

THE INFLUENCE OF DESIGN THINKING AND CREATIVITY ON TEACHER EFFICACY IN 21ST-CENTURY EDUCATION

Dia Anjani¹, Sutiyono², Komang³, Juni Suryanadi⁴

Buddhist Education Department, Jinarakkhita Buddhist College, Lampung, Indonesia^{1,2,3}
Buddhist Business & Management Department, Jinarakkhita Buddhist College, Lampung, Indonesia⁴

e-mail: dia.anjani@sekha.kemenag.go.id

ABSTRAK

Pentingnya penguatan kompetensi profesional guru di era pendidikan abad ke-21, khususnya terkait efikasi guru yang berperan dalam keberhasilan proses pembelajaran. Pentingnya menganalisis tentang pengaruh pemikiran desain dan kreativitas guru terhadap efikasi guru di era pendidikan abad ke-21. Pendekatan survei kuantitatif digunakan dengan melibatkan populasi jenuh sebanyak 75 guru agama Buddha di Provinsi Lampung. Pengumpulan data dilakukan di Bandar Lampung melalui kuesioner skala *Likert* yang disesuaikan untuk mengukur pemikiran desain, kreativitas, dan efikasi guru. Sebelum analisis regresi linier berganda diterapkan, dilakukan uji validitas dan reliabilitas instrumen. Temuan penelitian menunjukkan bahwa pemikiran desain memberikan pengaruh positif dan signifikan terhadap efikasi guru, sementara kreativitas guru juga berpengaruh positif dan cukup besar. Secara simultan, kedua variabel prediktor meningkatkan kemampuan model dalam menjelaskan variasi efikasi guru. Penelitian ini menyimpulkan bahwa efikasi guru dapat diperkuat melalui program pengembangan profesional berbasis studio design thought yang mengintegrasikan empati, penafsiran masalah, ideasi, pembuatan prototipe, dan pengujian, serta penguatan praktik kreatif di lingkungan sekolah.

Kata Kunci: *Pemikiran Desain, Kreativitas Guru, Efikasi Guru, Pendidikan Buddha, Keterampilan Abad Ke 21*

ABSTRACT

The importance of strengthening teachers' professional competence in the 21st-century education era is closely linked to teacher efficacy, which plays a crucial role in the success of the learning process. This study emphasizes the need to analyze the influence of design thinking and teacher creativity on teacher efficacy in the context of 21st-century education. A quantitative survey approach was employed, involving a saturated population of 75 Buddhist education teachers in Lampung Province. Data were collected in Bandar Lampung using a Likert-scale questionnaire specifically adapted to measure design thinking, creativity, and teacher efficacy. Prior to the application of multiple linear regression analysis, instrument validity and reliability tests were conducted. The findings indicate that design thinking has a positive and significant effect on teacher efficacy, while teacher creativity also exerts a positive and substantial influence. Simultaneously, both predictor variables enhance the model's ability to explain the variance in teacher efficacy. This study concludes that teacher efficacy can be strengthened through professional development programs based on studio-style design thinking that integrate empathy, problem interpretation, ideation, prototyping, and testing, as well as through the reinforcement of creative practices within the school environment.

Keywords: *Design Thinking, Teacher Creativity, Teacher Efficacy, Buddhist Education, 21st Century Skills*

INTRODUCTION

The demands of 21st-century education require teachers to possess critical, creative, adaptive, and innovative thinking skills in responding to global dynamics and rapid technological developments. The role of teachers is no longer limited to transferring knowledge but has shifted toward becoming facilitators who help students develop higher-order thinking skills, collaboration, creativity, and the ability to solve real-world problems. Zee and Koomen (2016) highlight that teacher self-efficacy is a key factor determining their ability to plan, implement, and evaluate instruction effectively, especially when dealing with classroom complexities and pedagogical demands in the 21st century. In this context, Design Thinking and teacher creativity emerge as two essential competencies that significantly influence instructional effectiveness in the digital era (Henriksen et al., 2020).

