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Developing Edupreneurship-Oriented Natural and Social Sciences Teaching Materials Using the Project-Based Learning to Improve Students' Creativity for Primary School

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ABSTRACT

The intent of this study is to describe the validity, practicality, and effectiveness of edupreneurship-oriented IPAS teaching materials using the PjBL model to improve primary school students' creativity. The research design used is ADDIE, which includes analysis, design, development, implementation, and evaluation. This research was conducted at public primary school Wonokerso 2. The data collection instruments used are validity sheets, teacher and student response questionnaires, and student creativity test sheets. The results of the study indicated that the validity test carried out by experts had a value of 90.57, which met the very valid category. The practicality test results from the student questionnaire, class teacher responses, and colleagues' evaluations, which had average values of 90.74, 87.10, and 84.68, respectively, all met the very practical category. The effectiveness test was based on the results of the paired sample t-test (value of Sig. 0.00 < 0.05) and n-gain tests (value of 0.52). The results of the paired sample t-test on student creativity showed an average difference between the observation data before and after the study. The n-gain analysis indicates that students' creativity meets the moderate category. The results of the study indicate that the entrepreneurship-oriented IPAS teaching materials using the PjBL model developed are proven to be valid, practical, and effective in supporting character education.

Keywords: edupreneurship, primary school, student creativity, teaching materials

INTRODUCTION

Creativity is a learning process carried out through various activities, through the development of one's ideas [1], [2]. Creativity is viewed as broad and crucial to individual well-being, as it can enhance self-excellence and is considered a key competitive advantage in the learning process [3], [4]. A person who can think synthetically is someone who can think creatively, thus creating a new atmosphere for themselves and their environment. The higher a person's level of creativity, the higher their academic achievement, and conversely, the lower their level of creativity, the lower their academic achievement [5], [6]. Creativity is often viewed as complex, involving the development of new ideas and conceptualizations that are novel and useful for everyone [7], [8], [9]. Thus, creativity is a process or ability of a person to express ideas, identify difficulties, and formulate hypotheses regarding their shortcomings [10].

Creativity has significant benefits for children's lives [11], [12], namely: creativity provides children with immense personal pleasure and satisfaction, a reward that has a real impact on their personality development; creativity is important for young children to add spice to their play, which is central to their life activities. If creativity can make play fun, they will feel happy and satisfied; this in turn will foster favorable personal and social adjustment; achievement is a primary interest in their life adjustment, so creativity helps them achieve success in areas that are meaningful to them, and being well-regarded by people who matter to them will be a source of great ego satisfaction; and an important and often overlooked value of creativity is leadership. At every age level, leaders must contribute something to the group that is meaningful to the group members. This contribution may be in the form of suggestions for new and different play activities or suggestions regarding how to take special responsibility for the group.

Given the importance of creativity for students, it is only natural to instill it from an early age. However, several obstacles or problems continue to occur that contribute to low levels of student creativity, one of which is students' reluctance and confusion in developing their imagination [13], [14]. Teachers frequently restrict their materials to explanations, causing students to lose themselves in their play activities. During learning, children imitate their peers' work, teachers tend to focus on one activity, the media used is limited to textbooks, and teachers lack appreciation for children's work.

According to data from the Global Creativity Index (GCI), Indonesia's creativity level is among the lowest compared to other ASEAN countries [15]. Indonesia scored 0.202, far below Singapore's 0.896. The GCI measures creativity based on the 3Ts (talent, technology, and tolerance). Consistent with this data, the PISA survey found that Indonesia's low student creativity levels are due to the lack of clear assessment guidelines, particularly when complex tools are required [16]. This information could help teachers design learning activities that support creativity and propose relevant evaluation criteria, thus facilitating students' understanding of creativity and expected outcomes. Furthermore, the realm of creativity in education has not yet addressed the broader scope of 21st-century skills [17], [18].

