INTEGRATION OF THE PANCASILA STUDENT PROFILE STRENGTHENING PROJECT WITH DESIGN THINKING IN THE MERDEKA CURRICULUM: STIMULATING STUDENTS' CREATIVE THINKING SKILLS

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Abstract

In the context of the 21st-century society, creative thinking skills stand out as pivotal competencies. Nevertheless, many countries, Indonesia included, grapple with a crisis in nurturing these skills among students. This research addresses this challenge by integrating the Pancasila Student Profile Strengthening Project with Design Thinking (DT) methodologies. Fifty-four fifth-grade students from a Madrasah Ibtidaiyah in Pacitan, East Java, Indonesia, participated in this study, which employed a mixed-methods approach combining qualitative and quantitative techniques. Qualitative data were gathered through interviews and observations, while quantitative data were collected through tests assessing creative thinking skills, specifically Fluency, Flexibility, Originality, and Elaboration. Guided by the five stages of DT—Empathise, Define, Ideate, Prototype, and Test—the integration of P5 with DT facilitated the development of students' original ideas and the creation of problem-solving products tailored to meet community needs. The findings underscore the significant efficacy of this integrated approach in enhancing students' creative thinking skills, particularly evident in marked improvements in originality and elaboration. This study contributes valuable insights for elevating critical thinking abilities among elementary school and Madrasah Ibtidaiyah students through DT methodologies.

Keywords: design thinking (DT),creative thinking skills, pancasila student profile strengthening project

Abstrak

Dalam konteks masyarakat abad ke-21, keterampilan berpikir kreatif menonjol sebagai kompetensi yang sangat penting. Namun, banyak negara, termasuk Indonesia, menghadapi krisis dalam mengembangkan keterampilan ini di kalangan siswa. Penelitian ini mengatasi tantangan tersebut dengan mengintegrasikan Proyek Penguatan Profil Pelajar Pancasila dengan metodologi Design Thinking (DT). Penelitian ini melibatkan lima puluh empat siswa kelas lima dari Madrasah Ibtidaiyah di Pacitan, Jawa Timur, Indonesia, dengan menggunakan pendekatan campuran yang menggabungkan teknik kualitatif dan kuantitatif. Data kualitatif diperoleh melalui wawancara dan observasi, sedangkan data kuantitatif dikumpulkan melalui tes yang menilai keterampilan berpikir kreatif, khususnya Kelancaran, Fleksibilitas, Orisinalitas, dan Elaborasi. Dipandu oleh lima tahap DT—Empati, Definisi, Ideasi, Prototipe, dan Uji—integrasi P5 dengan DT memfasilitasi pengembangan ide orisinal siswa dan penciptaan produk pemecahan masalah yang disesuaikan untuk memenuhi kebutuhan masyarakat. Temuan ini menegaskan efektivitas signifikan dari pendekatan terintegrasi ini dalam meningkatkan keterampilan berpikir kreatif siswa, terutama terlihat dalam peningkatan yang signifikan dalam orisinalitas dan elaborasi. Studi ini memberikan wawasan berharga untuk meningkatkan kemampuan berpikir kritis di kalangan siswa sekolah dasar dan Madrasah Ibtidaiyah melalui metodologi DT.

Kata kunci: design thinking (DT), keterampilan berpikir kreatif, proyek penguatan profil pelajar pancasila

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Introduction

Creativity has undoubtedly attracted the attention of contemporary researchers in the 21ˢᵗ century, for this process can create a solution (Beghetto, 2007) or a product (Mumford, 2003). In numerous publications, creativity is seen in multiple perspectives, such as an original idea or product (Amabile & Pillemer, 2012; Robinson & Aronica, 2016; Runco & Kim, 2011), an idea that can make an impact (J. C. Kaufman & Beghetto, 2009; Sak, 2009), the result of divergent thinking (Dollinger et al., 2004), and as simply, something new and valuable (Amabile & Pratt, 2016b). It can be seen that the essential dimensions of creativity lie in two values: a) novelty, which contains the value of originality and uniqueness (Hernández-Torrano & Ibrayeva, 2020), and b) usefulness, which refers to the appropriateness of the idea in effectively addressing the problem (Amabile & Pratt, 2016a).

