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Development of a Project-Based Student Worksheet Oriented to Local Wisdom to Enhance Creative Thinking Skills

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ABSTRACT

This study aims to determine the feasibility, practicality, and effectiveness of a project-based and local-wisdom-oriented student worksheet for enhancing creative thinking skills. This study is a development research employing the ADDIE model, with the research subjects being students in class C of the 2023 cohort of the Elementary School Teacher Education Study Program at Universitas PGRI Ronggolawe Tuban, totaling 32 students. This research was conducted in 2025 at Universitas PGRI Ronggolawe Tuban. The results showed that the developed student worksheet had an average feasibility score of 92%, indicating it is very feasible. The worksheet was also classified as very practical, with learning implementation and student responses reaching 93.3% and 92.9%, respectively. In addition, the worksheet demonstrated very high effectiveness in enhancing creative thinking skills, as indicated by an N-gain score of 86.88%. Based on these findings, the student worksheet integrating project-based learning and local wisdom is considered feasible, practical, and effective for enhancing students' creative thinking skills.

Keywords: project-based, local wisdom, creative thinking skills

INTRODUCTION

The development of education is growing rapidly, especially in the 21st century [1]. This century requires students not only to master course materials but also to possess higher-order thinking skills, particularly creative thinking skills [2]. Creative thinking is a skill in generating new ideas and applying them to solve problems [3]. Creative thinking skills must be possessed and applied by students [4]. This is because these skills are very important for students to produce innovative solutions and adapt to challenges [5]. Along with these global demands, education also aims to build strong character.

One form of character strengthening for students is the sense of love and appreciation for the identity and local wisdom of their region [6]. Moreover, many young people today, especially university students, have begun to lose their sense of love for their homeland [7]. Students need to understand and preserve local wisdom as part of their personal identity in society in the era of globalization [8]. Local wisdom is everything that becomes a distinctive characteristic of a region, consisting of various aspects such as culture, economics, social life, and others [9]. Unfortunately, the course materials are often still irrelevant and not yet focused on developing creativity and character formation needs through the local wisdom of the region [10]. These materials are generally included in the student worksheet. A student worksheet or LKM is a learning tool that supports the learning process and contains materials and assignments [11]. The role of the student worksheet, which should serve as a bridge for students to create and deepen their understanding of their local wisdom, is still not optimal. Therefore, it is necessary to develop contextual, effective learning materials, particularly student worksheets integrated with the region's local wisdom, to enhance creative thinking skills.

The most effective learning model for improving creative thinking skills is a project-based approach. A project-based learning model is a model that provides authentic learning, which directly involves students with the learning content [12]. This model focuses on disciplinary principles that facilitate students in conducting investigations to solve problems [13]. Through this model, it is expected that students' creativity can improve. In addition, it trains students in creating new ideas.

Previous studies have proven that the project-based learning model is effective in improving creative thinking skills [14], [15]. Similarly, studies on local wisdom in the curriculum have shown positive results in improving affective learning outcomes, particularly in fostering pride in one's own cultural wisdom [16], [17]. However, these studies and research have generally been conducted separately. Project-based learning often only focuses on general projects without emphasis on more specific local wisdom. Meanwhile, the integration

of local wisdom is still not optimal in structured projects. Student worksheets have also been widely developed, but most of them have not integrated project-based learning with elements of local wisdom from the region.

The development stage and feasibility testing of the student worksheet explicitly integrate the syntax of project-based learning with elements of local wisdom from the region. This combination is designed to create a positive synergy through project-based learning that cultivates creativity and local wisdom, enhancing students' sense of love for their regional cultural wisdom.

Based on this background, the purpose of this study is to determine the feasibility, practicality, and effectiveness of the developed project-based student worksheet, oriented to local wisdom, for enhancing creative thinking skills.

RESEARCH METHODS

This study used a Research and Development (R&D) approach. The development research model used is the ADDIE model, which consists of five stages: (1) Analyze, (2) Design, (3) Develop, (4) Implement, and (5) Evaluation [18].