Furthermore, a preliminary study conducted by the author at public primary school Wonokerso 2 revealed that student creativity remains relatively low. This was evident when teachers presented lesson material without students asking questions or responding; the learning process was passive. Students were not seen generating unique ideas or imagining themselves. Moreover, when students are given the task of drawing or creating a project, they produce it as exemplified, without any novelty or creative ideas emerging in their work. This low level of creativity is influenced by several factors: the lack of innovative learning models in the IPAS process. Teachers still rely on available learning resources, such as textbooks from specific publishers, and are limited in their use of other media in their learning due to limited student and school resources. Existing science and science learning resources come from several other sources selected by subject teachers. The lack of comprehensive learning resources providing reading materials that cover all aspects/content of the material aligned with the new curriculum makes it difficult for teachers to develop their classroom learning process.

Additionally, information has been obtained that student learning outcomes are quite low. This may be due to students relying solely on printed learning resources, namely textbooks, which impacts low learning creativity. Most students do not have learning resources in the form of science textbooks to support the learning process due to the limited availability of textbook learning resources in the library, so students experience learning difficulties due to limited learning resources and limited facilities for accessing information from the internet, where students only have chat packages, but to access information, students still have difficulty. In fact, teaching materials can stimulate creativity and critical thinking skills, solve problems in learning, and develop new skills for students [19], [20]. Based on the limited facilities and infrastructure regarding printed teaching materials available in the library, it is one of the causes of low student learning creativity.

These problems require solutions. Teaching materials play an essential role as guides in the learning process. Prastowo states that teaching materials are a systematic arrangement of collected materials from various learning sources [21]. Furthermore, teaching materials are systematically designed learning materials that provide a range of information, knowledge, experience, and skills in the teaching and learning process [22], [23], [24].

The teaching materials developed are oriented toward edupreneurship using the Project-Based Learning (PjBL) model. This means that the reading and practice questions use the entrepreneurship context and integrate the PjBL model within the teaching materials. The PjBL model was chosen because it is project oriented. Project-based learning directs students to design, create, and produce work/results to achieve cognitive competencies, attitudes, and skills [25], [26], [27], [28]. Project-Based Learning (PjBL) is an active learning method that connects technology to everyday life through project activities and creative work [29]. Consistent with this statement, PjBL reduces students' cognitive load, meaning they don't feel pressured to learn the required knowledge because they are given the freedom to discover, explore, and investigate their learning concepts [30].

Many studies have addressed this issue, such as research conducted by Octariani and Rambe, which indicated that validation results met the adequate and valid criteria and could be used for testing with students [31]. One of the activities designed in this teaching material was solving and discovering the concept of a circle and being able to apply it to GeoGebra software. Meanwhile, research conducted by Maharani and Efendi showed that the project-based learning model can create an active learning environment and influence student creativity [32]. However, the shortcomings of this development research are that it focuses solely on student cognition, specifically creativity, without integrating other concepts that can enhance student creative innovation. Therefore, this study addresses this issue by integrating creativity with the concept of edupreneurship.

Building upon the previously described concepts, field facts, and previous research, this study aims to describe the validity, practicality, and effectiveness of edupreneurship-oriented science teaching materials using the PjBL model to enhance primary school students' creativity.

RESEARCH METHODS

The type of research used is research and development. This research design uses the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation [33], [34]. The research and development conducted will create a product in the form of teaching materials as a resource for learning science. This research was conducted at Wonokerso 2 Public Primary School.

We conduct this research quantitatively, analyzing the collected data using descriptive statistics. The instruments used in this study include student creativity observation sheets, teacher response questionnaires, student response questionnaires, and

validation sheets from media and material experts. The student creativity observation sheets, teacher response questionnaires, student response questionnaires, media expert validation sheets, and material expert validation sheets were tested for validity by experts. This study employed interviews, questionnaires, observation, and documentation as data collection techniques.

After collecting data from all subjects or data sources, we conducted quantitative data analysis in this research and development project. The data analysis in this study used a valid analysis of teaching materials against the instrument used, namely a questionnaire assessing teaching materials by experts and practitioners. This study employed Gregory's method to validate teaching materials through the assessment of agreement among raters. This algorithm ensures that the evaluations conducted by teaching materials specialists in this research are consistent and reliable. The validation of data from the instructional materials and content expert surveys was computed using Gregory's algorithm, as cited in [35].

$$Vi = \frac{A}{A+B+C+D}$$

Description:
Vi : Gregory's content validity index
A : Disagreement between both raters
B : Disagreement shown by the second rater
C : Disagreement shown by the first rater
D : Agreement between both raters

The evaluation of the validation questionnaire outcomes by instructional materials specialists pertains to Table 1, which delineates the Gregory validity criteria.

