachers show that the lack of LKPD that can facilitate learning objectives that focus on the learning experience process, teachers use LKPD that is contained in the student's textbook, not the LKPD that is purely made and separate from the book. These findings are in line with the research[3]. WHO reports that low student learning achievement is closely related to the use of conventional lecture methods and the absence of innovative teaching media.[4] It also states that in some classes, especially in IPAS, the absence of interesting media causes students to become bored and their performance is poor.

Learning outcomes are defined as abilities acquired by students after undergoing the learning process for a certain period of time, which is generally measured through tests.[5] These results can be observed after learning activities and are reflected in changes in behavior or scores.[6] The cognitive domain is often the main focus for teachers in schools, as it is directly related to students' mastery of learning content.[7] Cognitive learning outcomes include knowledge, understanding, application, analysis, synthesis, and evaluation.[8].

The Student Worksheet (LKPD), also known as the Student Worksheet (LKS), is an important instrument in the learning process. According to[9], the LKPD is a study guide designed to direct students' testing or critical thinking.[10] This action sheet can be used as an aid to create a

psychological perspective and an aid for the learning corner as a trial or exhibition. **[11]**.

LKPD is a collection of sheets that contain student exercises, helping students to complete the actual exercises with the objects and problems learned.**[12]** According to**[13]**, e-LKPD also functions as a learning medium that can be used in conjunction with other learning resources. **[14]** found that e-LKPD was very effective in improving learning outcomes.

Liveworksheet is a free application from Google that turns conventional worksheets into interactive online exercises that can automatically correct students' answers. Students can work on and submit their answers online. The advantage of this app for students is that it is interactive and motivating, while for teachers, it saves time and paper use.**[15]**. *Liveworksheets* are still rarely used in education, with only 10% of users implementing them in a learning environment due to a perceived lack of understanding and technical challenges.

Despite these challenges, *Liveworksheet* has been shown to increase creativity and critical thinking in students.**[16]** shows that Liveworksheet-assisted e-LKPD is effective for use in the classroom.

Based on the analysis of needs and field findings, it is necessary to develop an interactive, innovative e-LKPD to overcome the low learning achievement of IPAS students in grade V of SD Negeri 064990 Medan Johor. The use of *Liveworksheet* in the development of e-LKPD is a strategic choice because it integrates visual, audio, and interactive controls to improve students' comprehensive understanding of the material. This media is expected to help teachers in delivering IPAS material in a more fun and meaningful way, thereby increasing students' motivation and academic achievement.

II. RESEARCH METHODS

This study uses a Research and Development (R&D) approach which aims to produce e-LKPD IPAS with *liveworksheet* assistance to improve student learning outcomes in IPAS (Integrated Science and Social Sciences) subjects for grade V students of SD Negeri 064990 Medan Johor. R&D is a method that is systematically applied to develop or improve a product through validation to ensure its accountability and excellence **[17]**. According to [20], R&D is a deliberate and systematic research method to discover, improve, develop, and test the effectiveness of new, efficient, and meaningful products, models, or strategies. This methodology is suitable for studies that not only think about existing conditions, but also produce innovative products that undergo validation of feasibility, practicality, and effectiveness.

This research was conducted at SD Negeri 064990 Medan Johor, located in Medan City, North Sumatra Province, in the odd semester of the 2024/2025 school year. The study involved 30 students of class V and five expert validators, consisting of subject matter experts, media experts, linguists, design experts and a homeroom teacher of class V who acted as a practitioner.

The study adopts the 4D development model proposed by Thiagarajan, which consists of four phases:

Define, Design, Develop, and Disseminate**[18]**The "Defining" stage includes a needs analysis conducted through classroom observation and teacher interviews to identify learning problems and learning gaps. This stage also includes student analysis, task analysis based on Learning Outcomes (CP) and Learning Objectives (ATP), and the formulation of learning objectives.

The Design Stage involves the development of livesheet-assisted e-LKPD, alignment of teaching materials with Curriculum Independence, and preparation of evaluation instruments, including validation questionnaires and pretest-post items. According to**[19]**This design process should pay attention to content structure, pedagogy, visual layout, and language to ensure learning objectives are effectively achieved.