Recent studies indicate that the application of Design Thinking in education can enhance teachers' reflective, empathetic, and collaborative abilities. Lor et al. (2023) found that Design Thinking helps teachers understand students' needs more deeply through stages such as empathy, problem analysis, ideation, prototyping, and testing, enabling them to design learning solutions that are more innovative and student-centered. Similarly, Kwek et al. (2023) showed that the integration of Design Thinking in initial teacher education improves teachers' confidence, motivation, and their ability to utilize educational technologies. Carroll (2020) also demonstrates that Design Thinking fosters greater flexibility and creativity among teachers in designing contextual learning experiences, as its iterative process encourages continuous adjustment of instructional strategies based on students' unique needs.

On the other hand, teacher creativity is a fundamental factor in enhancing the quality of 21st-century learning. Creative teachers tend to take pedagogical risks, experiment with new approaches, and create more dynamic and inspiring learning environments (Davies et al., 2020). Findings by Karwowski et al. (2022) indicate that teachers with high creativity are generally more confident in designing innovative learning activities and promoting active student engagement. Additionally, Choi (2024) states that teacher autonomy and creativity significantly influence innovative teaching behaviors, thereby strengthening teacher professionalism in the digital era.

Although numerous studies have examined Design Thinking, creativity, and teacher efficacy, research integrating these two variables as simultaneous predictors of teacher self-efficacy within the context of 21st-century learning remains limited. Lee and Kim (2023) found that teacher efficacy improves through innovative instructional practices across the curriculum, while Kumazawa (2020) demonstrated that consistent reflective practice enhances teacher self-efficacy, as reflection helps teachers interpret teaching experiences, recognize pedagogical strengths and weaknesses, and continuously refine their instructional strategies. Meanwhile, a meta-analysis by Chen et al. (2022) reported that both Design Thinking and creativity positively influence critical thinking and instructional innovation. However, few studies have examined the combined influence of Design Thinking and creativity on teacher self-efficacy in addressing the demands of digital learning environments.

The importance of this study lies in addressing the challenges of digital learning environments, which require teachers to possess interrelated competencies in design thinking, creativity, and self-efficacy to create relevant and innovative learning. The novelty of this research lies in its integrative approach that simultaneously examines the influence of Design Thinking and teacher creativity on self-efficacy. Through this approach, the study is expected to provide theoretical contributions to teacher competency development and practical

implications for designing professional development programs that focus on strengthening design thinking and creativity to enhance teaching effectiveness.

RESEARCH METHOD

This study employs a quantitative approach with a survey design to analyze the influence of design thinking and teacher creativity on teacher efficacy. This approach was selected because it allows for systematic measurement of the relationships among variables using standardized instruments. The research model consists of two independent variables: design thinking and teacher creativity and one dependent variable, namely teacher efficacy. The study population includes all 75 Buddhist Education teachers in Lampung Province. Because the population is relatively small and easily accessible, a saturated sampling technique was used, meaning the entire population was included as research respondents. The respondents represent various districts and cities, including Central Lampung, South Lampung, East Lampung, Pesawaran, Pringsewu, Tulang Bawang, Way Kanan, Bandar Lampung City, Metro City, and several other subdistricts. This distribution provides diverse characteristics of Buddhist Education teachers across the province. The model also includes partial and simultaneous hypotheses, which are illustrated in the following figure 1.