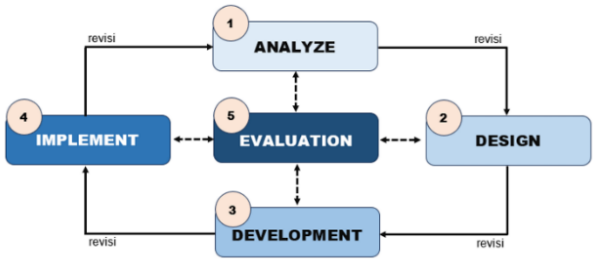

Figure 1. Stages of the ADDIE Model

This model was chosen for its structured focus on producing a student worksheet and on examining its feasibility, practicality, and effectiveness. The subjects of this study included material, media, and language experts, as well as students of the Elementary School Teacher Education Study Program at Universitas PGRI Ronggolawe Tuban, class of 2023, who are currently in the third semester taking the Local Cultural Wisdom course.

The research instruments used included: a product feasibility sheet, a learning implementation sheet, a student response questionnaire, and a creative thinking skills test sheet. This study used three data collection techniques, namely questionnaires, observations, and tests. The collected data were used to assess the product's feasibility, practicality, and effectiveness. The data analysis techniques were used to produce a high-quality product that meets the criteria of feasibility, practicality, and effectiveness. The indicators of creative thinking skills used were Fluency, Flexibility, Originality, and Elaboration according to the Torrance model. The product feasibility analysis was used to determine whether the developed product is feasible for implementation. This analysis was carried out on the feasibility data obtained using the feasibility sheet and calculated using the formula:

$$Feasibility\ Level = \frac{\text{Total score of expert assessment responses}}{\text{Maximum possible score of assessment responses}}\ x\ 100\%$$

The percentage of feasibility level obtained from the material expert, language expert, and media expert was averaged, then categorized based on the criteria in the following table [19]:

Table 1. Feasibility Categories

Percentage (%)	Category
85 ≤ feasibility score ≤ 100	Very Good
70 ≤ feasibility score < 85	Good
60 ≤ feasibility score < 70	Fairly Good
50 ≤ feasibility score < 60	Poor
0 ≤ feasibility score < 50	Very Poor

The results of the observation of learning implementation and the research subjects' response questionnaire regarding the product were used to determine the product's practicality. It was calculated using the formula:

$$Learning\ Implementation = \frac{\text{Total obtained score}}{\text{Maximum score}}\ x\ 100\%$$

Meanwhile, the following equation was used to calculate the percentage of research subjects' responses toward the developed product.

$$Research\ Subject\ Response = \frac{\text{Total obtained score}}{\text{Maximum score}}\ x\ 100\%$$

The percentage results of learning implementation and research subjects' responses toward the product were interpreted into the practicality categories in the table [20]:

Table 2. Practicality Categories

Percentage (%)	Category
81 – 100	Very Practical
61 – 80	Practical
41 – 60	Fairly Practical
21 – 40	Less Practical
0 – 20	Not Practical

The results of the creative thinking skills test administered to the research subjects were used to determine the effectiveness of the developed product. The data from the creative thinking skills test were analyzed using the N-gain score test with the formula:

$$N - Gain\ Score = \frac{\text{Posttest score} - \text{Pretest score}}{\text{Maximum score} - \text{Pretest score}}\ x\ 100\%$$

The percentage score obtained from the N-gain score test is categorized using the criteria in the following table [21]:

Tabel 3. N-gain Score Categories

Percentage (%)	Category
N-gain > 70	High
30 ≤ N-gain ≤ 70	Medium
N-gain < 30	Low

RESULTS AND DISCUSSION

The main scientific finding of this study is that the developed project-based student worksheet, oriented to local wisdom, has been proven highly functional and easy to implement in lectures. In general, this product obtained an average feasibility score of 92%, which is categorized as very feasible and very practical, because its learning implementation score was 93.3%. It received a good response from students, with a 92.9% score. It was very effective in enhancing the creative thinking skills of Elementary School Teacher Education students, as indicated by an N-gain score of 86.88%.