At the Development stage, the product is validated by subject matter, media, and language experts. The validation results guide the revision, which is followed by field trials to determine effectiveness and practicality. The final stage, Dissemination, consists of distributing products on a limited basis among teachers in the same school.
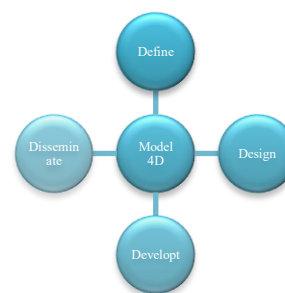

Figure 1. ImageMY4D development model

The IPAS e-LKPD was created using *Liveworksheet*, a free application from Google that turns conventional worksheets into interactive online exercises that can automatically correct students' answers with a visual programming tool, and is designed to display content that is engaging and easy to navigate for students. This e-LKPD includes the main components such as the cover page, main menu, learning guide, core materials, learning videos, interactive question exercises. This structure emphasizes clarity, appropriate language levels, and interactive features to support students' cognitive engagement. The following is the navigation structure of the e-LKPD IPAS Assisted *Liveworksheet*: The instruments used in this study include structured interview protocols, pretest-post questions.**[19].** Effectiveness was evaluated using a normalized gain score (g) to compare pretest and posttest results. The interpretation of the score followed the criteria described by Sugiyono (2017), which categorized gains as low ($g<0.3$), medium ($0.3 \leq g \leq 0.7$), or high ($g \geq 0.7$). Meanwhile, practicality was measured based on feedback from teachers and students.

Quantitative methods are used to process questionnaire data and test scores. Data collection methods include interviews, observations, and questionnaires. Observation serves as a non-instrumental method for

understanding classroom dynamics. Meanwhile, interviews help identify teaching needs and existing teaching conditions.

Table 1. MY DESKThe Scratch Media Navigation Structure

Register	The stages of registering by connecting an e-mail, filling in personal data.
Create e-LKPD	Stages of uploading the document file to the application.
Editing,	The editing stage works if we want to add video or audio that supports the completeness of our document. In addition, at this stage, we can change the questions/questions contained in our documents to be more interactive. Some of the features provided to make questions/questions more interactive include: a) multiple choices, b) filling, c) descriptions, d) matchmaking, e) determining words, f) questions in the form of audio, g) questions in the form of videos, h) drag and drop.
Share	After saving the document that we have *edited* earlier, at the top and bottom of our document page there is a *link*/link that will later be shared with students. When students click on the link, it will automatically go to the document that we have *edited* and worked on earlier.

Through the process of developing structured 4D, this research aims to produce an effective IPAS e-LKPD to improve learning outcomes. E-LKPD IPAS not only functions as a learning tool but also as a motivational tool that increases student involvement. In addition, this research contributes to the integration of educational technology in the implementation of Curriculum Independence at the elementary level. The resulting product can also serve as a replicable model for similar innovations in primary education and reference for further research in media-based learning interventions.

III. RESULTS AND DISCUSSION

The results and discussion of this study present a comprehensive explanation of the process of developing and evaluating e-LKPD IPAS Assisted *by Liveworksheet* which aims to improve the learning outcomes of grade V students of SD Negeri 064990 Medan Johor. Through the application of a systematic 4D development model Define, Design, Develop, and Disseminate This research describes each stage in detail, starting from identifying learning needs, designing e-LKPD, testing effectiveness, to limited dissemination. These findings provide empirical evidence on the effectiveness of the e-LKPD developed, highlighting its potential as a powerful digital learning tool that aligns with learning objectives. Independence of the curriculum and supporting meaningful, engaging, and student-centered learning[20].

1. *Define*

The definition stage aims to identify instructional needs and real problems in the field. Through classroom observations, documentation analysis, and interviews with teachers and principals of SD Negeri 064990 Medan Johor, it was found that IPAS (Integrated Science and Social Sciences) learning is still dominated by conventional learning. Learning is still highly dependent on lectures and the lack of use of interactive media, resulting in low student involvement and suboptimal learning outcomes.[21].