Table 1. Validity Criteria for Teaching Materials

Percentage	Criteria
0.80 - 1	Very high
0.60 – 0.79	High
0.40 – 0.59	Moderate
0.20 – 0.39	Low

The practicality of the teaching materials was analyzed using student and teacher questionnaire responses. The questionnaire assessment data was analyzed using descriptive analysis.

$$P = \frac{Total\ Overall\ Score}{Maximum\ Score \times Number\ of\ Students}$$

The criteria for the practicality of the teaching materials are presented in Table 2 [36].

Table 2. Practical Criteria for Teaching Materials

Percentage	Criteria
81 – 100	Very practical
61 – 80	Practical
41 – 60	Moderately practical
21 – 40	Less practical
0 - 20	Not practical

Next, the effectiveness of the eduprepreneurship-oriented science teaching materials was analyzed using the PjBL model. Teaching materials are considered effective if there is a difference in learning outcomes (creativity) before and after they are used. A paired sample t-test was used to determine whether there is a significant difference in student learning outcomes (creativity) between observations before and after using the teaching materials. The N-Gain test was used to determine the increase in learning outcomes (creativity) from the teaching materials.

$$N\text{-}Gain = \frac{Posttest\ Score - Pretest\ Score}{Ideal\ Score - Pretest\ Score}$$

The N-Gain criteria are presented in Table 3 [36].

Table 3. N-Gain Criteria

Gain Value	Interpretation
N-Gain < 0.3	Low
0.30 ≤ N-Gain ≥ 0.7	Medium
N-Gain > 0.70	High

RESULT AND DISCUSSION

The development of this research resulted in an Edupreneurship-oriented IPAS teaching material product using the PjBL model to enhance the creativity of fourth-grade primary school students. The development of the research product modified the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. The processes that have been carried out in this research are as follows.

1. Analysis Stage

In this analysis stage, the researcher first conducted a needs analysis to identify the existing problems and understand how to develop the product. The analysis activities in this study were conducted through interviews. At this stage, the researcher carried out an analysis of the curriculum. After observing teachers at primary school Wonokero 02, it was discovered that the school uses the Independent Curriculum from grades 1 to 6. Learning Material Analysis: After analyzing the learning materials obtained through observations of

the fourth-grade teacher, it was discovered that the material used was changed in state.

Next, Student Analysis: The condition of fourth-grade students at primary school Wonokero 02 during lessons was not questioned or responded to, and the learning process was passive. Students did not appear to generate unique ideas or imagination from within themselves. Moreover, when students were given the task of drawing or creating a project, they did so as exemplified, without any novelty or creative ideas emerging in their work. Several factors, such as the lack of innovative science learning models and the science learning process, contribute to this low creativity. Teachers still rely on available learning resources, such as textbooks from specific publishers, and are limited in their use of other media in their learning due to limited resources available to students and limited school facilities. Existing social science learning resources come from several other sources, selected by subject teachers. The lack of comprehensive learning resources, including reading materials that cover all aspects/content relevant to the new curriculum, makes it difficult for teachers to develop their classroom learning processes.

Additionally, the outcomes of student learning are relatively poor. This may be due to students relying solely on printed learning resources, namely textbooks, which impacts low learning creativity. Most students lack learning resources in the form of social science textbooks to support their learning process due to the limited availability of textbooks in the library. Consequently, students experience learning difficulties due to limited learning resources and limited access to information from the internet. Students only have chat packages but still struggle to access information. The limited facilities and infrastructure available in the library for printed learning materials are one of the causes of low student learning creativity.

Overall, this stage identified learning needs and problems.

a. Needs Analysis: It was found that existing natural and social science (IPAS) teaching materials did not facilitate the development of creativity and were not integrated with the concept of edupreneurship (entrepreneurship in education).
b. Student and Curriculum Analysis: Elementary school students require teaching materials that are contextual, active, and encourage problem-solving. The curriculum allows for the integration of Project-Based Learning (PjBL) and entrepreneurial values.
c. Conclusion: It is necessary to develop new IPAS teaching materials that incorporate elements of edupreneurship and use PjBL syntax.

