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Development of Design, Explain, Development, And Evaluation-Project Based Learning (DEDEn-PjBL) Model in Stimulating Children's Creativity

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Abstract

This research is research and development which aims to describe the level of need, prototype description, validity, practicality and effectiveness of the Design, Explain, Development, and Evaluation - Project Based Learning (PjBL) model in stimulating early childhood creativity. Data collection techniques through observation, interviews, and questionnaires. Data analysis techniques using descriptive and inferential data analysis. The research procedure begins with the investigation, design, realization, and test-evaluation-revision phases. The description of the needs analysis results shows that teachers need practical and effective learning models to stimulate children's creativity. The prototype description in the form of a model book and teacher's manual has been improved three times based on the input of expert validators and practitioners. It produces the DEDEn-PjBL model that can stimulate children's creativity. The results of the content validity test and the device's validity for all aspects are in the minimal category of "valid," so the DEDEn-PjBL model in stimulating children's creativity is declared valid. The results of the practicality test through the teacher's response questionnaire for all aspects are in the minimal category of "good," and the instrument for observing the implementation of the model shows that the average percentage of all aspects for five meetings is P >70% so that the DEDEn-PjBL model in stimulating children's creativity is declared practical. The effectiveness test results began with analyzing the pretest and post-test score data, which increased from the "low" to "very high" category. The data tested for normality with pretest results of 0.067 > Sig. 0.05 and posttest results in 0.081 > Sig. 0.05 so that the data is "normally distributed" after a hypothesis test, which shows the result tcount (14.714) > ttable (2.145), H0 rejected, and H1 accepted with a value of Sig. 0.00 > 0.05, which indicates that there is an influence of the DEDEn-PjBL model in stimulating children's creativity. The next step is the result of the mean N Gain Score is 0.7188 in the "high" category and a percentage value of 71.88% in the "quite effective" category. The N Gain test results show that the DEDEn-PjBL model is "quite effective" in stimulating children's creativity

Keywords: *Creativity, DEDEn-PjBL Model, Early Childhood.*

Introduction

It is essential to stimulate creativity from an early age. Developing children's creativity is important for achieving educational goals (Rupérez, 2020). Creativity can help children to develop critical thinking skills, innovation, independence, imagination, problem-solving abilities, and children's academic success (Ata-Akturk & Sevimli-Celik, 2023; Ketabi et al., 2012; Musdalifah et al., 2020; Patston et al., 2021). In children's creativity development, the curriculum has an important role. The curriculum can be a powerful tool in developing children's creativity by clearly understanding and integrating education oriented toward developing creativity in all subject areas (Tok, 2022). Therefore, teachers have an important role in developing learning to gain a deeper understanding in providing more open and flexible learning, as well as providing opportunities for children to explore their creativity (Ata-Akturk & Sevimli-Celik, 2023; Dolenc & Čehovin, 2020).

The results of the Global Creativity Index (GCI) survey in 2015 showed that Indonesia's level of creativity was ranked 115th, among the lowest compared to 139 other countries (Florida et al., 2015). Children's creativity at the early childhood education level is still low (Musdalifah et al., 2020; Nurasih et al., 2022; Puspitasari, 2015).

Some efforts that to increase children's creativity include providing opportunities to play and explore, providing challenges and problems according to children's abilities and requiring creative solutions, providing positive feedback and motivating children to try new things, providing freedom in expressing themselves as well as providing an environment that supports creativity such as well-organized spaces and materials that to create works of art or other creative projects (Amabile, 1996; Ketabi et al., 2012; Runco, 2014), in addition, educators and parents can also facilitate children to learn from experience, expand children's knowledge and skills, and provide opportunities to collaborate with others in solving problems (Sawyer, 2006). Thus, these efforts can help increase children's creativity effectively.

Teachers can apply project-based learning (PjBL) to increase children's creativity because this learning method provides opportunities for children to think creatively and innovatively in the context of interesting and meaningful projects. In PjBL, children tasks to complete projects that involve problem-solving, exploration, and experimentation. While completing the project, children can develop their creative abilities, such as generating new ideas, thinking out of the box, and thinking critically. In addition, PjBL has also to be able to increase children's motivation and interest in learning, which can help increase children's participation and involvement in learning so that they can be more open and courageous in developing their creative abilities (Chen et al., 2022; Ketabi et al., 2012).