The development results carried out using the ADDIE model (Analyze, Design, Develop, Implement, Evaluate) include:

1. Analysis Stage (Analyze)
   In this stage, several analyses were conducted, including curriculum and competency analysis of the Local Cultural Wisdom course, as well as analyses of student characteristics, in which students are interested in active learning outside the classroom but do not yet have innovative ideas for utilizing the potential of local wisdom in their region. In addition, an analysis of local potential was also conducted, along with an analysis of media and teaching material needs, such as the lack of structured media or student worksheets, as well as an analysis of learning problems that are not yet contextual and do not sufficiently support students in thinking creatively. The analysis results indicated a gap between the demands for creative thinking skills and the appreciation of local wisdom, and the actual learning conditions in the Local Cultural Wisdom course in the Elementary School Teacher Education Study Program at Universitas PGRI Ronggolawe Tuban.
2. Design Stage (Design)
   Based on the analysis results, a prototype was designed in this stage, including learning tools such as the Semester Learning Plan, PowerPoint slides, modules, student worksheets, and assessment sheets. In addition, research instruments were designed, including the feasibility sheet, observation sheet, and student response questionnaire.
3. Development Stage (Develop)
   At the development stage, the process included validating prototype one by three experts: a media expert, a material expert, and a language expert. The feasibility level obtained from the calculation results is presented in the following figure:

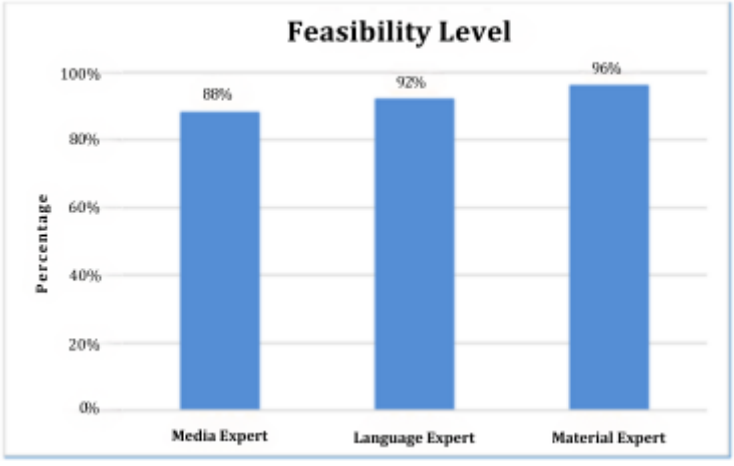

Figure 2. Percentage of Product Feasibility Level

Based on Figure 2, the feasibility results were obtained with the details of 88% from the media expert, 92% from the language expert, and 96% from the material expert. The average percentage of the overall feasibility score reached 92%. Prototype 2, or the project-based and local-wisdom-oriented student worksheet product, is consistently categorized based on Table 1 and obtained the Very Good category. The high level of agreement among the experts, especially from the material expert who assessed the educational substance and pedagogy, confirms that the content, language, and design of the student worksheet have met the quality standards and substantial feasibility before being implemented in the field trial.

Based on the results in Figure 2, the product's feasibility reached 92%. This score indicates that the product has been tested and is highly feasible to be trialed in accordance with the criteria in Table 1. In addition, the product was declared conceptual and structural, so it can address the problems identified in the initial analysis stage, namely, learning that was less conceptual and did not sufficiently encourage creative thinking skills. Contextual learning allows students to relate what they know to everyday life [22]. With proper integration of the project-based learning model and local wisdom, the student worksheet was assessed by experts as relevant, functional, and scientifically accurate teaching material. This is in line with a similar study conducted by Utami et al. (2025), which combined the PjBL model with local wisdom into a learning medium and obtained a very feasible category [23].