In the field of education, creativity is included in thinking skills (Paul & Elder, 2004), which can be practised (Craft, 2003) and is not innate (Jackson & Shaw, 2006). Therefore, creative thinking skills can often be translated by some characteristics, such as (1) Fluency (the ability to produce a new idea or idea), (2) Original (the originality of the idea), (3) Flexibility (the ability of students to think freely to see things from various points of view), (4) Elaboration (the ability of students to describe something in detail including connecting ideas to be more interesting) (J. C., P. J. A., & B. J. Kaufman, 2009).

Creative thinking is mandatory in the 21st century (Guo & Woulfin, 2016; P21 Partnership for 21st Century Learning, 2007; Trilling & Fadel, 2009; Voogt & Roblin, 2010) and is critical to becoming an innovative and adaptive society in a developing and uncertain world (Fine & Desmond, 2015). However, in reality, the creative thinking skills of school-aged students are still in crisis in various countries (Hua & Yang, 2024; Jiang et al., 2024; Karunarathne & Calma, 2024), including in Indonesia (Kurniawati & Sutama, 2024). Florida et al. (2011) revealed that the creativity index of school-aged students in Indonesia is only (0.037); its position is ranked 81 out of 82 countries consisting of developed or developing countries. The reality is that much of the learning process often falls short of fostering discovery and problem-solving, resulting in the utilisation of conventional and monotonous teaching methods, strategies, models, and approaches by mathematics educators (Al-Abdali & Al-Balushi, 2016; Mukhlis & Herianingtyas, 2021); the teacher often only explores students' understanding through questions and answers and group discussions (Leasa et al., 2021). The multifaceted demands and expectations placed on teachers hinder the development of students' creative thinking skills in the classroom (Newton & Newton, 2014), necessitating more time for lesson preparation, particularly in integrating critical and creative thinking activities (Craft, 2010).

Realising these challenges propels Indonesia towards enhancing the quality of learning processes and outcomes, particularly in cultivating 21st-century skills, specifically focusing on nurturing students' creative thinking abilities. Within this context, the Merdeka curriculum emerges as a platform fostering critical and creative student learning (Mulyono, 2022), notably through initiatives like the Pancasila Student Profile Strengthening Project, known as P5 in Indonesia (Lilihata et al., 2023; Rozhana et al., 2023). P5 constitutes an interdisciplinary endeavour to identify community needs or issues within educational settings (Badan Standar

Kurikulum dan Asesmen Pendidikan, 2022). Its implementation encompasses project-based activities to hone students' critical and creative thinking skills (Armadi & Kumala, 2023).

However, some research results show that implementing P5 as a project activity still needs to be clarified, including that P5 only focuses on producing products instead of solving problems (Fitriya & Latif, 2022). that teachers choose themes that relate to content in the core curriculum (Aulia, 2023). P5 is oriented towards celebration or excitement rather than critical reasoning and student creativity (Astuti et al., 2024). Furthermore, research (Sinyanyuri & Yarmi, 2023) also mentioned that in practice, the teacher's orientation towards P5 is more to the content contained in the core curriculum and the excitement of its implementation so that the essence of students' critical and creative thinking elements in P5 activities has not been achieved optimally. Therefore, innovation is needed in implementing P5 to be optimal in developing students' critical and creative thinking skills. One of them is the integration of P5 with DT. Initially, DT emerged and was implemented in the business field to understand user needs (Wrigley & Straker, 2017). However, in the 21st century, DT has begun to be implemented in education (Koh Joyce Hwee Lingand Chai, 2015).

DT generates ideas, assesses them, and chooses actions (Lin et al., 2020). This process is carried out by integrating the empathy component in understanding the context of the problem and creating the right idea (Cook & Bush, 2018). DT is a line of thinking that can stimulate the formation of students' critical and creative thinking skills (Goldman et al., 2009). Students can solve contextual problems with creative solutions (Henriksen et al., 2017a; Lee et al., 2019; Pressman, 2018). A study by Retna (2019) showed that DT can enhance skills such as creativity, problem-solving, communication and teamwork and empower students to develop empathy for others within and beyond the community. Plattner (2013) further arranged the steps of DT, which consist of Empathise, Design, Ideate, Prototype, and Test.