In applying the PjBL model in kindergarten, it cannot be applied as a standard and needs to suit the developmental stages of early childhood. The results of a survey on the implementation of the PjBL model in Kindergartens in Makassar City show that teachers do not apply standard PjBL model stages, such as opening lessons by asking challenging questions, planning projects, compiling activity schedules, supervising projects, assessments, and evaluations. However, teachers have developed some stages by combining them into just a few activities.

PjBL needs to be developed based on indicators of children's creativity, namely fluency, flexibility, originality, and elaboration (Munandar, 1997). This will be achieved through designing, explaining, developing, and evaluating project-based learning activities. The design activities aim to increase children's fluency in generating more ideas, while the explanation activities intend to help children comprehensively and flexibly articulate project designs. The development activities are expected to encourage children to produce original projects, and the evaluation activities aim to enhance their ability to describe projects in detail. Thus, this research focuses on developing the PjBL model with design, explanation, development, and evaluation activities to stimulate children's creativity.

Method and Data

The type of research used in this study is the research and development method with the stages proposed by Plomp & Nienke (2013). The stages of the research can be described in the following table:

Table 1. Research Stages Plomp & Nienke (2013)

Stages	Objective	Data Collection & Analysis Techniques	Subject Study
Preliminary Investigation	To collect data or information contained in the field	- Using a questionnaire via google form - descriptive statistic	27 Teachers (purposive sampling technique)
Design	To design products in the form of model books, teacher manuals and children's assessment tools in stimulating creativity	- Results of needs analysis - Rational - Supporting theory - Model Components - Research supports	
Realization/ Construction	To produce the basic shape of the product as a result of the realization of the design phase (Prototype)	- The results of the design phase are in the form of a prototype model book, and a teacher's manual	
Test, Evaluation, and Revision	To test the validity of the product	- Using material validity instruments and learning tools - Percentage of agreement Grinnell	2 persons Expert (PAUD materials and learning tools)
	To conduct product practicality test	- Using a teacher response questionnaire - descriptive statistic - Using teacher observation instruments	-5 Masters through (Simple Random Sampling) -5 Meetings
	To test the effectiveness of the product	- Children's creativity assessment sheets (pretest & posttest) - Normality test - Hypothesis testing - N-gain Score	15 Children (Simple Random Sampling)

Investigation phase as a phase to identify the level of need for model development in stimulating children's creativity, with 17 question items covering four aspects, namely the level of understanding, planning, implementation, and assessment. The design phase

includes designing model books, teacher manuals, and children's assessment sheets. The construction phase produces a prototype.

The Test, Evaluation, and Revision Phases assess the learning model's validity, practicality, and effectiveness. The effectiveness of children's creativity is measured using N-Gain analysis, which classifies results based on criteria introduced by Meltzer (2002) into the following categories: low ($0.00 < g < 0.30$), moderate ($0.30 \leq g < 0.70$), and high ($0.70 \leq g \leq 1$). To measure the difference in the child's character's ability before and after implementing the hypothesis test, paired sample t-test analysis was conducted (Sugiyono, 2015).

Results

Results of Needs Analysis

The results of the needs analysis questionnaire show that aspects of the teacher's understanding of learning activities in stimulating children's creativity are in the average category of 'medium'. The planning aspect of learning activities in stimulating children's creativity is in the 'medium' category, and questions related to teachers in preparing RPPH include the syntax of the PjBL model in the 'low' category. The implementation aspect shows that the average teacher experiences problems with the 'high' category. The assessment aspect shows that the teacher gives an assessment based on the project's results in the 'high' category and questions related to the teacher providing an assessment based on observing aspects of child development in the 'low' category.