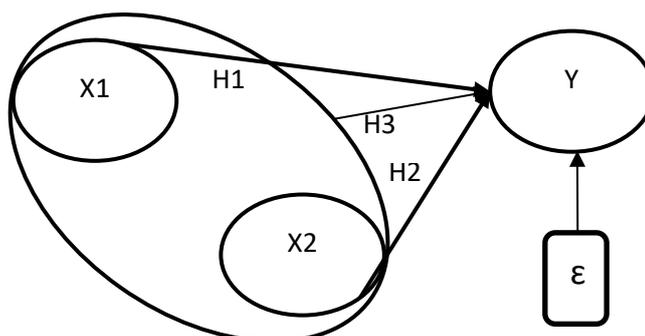


Figure 1. Research Constellation Model

Data were collected using a closed-ended Likert-scale questionnaire covering three main variables: design thinking, teacher creativity, and teacher efficacy. The instrument was developed based on indicators from previous studies, then validated using Pearson correlation and tested for reliability using Cronbach's Alpha, which produced α values above 0.70 for all instruments, indicating acceptable reliability. Data analysis was conducted using multiple linear regression with SPSS. Prior to analysis, a series of classical assumption tests were performed, including tests for normality, multicollinearity, linearity, and homoscedasticity, to ensure model feasibility. With a significance level of 0.05, the analysis was used to assess the partial and simultaneous influence of design thinking and teacher creativity on teacher efficacy.

RESULTS AND DISCUSSION

Results

Preliminary analyses were conducted to ensure the quality of the research data through validity testing, reliability testing, and descriptive statistics for the variables Design Thinking, Teacher Creativity, and Teacher Efficacy. All collected data were declared 100% valid, and no data were excluded. These results indicate that the dataset is suitable for further analysis using linear regression.

Table 1. Descriptive Statistics, Validity, and Reliability of the Instruments

Variable	N	Minimum	Maximum	Mean	SD	Category
Design Thinking	75	22	44	30.55	4.278	Sedang
Teacher Creativity	75	36	61	45,89	4.797	High
Teacher Efficacy	75	22	46	33.05	4.618	Good

Table 1 presents the descriptive statistics for the three variables studied. Overall, teachers' Design Thinking skills fall within the moderate category, indicated by the mean score positioned around the middle of the observed range. Teacher Creativity shows a stronger tendency, with average scores approaching the upper end of the scale, placing it in the high category. Meanwhile, Teacher Efficacy is categorized as good, supported by a relatively stable distribution of scores. Collectively, these descriptive patterns suggest that teachers demonstrate solid levels of creativity and professional efficacy, while their design-thinking abilities remain moderate and present opportunities for further improvement.

Table 2. Results of Instrument Validity and Reliability Tests

Variable	Number of Items	Data Validity	Cronbach's Alpha	Reliability Category
Design Thinking	11	100% Valid	0,714	Reliable
Teacher Creativity	14	100% Valid	0,711	Reliable
Teacher Efficacy	11	100% Valid	0,732	Reliable

The table 2 demonstrates that all instruments used in this study meet strong measurement standards. Each variable Design Thinking, Teacher Creativity, and Teacher Efficacy shows full item validity, indicating that every item functions as intended. In addition, all three variables fall within the reliable category, as reflected in Cronbach's Alpha values that exceed the commonly accepted threshold for social science research. These results confirm that the instruments possess adequate internal consistency and are appropriate for further statistical analysis.

Table 3. Summary of Regression Analysis (Partial and Simultaneous).

Model Analysis	R	R ²	R-squared Value	Predictor	B	Beta	Sig.
Partial	0,724	0,525	0,518	Berpikir Desain	0.711	0,659	0.000
Partial	0,420	0,176	0,165	Kreativitas	0.236	0,245	0,003
Simultaneous	0,762	0,580	0,569	Berpikir Desain	0.711	0,659	0.000
				Kreativitas	0.236	0,245	0,003

Table 3 presents the regression analysis results that illustrate the contributions of design thinking and creativity to teacher self-efficacy, both individually and jointly. When examined separately, design thinking emerges as the strongest predictor, showing the highest level of association and the most substantial regression effect on teacher self-efficacy. Teacher creativity also demonstrates a significant influence, although its predictive strength is more moderate compared to design thinking.

When both predictors are analyzed simultaneously, the model's predictive power increases. The combined influence of design thinking and creativity produces a very strong relationship with teacher self-efficacy, indicating that these variables together explain a larger proportion of variance than when assessed individually. Overall, the results confirm that design

thinking serves as the dominant predictor, while creativity remains a significant supporting factor in explaining variations in teacher self-efficacy.