The application of DT in P5 allows students to engage in exciting projects and identify solutions that are relevant to their lives (Hölzle & Rhinow, 2019). This shows the advantages of the DT process, which can stimulate the emergence of creative ideas. (Razzouk & Shute, 2012).. The integration of DT in P5 in this study uses the Theme of P5, which can be realised by involving users or communities so that students can develop projects based on their needs. Therefore, this study aims to improve students' creative thinking skills by incorporating DT into P5 so that the implementation steps and effectiveness test results are known.

Method

Research, including mixed methods, is a step that combines two pre-existing forms of research, namely qualitative research and quantitative research (Creswell, 2018). Qualitative research aims to explain the implementation of DT in the P5 program. In contrast, quantitative research is needed to determine the impact of P5 integrated with design thinking on improving students' creative thinking skills. For this purpose, a quasi-experimental type of experimental research was used.

The population in this study were all students in one of *Madrasah Ibtidaiyahs* (Islamic elementary schools) in Pacitan Regency, East Java Province. The sample analysed was fifth

students, totalling 54 students, consisting of 27 experimental group students and 27 control group students. The experimental and control group designs are shown in Table 1.

Table 1. Experiment Design

Experiment Group	T_1	Xa	P_1
Group Control	T_2		P_2

T_1 = Pretest of critical thinking skills in the experimental class
T_2 = Pretest of critical thinking skills in the control class
P_1 = Posttest of critical thinking skills in the experimental class
P_2 = Posttest of critical thinking skills in the control class
Xa = Treatment P5 integrated DT

This research was conducted using the flow illustrated in Figure 1, which consists of three stages: introduction, implementation, and end.
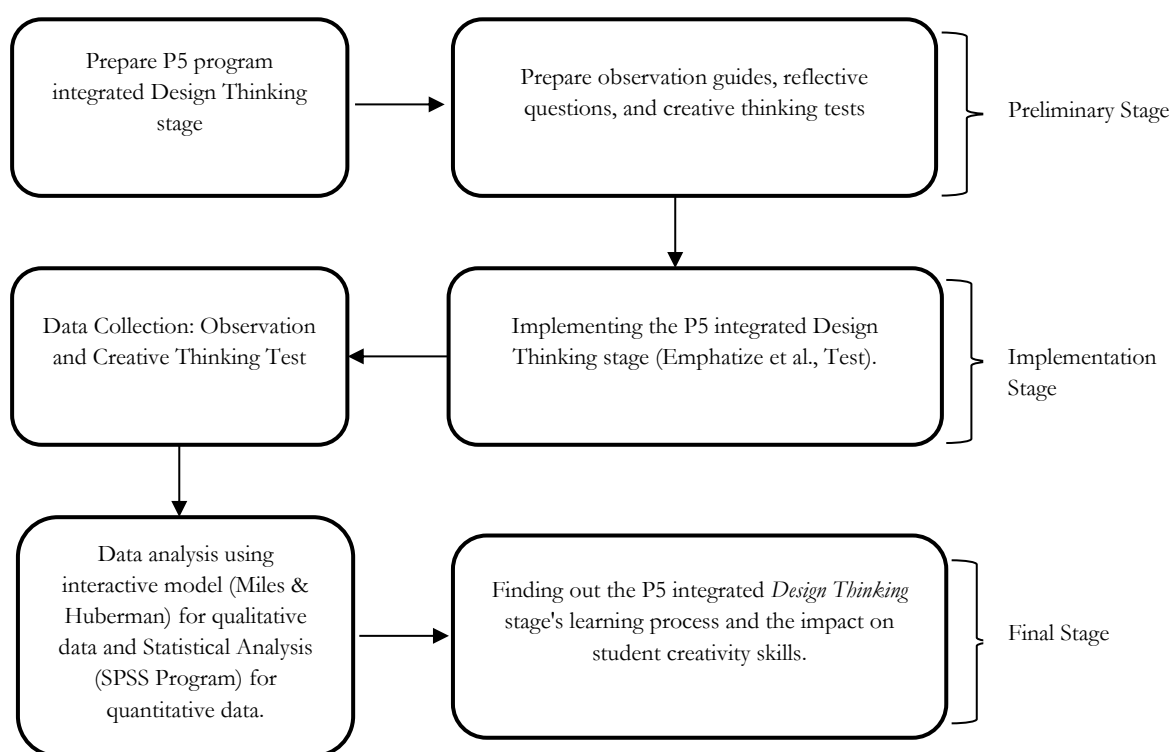