Table 2. Results of Needs Analysis

No	Indicator	Rate-Rata	Category
A.	understanding		
1	The teacher stimulates children's creativity	2,96	Currently
2	The teacher stimulates children to answer smoothly every challenging question given	2,76	Currently
3	The teacher stimulates children to use various tools/materials	3,19	Currently
4	The teacher stimulates children to process work differently from the others	2,96	Currently
5	The teacher stimulates children to explain in detail the details of the work they produce	2,84	Currently
B.	Planning		
6	The teacher develops a more complete learning model in stimulating children's creativity	3,38	Currently
7	The teacher applies the PjBL model in stimulating children's creativity	3,15	Currently
8	The teacher applies the PjBL model starting with the preparation of plans in the form of RPPH	3,23	Currently

No	Indicator	Rate-Rata	Category
9	The teacher arranges the RPPH by including the steps (syntax) PjBL model systematically	2,55	Low
C.	Implementation		
10	The teacher encounters obstacles when opening lessons with a challenging question	3,76	Height
11	The teacher encounters obstacles when asking children to plan projects	3,65	Height
12	The teacher encounters obstacles when asking children to arrange activity schedules	3,53	Height
13	The teacher faces obstacles when asking children to supervise the project	3,50	Height
14	The teacher faces obstacles when asking children to evaluate the products they produce	3,80	Height
15	The teacher faces obstacles when asking children to evaluate projects	3,57	Height
D.	Assessment		
16	The teacher in assessing the development of children's creativity in kindergarten, based on the results of the projects made	3,76	Height
17	The teacher in evaluating the development of children's creativity in kindergarten, based on observing the process of creating project works	2,30	Low

Based on the results of the needs analysis, it can be concluded that teachers need to develop learning models that can specifically stimulate complete children's creativity regarding planning, implementation, and assessment. Teachers have implemented the PjBL model but found many obstacles, and this is due to the need for a complete guide on implementing the unique PjBL model in stimulating children's creativity. Teachers also find that PjBL cannot be applied standardly, so it is necessary to develop a PjBL model considering the child's characteristics and developmental stages.

Overview of the DEDEn-PjBL Prototype Model

The product developed comprises a model book and a teacher's guidebook designed to enhance children's creativity. This learning model was specifically crafted to foster creativity among children, employing the PjBL (Project-based Learning) approach. The development of this model was prompted by the identified needs analysis results, which indicated that teachers faced challenges in effectively implementing the PjBL model, particularly in adapting it to early childhood education. Consequently, there was a pressing need to devise a PjBL model that considers children's unique characteristics and developmental stages to ensure its successful application in the classroom.

The learning model aligns with the target achievement indicators of creativity, encompassing fluency, flexibility, originality, and elaboration (Munandar, 1997). We implement this model using the PjBL approach tailored for children. The following table presents detailed analysis results.

Table 3. PjBL Model Stages, DEDEn Model Stages, and Creativity Indicators

No	Model StagesPjBL	Stages of the DEDEn Model		Creativity Indicator
1	Open the lesson with a challenging question.	1	Design: Drafting project design	Smoothness
2	Planning projects			
3	Arrange activity schedules	2	Explain: Describe the project design plan	flexibility
4	Supervise the running of the project	3	Development: Develop project	Originality
5	Evaluation of the product produced	4	Evaluation: Evaluate through reflection	Elaboration
6	Evaluation			

The following figure shows the components of the Design, Explain, Development, and Evaluation-Project Based Learning (DEDEn-PjBL) model.