Teachers reported difficulty in conveying abstract topics such as my area of pride. In addition, student analysis shows a variety of learning styles (visual, auditory, and kinesthetic), which have not been adequately accommodated in existing teaching methods. Therefore, e-LKPD IPAS Assisted *Liveworksheet* is identified as a learning tool that is equipped with interactive problem exercises and provides a more interesting learning experience.
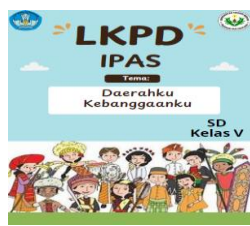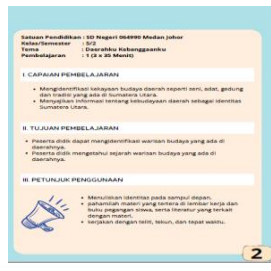
In addition, assignment analysis is carried out based on learning outcomes (CP) and learning objectives (ATP) of the Independence Curriculum. This is important to ensure that the content of the e-LKPD is aligned with the curriculum goals and the cognitive development of students.

2. *Design*

Based on the findings of the definition stage, the learning media was designed using *Liveworksheet*, focusing on the topic "My Pride Region" The content was taken from official teaching modules, teacher books, and student textbooks, and then adapted into interactive components.[26].

Liveworksheet includes several features: Home, create, review, communicate. First design:

Table Ii Design *Scratch* Media

Page 1	Page 2
Page 3	Page 4

Page 5	Page 6

Page 7	Page 8

Page 9	Page 10

Page 11	Page 12

Page 13	Page 14

Page 15	Page 16

3. Development

Effectiveness Test

The effectiveness test was assessed by comparing the results of the students' pretests and postes.

- The average pretest score is 61, while the post score rises to 88.
- The normalized gain score (g) was calculated as 0.69, categorized as "high effectiveness".

These results showed a significant improvement in students' conceptual understanding after using e-LKPD. Classroom observations also show increased student engagement, attention, and enjoyment during learning sessions. These findings are consistent with previous research by **[27],** which emphasizes the ability *of Liveworksheets* to improve learning outcomes and motivation.

4. Dissiminate

The final product was disseminated on a limited basis at SD Negeri 064990 Medan Johor. This approach allows for rigorous monitoring and refinement based on feedback from teachers and students. Dissemination involves collaborative discussions to assess the strengths of the e-LKPD and areas for improvement **[28]**.

Limited dissemination was chosen to ensure contextual relevance and adaptability prior to wider implementation. The development and use of e-LKPD IPAS is in line with the objectives of the Independent Curriculum, especially in encouraging meaningful, technology-integrated, and student-centered learning.

Based on the results obtained from the definement, design, development, and dissemination stages, e-LKPD IPAS assisted *by liveworksheet* for learning in Class V has proven to be very effective. The product is well designed in response to student needs and aligns with curriculum standards. Expert validation confirms the quality of its learning, and its implementation in the classroom demonstrates its ability to significantly improve student learning outcomes. The IPAS E-LKPD has succeeded in overcoming the limitations of traditional learning in IPAS, especially in presenting abstract scientific content. By combining visual, video, and practice elements of interactive questions, these media stimulate students' interest and facilitate deeper understanding. The strengthening score of 0.69 reflects very high effectiveness.

In conclusion, e-LKPD IPAS assisted *by liveworksheets* is highly recommended to be adopted more widely in elementary schools. This E-LKPD supports the goals of the Independent Curriculum and encourages

innovation in digital education. The further development and implementation of this e-LKPD on other topics and grade levels is highly recommended.

IV. CONCLUSIONS

Based on the results and discussion of this research and development, it can be concluded that the liveworksheet-assisted e-LKPD IPAS developed in this study is effective for use in Integrated Science (IPAS) Class V learning. This shows that the use of liveworksheet-assisted IPAS e-LKPD significantly improves student learning outcomes. The implications of this study show that e-LKPD IPAS assisted *by liveworksheet* functions as an innovative learning tool that supports meaningful and student-centered learning. First, this e-LKPD facilitates the role of teachers as learning facilitators, allowing students to be more actively involved in individual work, leading to improved learning outcomes. Second, it allows students to review and review the topic of "My Region of Pride" repeatedly, with no time limit, thus allowing for a more flexible and enjoyable learning experience. Third, the use of e-LKPD IPAS assisted *by liveworksheets* is in line with the objectives of the Merdeka Learning policy and the principles of 21st century education, which encourage technology-integrated learning and develop students' critical thinking and digital literacy skills. Recommendations based on the findings of the study are as follows: (1) Students who have mobile phones are expected to access e-LKPD IPAS at home as additional learning materials. (2) Teachers are expected to master the creation and development of e-LKPD so that they can keep up with technological developments, especially in creating other e-LKPDs that can help the learning process. (3)School principals can support by providing various learning tools, especially in the use of e-LKPD IPAS assisted by liveworksheets, as a means of development and utilization to achieve learning goals. (4) This research can be used as a reference for other researchers who want to conduct similar research.