It was found that available science teaching materials lack contextualization and do not integrate 21st-century skills, particularly creativity and entrepreneurship (edupreneurship). Previous research (e.g., Wang et al.) emphasized that entrepreneurship education must encourage students to be creative and innovative [37]. Furthermore, project-based learning has been shown to connect learning materials to real-life situations and stimulate students' creative thinking [1], [38] (as demonstrated in research on PjBL in science learning in elementary schools).

2. Design Stage

In the design stage, the step taken is to draft the teaching material product. The product developed is a novelty in enhancing student creativity. This teaching material is designed using the PjBL learning model and is oriented towards Edupreneurship. The PjBL syntax is integrated into the learning steps contained in the teaching material. The teaching material design consists of a cover, foreword, learning outcomes, instructions for using the teaching material, table of contents, materials, student activities/student worksheets, and evaluation questions. The cover and learning outcomes design of the Edupreneurship-oriented IPAS teaching material product, which uses the PjBL model to enhance the creativity of fourth-grade primary school students, is presented in Figure 1.

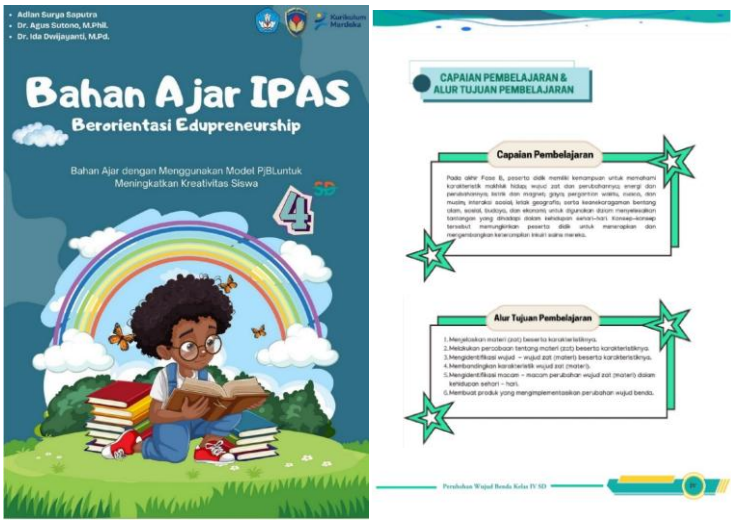

Figure 1. Teaching Material Cover and Learning Outcomes

Additionally, the student materials and worksheets design of the Edupreneurship-oriented IPAS teaching material product, which uses the PjBL model to enhance the creativity of fourth-grade primary school students, is presented in Figure 2.

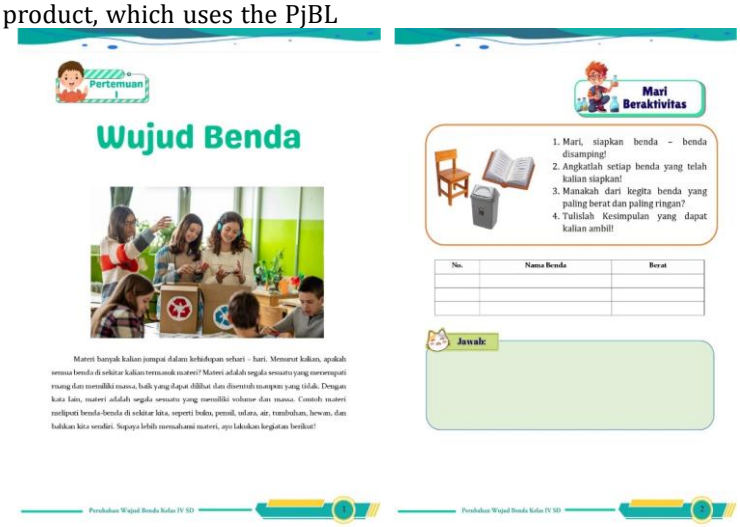

Figure 2. Student Materials and Worksheets Design

This stage produces a product blueprint. The teaching materials are designed to include main components such as teacher guides, student activity sheets, science and natural science materials related to simple entrepreneurial products/services, and project-based project stages. The team formulates student creativity assessment instruments that align with PjBL activities in the context of edupreneurship, focusing on areas such as original thinking skills, fluency, flexibility, and elaboration in project ideas. Overall, a blueprint for teaching materials is produced that combines science and natural science materials with PjBL syntax, where each project is directed at creating a simple product/service with sales value (edupreneurship). The creativity assessment instrument is designed based on creativity indicators in the context of product creation [39], [40].