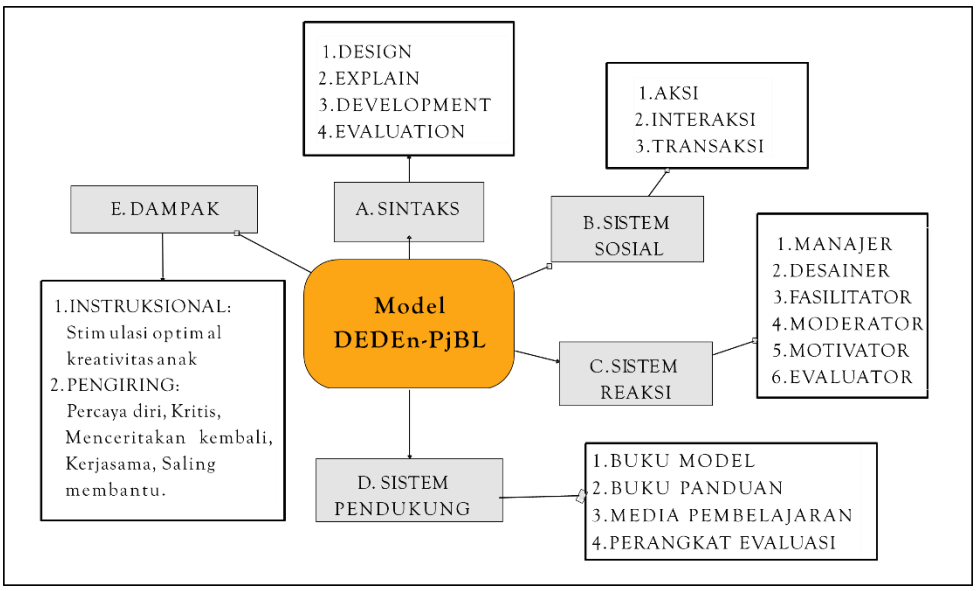

Figure 1. Components of the DEDEn-PjBL Model

The DEDEn-PjBL model book contains information about the rationale for learning, learning theory, the concept of creativity, and learning management (learning planning, implementation, and learning assessment). Coverage of material in the model book comprehensively provides theoretical and practical knowledge to early childhood educators regarding the DEDEn-PjBL in stimulating children's creativity in Kindergarten.

Table 4. Descriptive Model Books and Teacher's Handbooks

Unit	Component	Head
DEDEn-PjBL Model Book	Introduction	Rational; Name; Objective; Benefit; Development Platform; and Model Book Goals.
	Learning Theory	Jean Piaget's Cognitive Learning Theory; Lev Vygotsky's Learning Theory; Constructivism Theory; Creativity as an Aspect of Cognitive Development
	Creativity Concept	Definition of Creativity; Creativity Development Strategy
	DEDEn-PjBL Model Planning	The results of the analysis of indicators of children's creativity as targets for achievement through the application of the DEDEn-PjBL model.
	Implementation of the DEDEn-PjBL Model	Syntax; Social System; Reaction Principle; Support System; Instructional Impact and Accompanying Impact.
	Development of Children's Creativity Assessment	Observation Sheet for Assessment of Children's Creativity; Children's Creativity Assessment Rubric.
DEDEn-PjBL Model Teacher Handbook	Competence, Indicators, and Learning Objectives	Core Competencies, Basic Competencies; Child Development Achievement Indicators; Learning Objectives.
	Learning materials	Beverage Making Project Choco milk; Project to Make Classroom Furniture; Aquarium Making Project; Goat Hair Collage Project; Sunflower Picture Sticking Project
	Guidelines for Assessment of Children's Creativity	Observation Sheet for Assessment of Children's Creativity; Children's Creativity Assessment Rubric.

DEDEn-PjBL Model Validity Test

A materials expert and a learning tools expert assessed the validity test of the DEDEn-PjBL model related to materials and tools. The results of the validity test for the materials and learning tools used in the DEDEn-PjBL model are presented in the following table.

Table 5. Results of Testing the Validity of the Materials and Tools of the DEDEn-PjBL Model

No	Rated Aspect	Validity	
		V	**Category**
	Material		
1	Rational Model	3,00	Valid
2	Supporting Theory	3,50	Very Valid
3	Principles of model development	3,70	Very Valid
4	Model development guidelines	3,70	Very Valid
5	Syntax	3,70	Very Valid
6	Social System	3,40	Valid
7	Reaction principle	3,70	Very Valid
8	Support system	3,50	Very Valid
9	Instructional impact and accompaniment impact	3,30	Valid
10	Guidelines for assessing learning outcomes	3,70	Very Valid
	Device		
1	Instruction	4,00	Very Valid
2	Head	3,80	Very Valid
3	Language	3,70	Very Valid

The results of the validity test related to the materials and learning tools of the DEDEn-PjBL model in stimulating children's creativity indicate that the average falls within the 'valid' and 'very valid' categories. This demonstrates that the materials and learning tools used in the DEDEn-PjBL model to stimulate children's creativity meet the validity requirements and are declared valid for use.