Figure 1: Research flow

Data Collection Techniques and Procedures

Observation

Observations were conducted to determine the preparation, implementation, and evaluation stages in implementing P5 integrated with DT. Observation is also used to ensure that the stages carry out the stages of DT.

Creative Thinking Test

The creative thinking test measured students' creative thinking skills before and after participating in P5 integrated DT. The test consists of four essay questions to test students' creative thinking skills on the content of Utilization of Natural Resources based on Local Wisdom.

Data Analysis Procedure and Validity Check

Qualitative data were analysed using interactive analysis techniques, consisting of three stages, namely (1) data collection, (2) data condensation/reduction, (3) data presentation, and (4) conclusion/verification used in the study (Miles, 2014). Meanwhile, the test instrument used to measure students' creative thinking skills was tested for validity and reliability. Test the instrument's validity using product moment interrelation with the help of the SPSS application. The Creative Thinking Skills test presented through the pretest-posttest contains four detailed questions with a grid developed by the criteria for creative thinking skills, namely: (1) Fluency, (2) Original, (3) Flexibility, and (4) Elaboration.

The effectiveness of P5 integrated *DT* was analysed using (1) paired t-test or Wilcoxon for non-parametric tests (Gibbons & Chakraborti, 2014), (2) determining N-gain, (3) the average percentage of creative thinking test results in the experimental class. The calculation of N-gain employed the following formula:

$$N - gain = \frac{(posttest\ score - pretest\ score)}{(ideal\ score - pretest\ score)}$$

The N-gain score criteria are as follows table 3.

Table 3. N-Gain Criteria

N-Gain Score	Criteria
0.7 < g ≤ 1.0	High
0.3 ≤ g ≤ 0.7	Medium
g< 0.3	Low

Results and Discussion

This research began in July 2023 with initial observations and interviews with fifth-grade teachers. The research participants were the fifth-grade teacher and 54 students (18 groups). In August 2023, P5 activities were carried out with the Utilization of Natural Resources theme based on Local Wisdom. This activity was carried out using the stages of DT. Data were collected through observation of each stage and the results of students' creative thinking tests. The implementation of P5 integrated with DT was carried out with the following steps:

Empathise

In the initial meeting of the Empathize stage, students, alongside their group members, devised a project plan aligned with the designated Theme. They precisely identified the community groups slated to be the project's target users. Students collaboratively compiled interview questions to gather data on user needs pertinent to the project under development.

Subsequently, they engaged in direct observations and interviews within the community. This phase yielded insights into the needs, desires, problems, and utilisation of locally-derived natural resources within the surrounding environment. Notably, upon completing these observations and interviews, students exhibiting creativity further augmented their understanding by conducting additional research via the Internet, thereby reinforcing the identified problems and needs.

Define

After obtaining data from observations and user interviews, they focused on identifying the root of the problem to be solved and setting clear goals for the solution to be developed that fit their needs. Students looked for patterns and relationships from the results of interviews and observations that had been made. Some creative students were also seen using online information materials and asking the teacher to strengthen their understanding.

Ideate

Students discussed building ideas together to generate solutions. At this stage, students were given space to think, considering effective solutions to solve the root of the problem. Students and their group members filtered and prioritised creative and innovative ideas most likely to be implemented.