3. Development Stage

In the development stage, researchers first translate the design into a tangible (physical) form. In product development, researchers pay attention to the attractiveness of the design, font type, color design, layout, and language design, according to the characteristics of fourth-grade students.

Experts in the field conduct validation testing at this development stage. The validation process assesses aspects such as the completeness of teaching materials, the completeness of content and language use, the PjBL model, edupreneurship, and creativity. Indicators that demonstrate the completeness of teaching materials include teaching pages, a table of contents, the flow of learning objectives, concept maps, content design, and evaluation questions. Indicators of content completeness and language use are teaching material typography, material accuracy, content accuracy, and evaluation questions. Indicators of the PjBL model are PjBL syntax and the appropriateness of PjBL syntax to the activities. The Edupreneurship indicator is the appropriateness of Edupreneurship indicators to the activities. The creativity indicator is the appropriateness of creativity indicators to the activities. The results of the teaching materials validation are presented in Table 4.

Table 4. Teaching Material Validation Results

Aspect	Indicator	Validator		
		1	2	3
Completeness of teaching materials	Home Page	12	10	12
	Table of Contents	8	8	7
	Learning Objective Flow	8	8	7
	Concept Map	7	6	7
	Content Design	7	16	14
Completeness of content and language use	Typography of Learning Materials	15	15	13
	Material Accuracy	11	11	11
	Content Accuracy	20	18	18
	Evaluation Questions	12	12	10
PjBL Model	Problem-Based Learning Syntax	6	6	6
	Problem-Based Learning Syntax and Activities	3	4	3
Edupreneurship	Education and Entrepreneurship Indicators	12	10	9

Aspect	Indicator	Validator		
		1	2	3
	Education and Entrepreneurship Indicators and Activities	4	4	3
Creativity	Creativity Indicators	8	6	7
	Creativity Indicators and Activities	4	4	4
Total Score		133	140	133
Value		89,50	92,11	89,50
Average		89.03		
Category		Very Valid		

This stage produces the final product and tests its validity through expert evaluations. Validation of Material & Media Experts, namely the developed teaching materials, are declared Very Valid or Valid (based on the average assessment of material expert validators and media/design experts, with a validity percentage). Implications: The teaching materials are suitable for use in terms of substance (IPAS & edupreneurship material) and appearance/design (ease of use & visualization). In addition, the teaching materials are theoretically suitable for use in terms of substance (integration of IPAS, Edupreneurship, and PjBL) and appearance. The iterative process of expert validation and user trials ensures that the resulting product has gone through a series of tests and improvements, which ultimately results in a product that is "valid" or suitable for use and meets learning objectives [41].

The relevant research findings are supported by the results of a study conducted by Dewi et al, which showed that these teaching materials are valid for enhancing students' creative thinking [42]. This research aligns with the validity of the teaching materials for enhancing student creativity. This is because the teaching materials are designed differently, integrating creativity indicators. These creativity indicators are incorporated into student activities, thus enhancing student creativity through active participation.

4. Implementation Stage

In addition, during the implementation stage, a trial of entrepreneurship-oriented IPAS teaching materials using the PjBL model was also conducted to improve the creativity of fourth-grade primary school students. This trial was conducted on 9 students, namely 3 top-ranked students, 3 middle-ranked students, and 3 bottom-ranked students. This product trial was used to determine the practicality of the teaching materials. After the trial, students and teachers were given teacher and student response questionnaires. The instrument used was a teacher and student response questionnaire. The following is a summary of the results of student and teacher responses to the practicality of the teaching materials in Table 5 and Table 6, respectively.