DEDEn-PjBL Model Practicality Test

We obtained data on the practicality test requirements of the DEDEn-PjBL model through the analysis of the teacher's response questionnaire involving five teachers and by using a teacher's observation instrument during the application of the DEDEn-PjBL model to stimulate children's creativity over five meetings. The results of the practicality test of the DEDEn-PjBL model are presented in the following table.

Table 6. Results of Questionnaire Analysis of Teacher Responses to the DEDEn-PjBL Model

No	Statement	Teacher Response					Rate-rate	Criteria
		1	2	3	4	5		
1	I assume that the DEDEn-PjBL model suitable for use in kindergarten	4	4	4	4	4	4	Very good
2	I'm interested in implementing a DEDEn-PjBL model in the class I teach.	3	3	3	4	4	3,4	Very good
3	I assume that the implementation of the DEDEn-PjBL model creates a pleasant atmosphere	3	3	4	3	4	3,4	Very good
4	I'm sure that learning by using DEDEn-PjBL model can increase children's learning motivation.	4	4	4	4	4	4	Very good
5	I consider learning with DEDEn-PjBL model can stimulate children's creative abilities	3	4	4	3	4	3,6	Very good
6	I consider the learning DEDEn-PjBL model to foster a healthy competitive spirit for children.	3	4	4	3	4	3,6	Very good
7	Learning Media DEDEn-PjBL model can increase my insight in implementing learning.	3	4	4	3	4	3,6	Very good
8	The language used in the RPPH is easy to understand	4	4	4	3	4	3,8	Very good
9	the activity steps in the RPPH are obvious	4	4	4	3	4	3,8	Very good
10	The activity steps in the RPPH are by the learning method used	4	4	4	3	4	3,8	Very good
11	RPPH which was developed by the principles of learning for early childhood to stimulate children's creative abilities.	4	4	4	3	4	3,8	Very good
12	The details of the time used in the RPPH are sufficient for each meeting	4	4	4	3	4	3,8	Very good
13	The language used in the handbook DEDEn-PjBL model easy to understand teaching materials	4	4	4	3	4	3,8	Very good
14	The arrangement of the material in the guidebook is by the order of the indicators in the RPPH	4	4	4	3	4	3,8	Very good
15	The material in the handbook DEDEn-PjBL model easy to understand	4	4	4	3	4	3,8	Very good
16	The illustrations in the teaching material guidebook help in understanding the material being studied	4	4	4	3	4	3,8	Very good
17	The language used in the learning model is easy to understand	4	4	4	3	4	3,8	Very good
18	Activities in learning make it easy for students to stimulate children's creativity	4	4	4	3	4	3,8	Very good

No	Statement	Teacher Response					Rate-rate	Criteria
		1	2	3	4	5		
19	Activities in learning are in accordance with RPPH and child-centered	3	3	3	3	3	3	Good
20	The approach used in child-centered learning	3	3	3	3	4	3,2	Good
21	The time used is sufficient for each activity in learning	4	4	4	4	4	4	Very good
22	Learning with an integrated method centered on students	3	3	3	3	3	3	Good
23	The way teachers teach with individual methods is more practical	3	4	3	4	4	3,6	Very good
24	Learning with an integrated method creates a pleasant atmosphere	3	4	3	3	4	3,4	Very good
25	The time used in the teaching and learning process is sufficient	3	3	3	3	3	3	Good
26	Teacher motivation can stimulate children's activity during the learning process	3	3	3	3	3	3	Good
27	Exercise in stimulating children's creativity according to the learning material that has been taught	3	3	3	3	3	3	Good
28	Assessment of exercises that stimulate student creativity by teachers is objective.	3	3	3	3	3	3	Good

The results of the teacher's response analysis show that the average is in the 'good' and 'very good' criteria. This proves that teachers respond well, and the DEDEn-PjBL model is very good at stimulating children's creativity.