In addition, other studies obtained similar results when combining project-based learning with local wisdom, which improved creative thinking skills. These studies include research conducted by Azizah and Wulandari (2024), which stated that the integration of both has a positive influence on enhancing creativity [24]. A similar study was also conducted by Nurfitriani et al. (2025) and obtained results showing that the integration of PjBL with local wisdom can improve learning outcomes and creativity [25]. From these studies, the average findings support and strengthen the feasibility results of the developed student worksheet product. Therefore, in terms of feasibility, this student worksheet product is very feasible for field testing.

4. Implementation Stage (Implement)

After being declared feasible for trial, the student worksheet was applied to 32 students in the Elementary School Teacher Education Study Program, class of 2023, class C, in the Local Cultural Wisdom course on the topic of Plant and Animal Natural Resources. The implementation involved administering a pretest and posttest to assess the effectiveness of creative thinking skills, and a response questionnaire to assess practicality.

The data obtained from the observation of learning implementation, as well as student responses, which were used to measure practicality, are presented in the following figure:

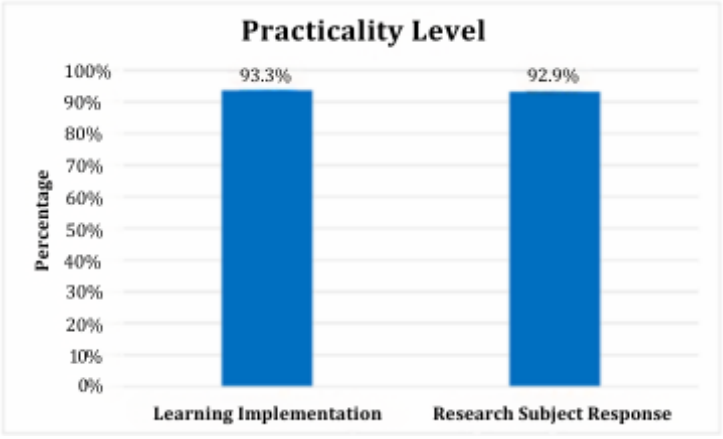

Figure 3. Percentage of Product Practicality Level

Based on Figure 3, the results showed that the observation of learning implementation reached 93.3%. Meanwhile, the results of the student response questionnaire showed a high percentage, namely 92.9%, which indicates a good response according to Table 4 regarding ease of understanding and comfort of use by the students. The indicators in Table 2 state that these percentages fall into the Very Practical category. This high percentage indicates that the student worksheet has clear instructions, a logical project flow, and a design that facilitates both the instructor's role and students' independent activities without significant obstacles.

Based on the results in Figure 3, after observing the learning implementation during the implementation stage, the observer's practicality score was 93.3%. This score indicates that the implementation of the student worksheet product is very practical, as shown in Table 2. The high level of practicality from the observation results of learning implementation indicates that the student worksheet provides convenience for lecturers and students in encouraging creative thinking skills. The student worksheet plays an important structural role in simplifying the implementation of the project-based model for lecturers, as it provides clear steps. Simplifying the project-based learning model through learning media based on local wisdom becomes one of the practical solutions in learning [26][27] [28].

In addition, to measure practicality from the student perspective, a student response test on the implementation of lectures using the student worksheet was also conducted, with a score of 92.9%. Based on Table 4 regarding student responses as research subjects, this indicates that the implementation received a response categorized as very good. The high level of student responses indicates that implementing the student worksheet makes students more active in lectures (learner autonomy) [29]. This is because the student worksheet requires students to explore the local wisdom of their respective regions. With this,

students will feel freer in generating ideas, solutions, and creative concepts in developing the local wisdom of their region. This is supported by the study of Tarika and Pritasari (2024), which obtained a very good response when implementing similar teaching materials [30].