Discussion

The findings of this study indicate that Design Thinking is the strongest predictor of teacher self-efficacy. The high partial correlation value ($R = 0.724$) and its contribution of 52.5% to the variance of teacher self-efficacy ($R^2 = 0.525$), with a significance level of $p = 0.000$, confirm that teachers' ability to apply Design Thinking principles from empathizing with students' needs, defining problems, ideation, prototyping, to testing plays a substantial role in enhancing their confidence in teaching. These results align with ElSayary (2022), who found that Design Thinking improves teachers' self-confidence and strengthens pedagogical reflection in instructional planning. Design Thinking enables teachers to iteratively refine learning solutions, allowing them to adapt more effectively to student needs and classroom challenges (Lor & Truong, 2023). Moreover, Kwek (2015) emphasized that incorporating Design Thinking into instructional planning enhances the effectiveness of teaching strategies because it trains teachers to deeply understand student needs, design learning solutions creatively, and perform iterations to improve instructional design. This approach also positively influences classroom management and student engagement, as the design process promotes learning that is more collaborative, reflective, and student-centered. Teachers who employ design-oriented approaches tend to be more systematic in planning, implementing, and evaluating instruction, thus supporting the overall improvement of teaching efficacy.

In addition to Design Thinking, teacher creativity also contributes positively and significantly to teacher self-efficacy, although with a smaller effect size. The correlation coefficient ($R = 0.420$) and $R^2 = 0.176$ with a significance level of $p = 0.003$ indicate that creativity accounts for 17.6% of the variance in teacher self-efficacy. This suggests that creative teachers possess greater confidence in designing and managing instruction. Nurahadiyatika et al. (2022) support these findings by showing that creativity helps teachers develop flexible and engaging learning methods. Similarly, Henriksen et al. (2018) emphasize that teacher creativity plays a crucial role in designing learning experiences that are more contextual, meaningful, and dynamic, ultimately improving the quality of instructional interactions.

Furthermore, Richards et al. (2016) found that creativity contributes significantly to building teachers' emotional resilience, as creative thinking enables them to respond to changes and instructional challenges more flexibly and positively. When Design Thinking and creativity are examined simultaneously, their predictive strength increases substantially. The values $R = 0.762$ and $R^2 = 0.580$ indicate that the combination of both variables explains 58% of the variance in teacher self-efficacy. These findings show that teachers who possess strong Design Thinking skills *and* high levels of creativity demonstrate much stronger teaching efficacy compared to those who master only one of the two competencies. Henriksen (2017) found that incorporating Design Thinking into teacher education enhances creativity and encourages teachers to take pedagogical risks in developing innovative learning strategies. Llorent-Vaquero and Ortega-Tudela (2021) also emphasize that integrating both competencies produces a more imaginative yet structured instructional design process, making the resulting educational solutions more responsive to students' needs.

Overall, Design Thinking emerges as the most dominant predictor of teacher self-efficacy, while creativity contributes significantly albeit to a lesser degree. The combination of both competencies offers stronger predictive power and indicates that teacher self-efficacy develops more optimally when Design Thinking and creativity are strengthened simultaneously. Therefore, teacher training and professional development programs should

systematically incorporate Design Thinking while also fostering creative capacity. By doing so, teachers can become more confident, adaptive, and innovative in addressing the instructional challenges of 21st-century education.

CONCLUSION

This study affirms that design thinking and creativity are two essential competencies that play a significant role in enhancing teacher efficacy in 21st-century education. Design thinking through the stages of empathy, problem definition, ideation, prototyping, and testing supports teachers in designing instruction that is more reflective, structured, and adaptive to classroom dynamics. Meanwhile, creativity strengthens teachers' ability to create innovative, engaging, and relevant learning experiences that optimally foster student engagement. The findings indicate that both variables have a positive and significant influence on teacher efficacy, with design thinking emerging as the more dominant predictor. This conclusion highlights that teachers who are able to think reflectively and creatively possess stronger professional confidence in managing classrooms and responding to pedagogical challenges. However, this study is limited by its small sample size and its focus on Buddhist education teachers. Therefore, future research is recommended to involve more diverse respondents and to consider a mixed-methods approach. Practically, the results support the need for teacher training programs grounded in design thinking and creativity to strengthen professional competence and teacher efficacy.

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