Additionally, we obtained practicality test data from teacher observations during the piloting of the DEDEn-PjBL model to promote children's creativity over five meetings. The results of the observational analysis of the implementation of the DEDEn-PjBL model in stimulating children's creativity are presented in the following table.

Table 7. The results of the analysis of the instrument for observing the implementation of the DEDEn-PjBL model

No	Rated aspect	Observational Assessment					%	Criteria
		1	2	3	4	5		
A	**Opening**							
1	Standard Operational Implementation (SOP)	2	2	2	3	3	80	Good
2	Start the lesson by saying hello	3	3	3	3	3	100	Very good
3	Ask the condition of students.	2	3	3	3	3	93	Very good
4	Directing children to read study prayers	2	2	3	3	3	87	Good
5	Delivering learning objectives	2	3	3	3	3	93	Very good
6	Motivate students	3	3	3	3	3	100	Very good
7	Deliver learning steps	2	2	2	2	3	73	Enough
B	**Core activities**							
1	The teacher prepares tools according to the learning material	2	2	2	2	3	73	Enough
2	The teacher prepares the material according to the learning material	2	2	2	3	3	80	Good
3	The teacher prepares the learning area according to the learning material	2	2	2	3	3	80	Good
4	The teacher arranges the child's seat according to the activity to be carried out	2	2	2	3	3	80	Good
5	Design Activity The teacher opens the lesson with a challenging question	2	2	3	3	3	87	Good
6	The teacher asks the child to design a project plan/prepare for project work	2	2	2	3	3	80	Good
7	The teacher introduces the tools and materials used	2	3	3	3	3	93	Very good
8	Explain Activity The teacher asks the children to explain the project plan that will be made including the activity schedule plan	2	3	3	3	3	93	Very good
9	Development Activity The teacher demonstrates how to make a project	2	2	2	3	3	80	Good
10	The teacher gives the opportunity for children to ask questions	2	2	3	3	3	87	Good

No	Rated aspect	Observational Assessment					%	Criteria
		1	2	3	4	5		
11	The teacher then distributes tools and materials according to group division	2	2	3	3	3	87	Good
12	The teacher asks the children to start working on the project in an orderly manner.	2	2	3	3	3	87	Good
13	The teacher oversees the course of the project	2	2	3	3	3	87	Good
14	Teachers encourage the development of unique projects	2	2	3	3	3	87	Good
15	Evaluation Activity The teacher asks the children to share their experiences while working on the project as a form of reflection	2	3	3	3	3	93	Very good
C	**Closing**							
1	Teacher does review today's activities	2	2	2	3	3	80	Good
2	Give moral messages to students	3	3	3	3	3	100	Very good
3	Direct students to read the prayer before going home	3	3	3	3	3	100	Very good
4	Close the learning by saying greetings	3	3	3	3	3	100	Very good

The results of the analysis of the instrument for observing the implementation of the DEDEn-PjBL model in stimulating children's creativity were seen to be carried out with the criteria of 'good' and 'very good'. The analysis of teacher response questionnaire data and teacher observation instruments can prove that the DEDEn-PjBL model in stimulating children's creativity fulfills the practical requirements, so the DEDEn-PjBL model is stated to be practical in stimulating children's creativity.

Test the Effectiveness of the DEDEn-PjBL Model

The effectiveness test of the DEDEn-PjBL model in stimulating children's creativity is conducted by comparing the results of the pretest and posttest after applying the DEDEn-PjBL model. A comparison of the data can be observed in the following figure.