Table 5. Results of Student Responses to the Practicality of Teaching Materials

Number of Students	Average	Category
9	90.71	Very Practical

Table 6. Results of Teacher Responses to the Practicality of Teaching Materials

Assessor	Value	Category
Class Teacher	90,10	Very Practical
Colleagues	88,54	Very Practical

Teaching materials that have gone through a series of validations and trials are used as trial materials; in this case, a study to improve student creativity. In the trial use stage, students will use entrepreneurship-oriented teaching materials using the PjBL model, and then the creativity that develops in the students will be observed. We conduct observations twice: once prior to the use of entrepreneurship-oriented teaching materials utilizing the PjBL model, and once during their use. This trial stage aims to determine the effectiveness of entrepreneurship-oriented teaching materials using the PjBL model.

Testing the effectiveness of teaching materials on improving student creativity can be determined using analysis of variance. Analysis using ANOVA requires several prerequisites, including: 1) Data from a population with a multivariate normal distribution, 2) Equality of variance and covariance across populations. To meet these requirements, several assumption tests were conducted: 1) Normality Test, 2) Homogeneity of Variance and Covariance Test. Based on the results of the normality test for the data before the study, sig. 0.513 was obtained. The results of the normality test after the study were 0.787. Because of the sign. 0.05 indicates that pre-test and post-test observations on student creativity are normally distributed. Meanwhile, the homogeneity test yielded a sign. of 0.548, indicating that the pre- and post-study observations on student creativity are homogeneous. Next, a paired-sample t-test was conducted to test the hypothesis.

Based on the results of the "Paired Samples t-Test," the two-tailed Sig. 0.000 < 0.05 was obtained. Therefore, H0 was rejected and H1 was accepted. Therefore, there was a difference in the average between the observation data before and after the study on student creativity. The results of the paired sample t-test on student creativity showed a

difference in the average between the observation data before and after the study. Next, an n-gain test was conducted to determine the extent of the increase in observation data before and after the study.

The effectiveness of the teaching materials development was analyzed using the n-gain test. The n-gain test is used to calculate the magnitude of the increase in creativity. The data in Table 7 shows that student creativity increased in the observations before and after the study. The normality analysis shows that the average n-gain value of 0.52 in fourth-grade students' creativity falls into the moderate category.

Table 7. N-Gain Results of Student Creativity

Components	Findings	
	Pretest	Posttest
Number of students	30	30
Mean score	67,74	84,67
Normality gain	0,52	
Category	Medium	

The results of Table 7 show that learning using teaching materials can increase student creativity. Therefore, it is concluded that entrepreneurship-oriented IPAS teaching materials using the PjBL model are effective in increasing student creativity in the science subject content of grade students.

Edupreneurship-oriented teaching materials using the PjBL model, with the topic "transformation," were deemed practical based on teacher and student responses. The use of edupreneurship-oriented teaching materials using the PjBL model, based on student responses, resulted in a 90.74% percentage, categorized as very practical. Meanwhile, practicality tests conducted by classroom teachers yielded 87.10%, and those by peers yielded 84.68%, categorized as very practical. Therefore, in terms of practicality, entrepreneurship-oriented IPAS teaching materials using the PjBL model are practical for use in science lessons to enhance student creativity.

The importance of considering the product's attractiveness and usability when evaluating the practicality of teaching materials [43]. This is supported by research by This is supported by research by Ayomi et al and Nainggolan et al, who concluded that practicality is the level of usability or ease of use of teaching materials by students, encompassing aspects such as ease of use and presentation [44], [45]. The concept of ease of use involves comprehending the material and the language employed in the module. The presentation focuses on the module's appearance. Additionally, Alwi et al and Usman et al suggested that factors that can be investigated in product practicality include readability, ease of access to required information, the structure of each icon, and so on [46], [47]. The teaching materials' instructions, content, and ease of use serve as indicators to gauge their practicality.

Entrepreneurship-oriented teaching materials that utilize the PjBL model are deemed practical because they enhance student creativity through the learning activities included in those materials. The teaching materials should spark students' interest in reading, provide legible images and text, combine bright and attractive colors, be easy to use, use language that is easy to understand, and present the material in a complete and coherent manner. Well-packaged teaching materials engage readers and encourage further reading [23], [48], [49].