In addition to practicality at this stage, students were asked to complete a creative thinking skills test in the form of a pretest and posttest to determine the level of effectiveness of the product. The students' scores were then calculated using the N-gain formula. The data obtained were then presented in the following figure:

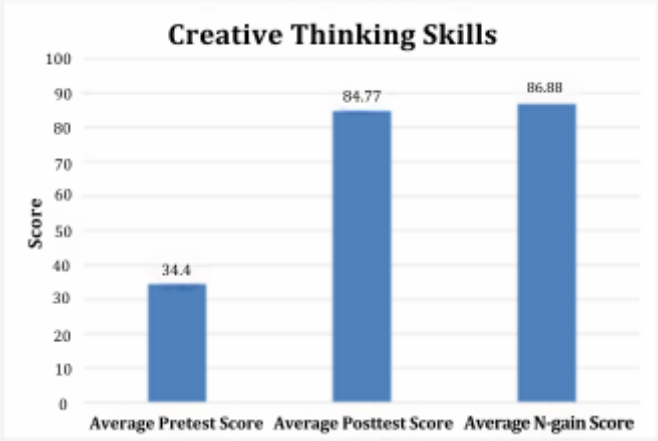

Figure 4. Average Scores of Pretest, Posttest, and N-gain

Figure 4 shows that the average pretest score was 34.4 and increased significantly to 84.77 in the posttest. This increase in scores indicates that implementing this student worksheet effectively stimulates the dimensions of creative thinking skills, such as fluency, flexibility, originality, and elaboration. The N-gain calculation result showed a score of 86.88, which, according to Table 3, is categorized as a high level of effectiveness. The project-based, oriented to local wisdom student worksheet has been proven highly effective in enhancing students' creative thinking skills.

Based on Figure 4, there was an increase in pretest and posttest scores, as evidenced by an N-gain score of 86.88. This score, based on Table 3, is classified into the high effectiveness category. The high effectiveness is due to the application of the project-based learning model, which stimulates divergent thinking among students. This divergent thinking generates unique ideas (Originality) and various solutions for solving problems (Flexibility) in processing local wisdom [31] [32]. The relevance of local wisdom issues becomes a strong trigger that makes learning more challenging and meaningful, thereby highly supporting the development of creative thinking skills [33] [34]. This is certainly supported by a previous study conducted by Hikmawati et al. (2023), which stated that the integration of the project-based learning model with local wisdom has a high level of effectiveness in improving creative thinking skills [35].

5. Evaluation Stage (Evaluate)

At this stage, the researcher compiled the research results into assessments from the validators, observations of the learning implementation, responses from the research subjects, pretest and posttest scores, and the sense of appreciation for the local region before and after the implementation of the product. When evaluating research and development results, data analysis techniques and criteria are needed to assess feasibility, practicality, and effectiveness. The final evaluation concluded that the developed student worksheet was declared successful because it met all the standards of being Very Feasible, Very Practical, and Very Effective. Although the product met the high feasibility standards, the evaluation recorded several suggestions from experts for further product improvement, such as providing a clear time duration for each project stage, avoiding the use of red color, making the language more communicative for easier understanding, and making the material more systematic so that the learning sequence becomes more coherent.

CONCLUSION

The development research of a project-based student worksheet oriented to local wisdom to enhance creative thinking skills, which was conducted using the ADDIE model, successfully achieved its objectives with the following results:

1. The student worksheet is feasible to be used with a Very Good category, as evidenced by the assessments from three validators, namely media expert: 88%, language expert: 92%, and material expert: 96%, resulting in an average of 92%.
2. The student worksheet is categorized as Very Practical, based on data from the implementation of learning practicality: 93.3% and research subject responses: 92.9%
3. The student worksheet has high effectiveness in enhancing the creative thinking skills of undergraduate students of the Elementary School Teacher Education Study Program, Universitas PGRI Ronggolawe Tuban, as evidenced by an N-gain score of 86.88%.

Overall, this project-based student worksheet, oriented to local wisdom, was successfully developed and is deemed feasible, very practical, and effective for enhancing students' creative thinking skills.

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