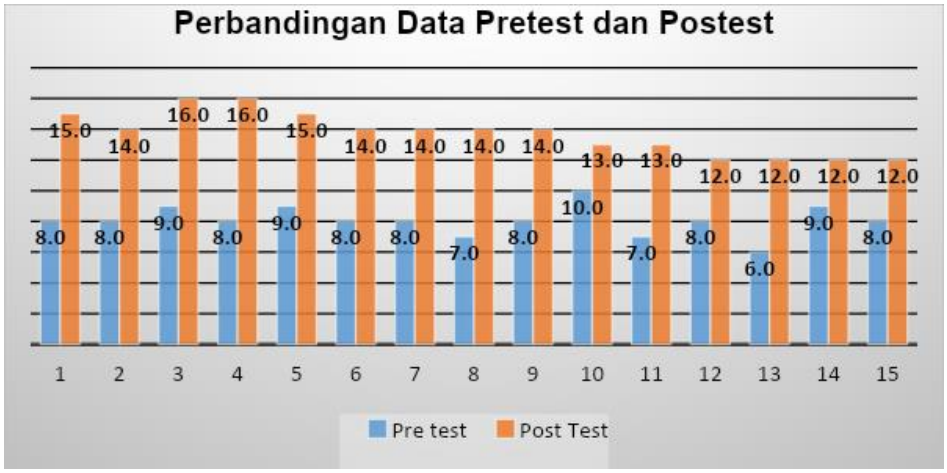

Figure 2. Comparison of Pretest and Posttest Data

The comparison of pretest and posttest data for 15 children reveals differences in their creative abilities before and after applying the DEDEn-PjBL model to stimulate creativity. Afterward, we conducted a data normality test, and you can observe the results in the following table.

Table 8. Pretest and Posttest Data Normality Test Results

Group	Say. (2-tailed)	Conclusion
Pretest	.067	Normal
Posttest	.081	Normal

Based on the normality test results for data before treatment, we obtained a p-value of 0.067, indicating that the data is normally distributed as 0.067 > 0.05. Similarly, we obtained a p-value of 0.081 for the normality test after treatment, suggesting that the data is normally distributed as 0.081 > 0.05. Subsequently, we conducted a hypothesis test to determine whether there was an effect of the DEDEn-PjBL model in stimulating children's creativity. The results of the hypothesis test are presented in the following table.

Table 9. Hypothesis Test Results Paired Sample t Test Before and After Deployment DEDEn-PjBL model in Stimulating Children's Creativity

Developmental Aspects	Amount	Mark t_{count}	Mark t_{table}	Say.	Conclusion
Creativity	15	14.715	2.145	0.00	H_0 *rejected* / h_1 accepted

The results of the hypothesis test indicate that $t_{count}(14.715) > t_{table}$ (2.145), leading to the rejection of the null hypothesis (H_O) and the acceptance of the alternative hypothesis (H_1), with a significance value (Sig.) of 0.00 < 0.05. This demonstrates a significant difference in the mean values between activities before implementation (mean value = 2.033) and after applying the DEDEn-PjBL model (mean value = 3.45) in stimulating children's creativity.

After confirming the difference in average values before and after implementing the DEDEn-PjBL model to stimulate children's creativity, the model's effectiveness is further assessed using the N-Gain test, as shown in the following table.

Table 10. Descriptive Statistics N Gain Score

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
N_Gain_Score	15	.41	1.00	.7188	.18214
N_Gain_Score_Percent	15	41.18	100.00	71.8800	18.21358
Valid N (listwise)	15				

Mark Mean N Gain Score obtained by 0.7188. Based on the distribution of score categories N-Gain entered the "high" category with a value range of g> 0.7. While the percentage value is 71.8800% rounded up to 72% based on the estimated percentage, category N-Gain falls into the category of "quite effective" with a range of 56-75%. Based on the results of this effectiveness test, it can be concluded that the use of the model DEDEs-PjBL is "quite effective" in stimulating children's creativity.

Discussion and Conclusions

Teachers need guidance in stimulating children's creativity through model books, guidebooks, and assessment sheets of children's creativity. Creativity for children of this age is still limited to internalizing cognitive values. Internalization is a mental formation that cannot be reached quickly. The process is planned according to the child's development to stimulate creativity. Several essential skills are taught, for example, fluency, flexibility, originality, and elaboration are indicators of creativity (Munandar, 1997). This ability is very appropriate to be internalized in early childhood education.