Prototype

Students created a prototype after determining the best idea from the group discussion. This process involved creating physical models or prototypes of the ideas generated during the ideate phase. Prototyping provided a visual way to communicate the ideas generated to users. At the end of this stage, students again met with the community to offer their ideas as prototypes to get input and help minimise misunderstandings.

Test

At this stage, students tested the prototype directly with users or the community to ensure that the product that had been developed was effective in solving existing problems. At this stage, students also had the opportunity to listen to direct feedback from users/communities. This helped the team better understand how users interacted with the solution and allowed for identifying problems or shortcomings that may not have been apparent during development. The results of the test phase allowed the team to make further adjustments. If problems or changes were needed, the team could make immediate improvements until the product effectively solved the problem and met the needs of the users or communities involved. Furthermore, the effectiveness of P5 in integrating *DT* into students' creative thinking skills can be seen in Table 3.

Table 3. Test Results of Effectiveness of P5 Integrated *DT* on Creative *Thinking* Skills

Class	N	Equal Variances Assumed		
		t	Sig. (2-tailed)	Ho
Experiment	27	2.256	0.011	Rejected
Control	27			

Based on Table 3, the sig. The value obtained is 0.011 <0.05. This means that Ho is rejected. Therefore, P5, when integrated with *DT, is* efficacious in improving students' creative thinking skills.

Table 4. Level of Effectiveness of P5 Integrated *DT* on Creative *Thinking* Skills

Class	Average Value		Gain
	Pretest	Posttest	
Control	53.40	64.50	0.33
Experiment	53.53	89.33	0.72

It can be seen in Table 4 that the gain in the experimental class is higher than the gain in the control class. The control class obtained a gain of only 0.33 and was included in the low category. In contrast, the experimental class obtained a gain of 0.72, including in the high category. Thus, the results of integrating P5 with DT are stated to be highly effective in increasing students' creative thinking skills. Furthermore, the increase in the average percentage of test results (pretest-posttest) of students' creative thinking skills in the experimental class can be identified in Table 5.

Table 5. Average Percentage of Creative Thinking Skills (Pretest and Postest)

No.	Aspects of Creative Thinking Skills	Category			
		High (%)	Medium (%)	Basic (%)	Beginner (%)
Pretest					
1	Fluency	14,81	16,67	22,22	46,30
2	Originality	7,41	14,81	25,93	51,85
3	Flexibility	16,67	27,78	22,22	33,33
4	Elaboration	5,56	18,52	57,41	18,52
Posttest					
1	Fluency	46,30	37,04	9,26	7,41
2	Originality	42,00	6,00	3,00	3,00
3	Flexibility	55,56	33,33	5,56	5,56
4	Elaboration	40,00	10,00	5,00	4,00

Tables 4 and 5 represent the increase in students' creative thinking skills test results after applying DT in P5. Students with high creative thinking skills experienced a significant increase, especially in the Flexibility aspect, by 38.89%.

DT is proven to stimulate student creativity when developing a product. Previous research by Zhao et al. (2022) found that DT effectively enhances students' problem-solving creativity through project activities. As in the integration of DT in P5, students are involved in a project to develop handicraft products from natural materials available in the surrounding environment. The project results produced by students are made of bamboo, coconut leaves, coconut fibre, and clay. The products produced are diverse and valuable, such as water filtration tools, wall hangings, brooms, pottery and other household tools. The students' work is realised from the desires and needs of the community, in this case, as users.

Previously, several studies have also shown that learning with DT can effectively increase student creativity in developing a product, including Robots (Kuo et al., 2021) and digital artefact designers (Fabri, 2015). The flow of divergent thinking in DT allows students to express their creative ideas when producing products (Ülger, 2016). Therefore, students can produce products that are not only attractive but also useful according to user needs (Grammenos & Antona, 2018). In this research, DT is not implemented to learn a specific subject area as in previous studies. Instead, it is integrated into the P5 project activities, which form part of an independent curriculum program in Indonesia encompassing all subject areas.