REFERENCE

[1] Amri, S. (2016). Development & Learning Model in Curriculum 2013, Jakarta: Prestasi Pustakarya.

[2] Arifin, Z. (2020). Educational Research Methodology. Al-Hikmah Journal, 1(1).

[3] Fauziyah, L., & Mulyani, P. K. (2023). Development of E-LKPD Assisted by Liveworksheets for Human Organ Materials Class V Sdn 02 Podo. Prima Magistra: Scientific Journal of Education, 4(4), 522–532. https://doi.org/10.37478/jpm.v4i4.3039.

[4] Firtsanianta, H., Khofifah, I., & Surabaya, U. M. (2022). The Effectiveness of Liveworksheet-Assisted E-LKPD. 141–150.

[5] Hamzah, A. (2021). Research & Development Methods, Quantitative and Qualitative Product Tests, Processes and Results, Sample Development Proposals for Qualitative and Quantitative Test Designs. CV Literasi Nusantara Abadi.

[6] Noor, J. (2021). Research Methodology (2nd). Jakarta: Kencana Prenada Media Group.

[7] Prabowo, Andi. (2021). The Use of Liveworksheet with Web-Based Applications to Improve Student Learning Outcomes. Indonesian Journal of Education and Technology (JPTI).

[8] *Purwanto. (2019). Evaluation of Learning Outcomes (Budi Santosa (ed.); 3rd). Yogyakarta: Pustaka Belajar.*

[9] Sa'adah, R. N. (2021). R&D (Research and Development) Research Methods, Theoretical and Applied Studies. CV Literasi Nusantara Abadi.

[10] Sugiyono. (2017). Management Research Methods Quantitative, Qualitative, Combination, Action Research, Evaluation Research. Bandung: Alfabeta.

[11] Sukmadinata, Nana Syaodih. (2008). Educational Research Methods. Bandung: PT. Teenager Rosdakarya.

[12] *Suratmi, S., Suratmi, & Laihat. (2023). Analysis of the Development Needs of E-LKPD Based on Hots Assisted by Lıveworksheet for Elementary School Participants. Journal of Elementary Education, 6(4), 1818–1827.* https://doi.org/10.31949/jee.v6i4.7222

[13] Susanto, Ahmad. 2015. Development of Social Studies Learning in Elementary Schools. Jakarta: Achievements of Pustaka Raya

[14] Syah, M. (2017). Educational Psychology. Bandung: Remaja Rosdakarya.

[15] Trianto. (2012). Designing an Innovative-Progressive Learning Model. Jakarta: PT. Kencana Prenada Media Group.

[16] Urfani Nurul Fitriah and Ismono. (2017). LKPD is oriented to a contextual teaching and learning approach to train critical thinking skills on solubility materials and solution results. Unesa Journal Of Chemical Education, 6(2), 238-242.

[17] Wahidmurni. 2017. Social Studies Learning Methodology. Yogyakarta: AR-RUZZ.

[18] Widiyani, A., & Pramudiani, P. (2021). Development of Liveworksheet Software-Based Student Worksheets (LKPD) on PPKn Materials. DWIJA CENDEKIA: Journal of Pedagogic Research, 5(1), 132. https://doi.org/10.20961/jdc.v5i1.53176Media.

[19] Winanda Sipra Surya Sitinjak1, L. J. A. (2023). The development of LKPD based on discovery learning assisted by liveworksheets on theme 7 changes in the form of objects in class V of SDN 064958 Medan Area. 01(03), 159–175.

[20] Yuniastuti, et al. (2021). Learning Media for the Millennial Generation. Surabaya: Scopindo Media Pustaka.