Creativity can help children to develop critical thinking skills, innovation, independence, imagination, problem-solving abilities, and children's academic success (Ata-Akturk & Sevimli-Celik, 2023; Ketabi et al., 2012; Musdalifah et al., 2020; Patston et al., 2021). The basic concept of creativity will form a person who can adapt later in society. The concept of creativity makes children creative, good at seeing opportunities, innovative, and able to survive in various conditions. In addition to the concept of creativity instilled in children in the concrete operational stage, children are guided to know about creativity. Knowledge extracted through model implementation activities. The teacher can create various learning activities by playing to introduce activities to stimulate creativity.

This integration step can be done when learning models or assessment systems deliver the material. Creativity is integrated into subjects starting from the planning, implementation, and evaluation stages. At the planning stage, daily learning implementation plans are designed to contain creative values such as fluency, flexibility, originality, and elaboration (Munandar, 1997). How to prepare a lesson plan by adding the DEDEn-PjBL model. With this model, students learn to stimulate creativity through the project process.

The DEDEn-PjBL model was specially developed to stimulate children's creativity. However, it does not rule out the possibility that it can be applied to improve other aspects of child development. The DEDEn-PjBL model with the syntax Design, Explain, Development, and Evaluation is the result of the development of the PjBL model, which is produced based on a needs analysis and adapted to the characteristics and developmental level of the child. Piaget (Trianto, 2009) argues that children aged 0-7 years are not advised to make logical decisions but are based on decisions that can be seen immediately. The development of children's abilities still uses symbols to express world objects. Children's thinking is still egocentric and concentrated.

The DEDEn-PjBL model syntax has proven to be quite effective in stimulating children's creativity in terms of fluency, flexibility, originality, and elaboration. Creativity indicators are achieved at every stage of project work, from design to project evaluation. The teacher completes the authentic assessment process by filling in the child's assessment sheet. Assessment is a process of measuring children's creativity. Assessment of learning activities in Kindergarten uses an authentic assessment approach. Authentic assessment is an assessment of learning processes and outcomes to measure the level of achievement of attitude competencies (spiritual and social), knowledge, and skills based on facts (Kemendikbud, 2014). Assessment is carried out systematically, sustainably, and comprehensively, including the growth and development children have achieved over a certain period.

The description of the results of the needs analysis shows that teachers in stimulating children's creativity are in the "moderate" category, teachers in preparing planning learning models are in the "moderate" category, and teachers are constrained in implementing learning models in the "high" category, and in the teacher's assessment of the results the project is in the "high" category and the process assessment is in the "low" category. This shows that teachers need to develop valid, practical, and effective learning models to stimulate children's creativity.

Description Prototype produced in the form of model books and manuals DEDEn-PjBL model in stimulating children's creativity as a result of refinement of improvements made based on suggestions from content experts and device experts as well as from teachers as practitioners.

Model validity test results DEDEn-PjBL in stimulating children's creativity based on content experts and device experts shows that the average instrument is in the minimum "valid" category so that the DEDEn-PjBL model in stimulating children's creativity has met the validity criteria or has an adequate degree of validity.

The results of the practicality test through the teacher's response questionnaire and the model implementation observation instrument average indicate the category ‘very good', and has an average value of each aspect of observation for five meetings at a percentage of 90%. The test results show that the model DEDEn-PjBL in stimulating children's creativity has an adequate degree of implementation or is carried out entirely very well so that it is declared practical.

The effectiveness test results begin with an analysis of the score data pretest and posttest, which shows an increase from "low" to "very high". The data obtained was then tested for normality with the results pretest 0.067 > 0.05 and results posttest 0.081 > 0.05 so that the data is declared "normally distributed". The next step is to test the hypothesis with the results of calculating the development of children's creativity at t_{count} (14.714) > t_{table} (2.145), H_0 rejected, and H_1 value received Sig. 0.00 > 0.05 indicates that a model influences DEDEn-PjBL in stimulating children's creativity. The next step is the result value means N-Gain Score is 0.7188 in the "high" category, and the percentage value is 71.88% in the "effective enough" category. Based on test results N-Gain, the DEDEn-PjBL model is "quite effective" in stimulating children's creativity.

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