Building upon student and teacher assessments in the questionnaire responses, this teaching material is considered practical because students can use it because the instructions are easy to understand. Students can understand the story well because the language used is simple. Students enjoy reading the teaching material because it uses bright, attractive colors and is easy on the eyes. Students enjoy reading books because of the attractive font type and size. Meanwhile, according to teachers, the teaching material is considered practical because the size is proportional, making it easy to use and carry. The layout of the teaching material, which includes titles, subtitles, text, images, and page numbers, follows a consistent pattern. The teaching material is appropriate to the curriculum. The value of creativity is stated in each activity, and the teaching material enhances student creativity. Furthermore, the teaching material is designed to enhance student creativity, so it includes many activities that generate ideas for students to develop, which can enhance student creativity.

This means that learning IPAS using project-based teaching materials can encourage students' creativity in the learning process because the existing projects stimulate students' creativity. The use of teaching materials can help teachers maximize learning time with available projects, ensuring teachers are not confused about which projects students will undertake [50], [51].

The use of teaching materials in this IPAS project's learning provides feedback for both students and teachers. For teachers, project-based teaching materials can be used to facilitate the delivery or explanation of material, while for students, they serve as tools for independent and responsible learning. A teaching process can be considered successful if the lesson stimulates effective learning [52], [53], [54]. Learning outcomes are the result of the interaction between learning and teaching. Teachers use learning outcomes as a measure or criterion for achieving educational goals [55].

5. Evaluation Stage

This evaluation stage is carried out to review matters related to the development of Edupreneurship-oriented teaching materials using the PjBL model. This evaluation aims to obtain feedback on the success of the entrepreneurship-oriented teaching materials using the PjBL model that has been developed. However, evaluation can be done at any stage in the ADDIE model. During the development process, there are many suggestions, criticisms, and input received from validators. The suggestions, criticisms, and input provided serve as guidelines or benchmarks for making revisions at each stage to improve the product even more. For example, during the validation of teaching materials, if there are deficiencies in the teaching material display, the teaching material is re-evaluated so that deficiencies in the teaching material display are corrected. The final evaluation is conducted to determine whether the interactive teaching materials are declared valid for use and testing. Based on the validation results that have been carried out, it can be said that according to the validators, the developed teaching materials are declared valid and suitable for use.

Edupreneurship-oriented science teaching materials using the PjBL method are valid, practical, and effective in enhancing the creativity of elementary school students. The teaching materials are recommended for use as an alternative in science teaching in elementary schools and can be used as a model for developing other integrative teaching materials.

The results of this study demonstrate that the PjBL model creates active, contextual learning and stimulates students' creative thinking. Entrepreneurship-based teaching materials foster an entrepreneurial spirit, enhance creativity, and promote student innovation. This finding is supported and corroborated by the results of previous research, such as studies conducted by Andini et al. and Charron et al. [56], [57].

The theoretical implications of the results of this development research can serve as a reference for other comparable studies. Practically, this research can be used as a reference to gain new insights, increase creativity in developing teaching materials, and contribute to minimizing existing problems in education. Additionally, this research can serve as a guide to boost student creativity. Furthermore, the developed teaching materials can stimulate students' enjoyment with new, more varied materials, making learning more active and less boring.

CONCLUSION

The entrepreneurship-oriented IPAS teaching materials using the PjBL model to enhance the creativity of fourth-grade primary school students are proven valid, with a very valid category according to experts and practitioners. Students and practitioners have proven the practicality of the entrepreneurship-oriented science teaching materials, placing them in a highly regarded category. Furthermore, research has proven that the edupreneurship-oriented IPAS teaching materials effectively enhance the creativity of fourth-grade primary school students. As a recommendation, teachers are advised to adopt and implement the developed teaching materials. The use of project-based learning (PjBL) methods integrated with edupreneurship can be a primary alternative for creating active, contextual, and effective science and science learning that stimulates student creativity. The developed printed teaching materials can be converted into interactive e-module formats, complemented by video tutorials on project creation or augmented reality to increase appeal and ease of access. Furthermore, a more detailed Training of Trainers (TOT) guide for teachers is needed to enable them to effectively manage student entrepreneurship projects, from the idea planning stage to simple product marketing.

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