In its implementation, P5 integrated with DT involves elements of the community around the Madrasah. They were chosen as users of the projects developed by students. Students conduct observations and interviews to get an overview of the needs and desires of users, namely, related to the utilisation of goods or objects made from natural resources in the surrounding environment. Users at this Emphatise Stage explain the product specifications they want to students at the Emphatise Stage. (Ananda et al., 2023). Previous research conducted by (Carlozzi et al., 1995) found a positive relationship between empathy and creativity. Without empathy, a person will be limited in his ideas in work; according to Henriksen et al. (2017a), personal experience is not enough to realise practical work.

Furthermore, the Define Stage is a continuation of the Emphatise Stage. Students and their group members define the main needs of users (Murphy et al., 2013). The results of observations and interviews that students have conducted are then brought into the classroom to be discussed again with their group members. This discussion process provides an opportunity for each student to take part in expressing their findings one by one. Moore et al. (2009) said that students can see needs from different perspectives at this stage. Therefore, there are previous studies that reveal that DT can improve not only students' creativity but also their social communication skills (Aini & Aini, 2023).

After defining the problem, students continue the P5 activity by developing ideas with their group members. The teacher directs students to write down their ideas extensively; all group members take part in providing ideas related to the product they will develop. This stage plays a significant role in the emergence of student creativity. Students can develop ideas that they feel are most effective (Lee et al., 2019). This ideation experience reflects the divergent thinking aspect of creativity (Henriksen et al., 2017b). People who think divergently can generate many possibilities (Nusbaum & Silvia, 2011). This stage's output is the product's agreement to be developed, which is considered appropriate to users' needs.

The next stage of DT is prototyping, a key element in developing solutions and innovations. Some studies mention that DT can stimulate students' ability to innovate, namely giving birth to new things that have never existed before (Baričević & Luić, 2023; Velu, 2022). Therefore, with DT, there are out-of-the-box products that students in learning can produce. Students start to design the product together.

After producing a product design in the form of a *prototype,* students bring the product back to the user for advice and input on whether the product developed is following the needs and desires of the user. At this stage, students also get the opportunity to listen to direct feedback from users. This design testing stage allows students to learn and develop (Seidel & Fixson, 2013). When the resulting product does not match the user's expectations, students must return to improve the product. Conversely, when the product is considered appropriate, users give appreciation to students. This emphasises DT as a reflective flow of thinking. Tsai (2022), in this case, has conducted research showing a positive correlation between DT and student creativity in everyday life because it relates to ideation, reasoning, and reflection. According to (Greenstein, 2012), reflective thinking means the process of thinking by considering the possibilities that will occur. When students get feedback from users, they will reflect within themselves as material to re-improve their products until they get the correct and effective results.

Conclusions

Integrating P5 innovation with Design Thinking (DT) within an independent curriculum can significantly enhance elementary school students' creative thinking abilities. By engaging in the iterative processes of convergent and divergent thinking inherent in DT, students can adeptly identify community needs and problems, thereby generating appropriate solution ideas. Students conceptualise innovative ideas and translate them into tangible and practical products through this approach. From designing prototypes to direct user testing, students actively refine their solutions until achieving optimal outcomes. This fusion of P5 and DT fosters creativity and substantially improves students' problem-solving skills, as evidenced by a noteworthy N gain of 0.72.

Furthermore, the study revealed notable improvements in students' pretest and posttest scores across key dimensions such as Fluency, Originality, Flexibility, and Elaboration, with particularly significant gains observed in Originality and Elaboration. This underscores the efficacy of P5-integrated DT in nurturing students' capacity to generate novel ideas and elaborate upon them effectively. However, it is crucial to acknowledge the limitations of this study, including its small sample size and constrained timeframe. Moreover, while this research underscores the potential of DT, there remains a dearth of studies exploring its impact on non-cognitive aspects and other educational domains. Consequently, the author suggests avenues for future research to delve deeper into the influence of DT on students' attitudes and character development. Additionally, given the scarcity of research on DT within elementary education, this study serves as a springboard for further investigations into the applicability and efficacy of this approach within primary education settings.

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