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# ENHANCING HUMAN SKILLS THROUGH INNOVATIVE PEDAGOGIES: INTEGRATING TBPL AND DESIGN THINKING IN INDONESIAN HIGHER EDUCATION

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**ABSTRACT**

The rapid progression in digital technologies and endless industrial disruption necessitate that higher education institutions change from the classical paradigm of knowledge transfer toward one that enhances adaptive human skills. This article discusses the integration of Team-Based Project Learning (TBPL) and Design Thinking as an innovative teaching method for enhancing human skills, e.g., collaboration, communication, critical thinking, empathy, and problem-solving. Two hundred twenty-nine students at Primakara University were involved in the learning model, and data were collected through a structured questionnaire; they were analyzed using descriptive statistics with the aid of SPSS version 26 based on mean scores and rank indicators of the skill structure. All skill dimensions measured in this study were rated above 3.00 on a 1–4 Likert scale, which indicates an encouraging perception from the students. Highest-scored dimensions included: Lecturer Support (3.48) and Ability to Face Challenges (3.38), whereas Learning Facility Support (3.20) and Project Theme Relevance (3.12) scores recorded were relatively lower. It appears that the TBPL and Design Thinking integration have constructive contributions toward the development of non-cognitive competencies concerning the 21st century. The findings give empirical implications for the universities to design learning environments with an explicit intent to embed collaboration, empathy, and problem-solving as key educational outcomes.

**Keywords:** *Team-based project learning, design thinking, human skills, innovative pedagogies, 21st-century skills*

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## INTRODUCTION

Higher education is now forced to adapt in a world that has quickly changed due to advancing technology, global uncertainty, and industrial disruption. The conventional learning model, which focuses primarily on the delivery or transfer of knowledge, is no longer relevant. At present, a transformation of the learning model is required, one that emphasizes the development of human skills, including communication, collaboration, adaptability, empathy, critical thinking, and effective problem-solving (OECD, 2018; World Economic Forum, 2020). However, the new urgency of these skills may be justified because of the fact that the Fourth Industrial Revolution manifests itself as Society 5.0, which emphasizes human-centered innovation and solving complex problems (Fukuyama, 2018; Schwab, 2017).

As the implementation of outcome-based education increases in higher education institutions, the improvement of learning models that strengthen conceptual understanding and practical competence becomes increasingly necessary. TBPL and Design Thinking have been recognized as promising pedagogical approaches with substantial potential to enrich the development of essential human skills, including collaboration, communication, critical thinking, empathy, and problem-solving. TBPL engages students in collaborative learning environments so that shared ownership and responsibility, teamwork, and authentic project activities facilitate meaning-making and interpersonal growth (Hesse et al., 2015; Michaelsen & Sweet, 2008). Whereas Design Thinking relies on an empathy-generating framework that requires creativity and iterative experimentation from user-oriented aims and co-created ideas (Brown, 2009; Razzouk & Shute, 2012).

Fundamentally, human skills are those "soft" ones, generally classified as emotional intelligence (Goleman, 1995), the “4Cs” which stand for critical thinking, communication, collaboration, and creativity, and more recently, skills such as grit and social-emotional learning (Duckworth & Yeager, 2015). They are now seen as essential academic attainments, career readiness, and global citizenship (Partnership for the 21st Century Learning, 2019; Trilling & Fadel, 2009) as opposed to supplementary learning. However, these were mostly missed in traditional academic structures, showing the urgent need for changes in pedagogy (Anderson & Krathwohl, 2001; Kyllonen, 2016; Wagner, 2014).

TBPL is constructed on the principles of constructivism and social learning, for it is the involvement of students who are considered co-creators through collaboration, reflective dialogue, and sharing accountability in such environments (Hesse et al., 2015; Vygotsky, 1978). Its structured, team format gives rise to opportunities for leadership, empathy, and responsibility while realistically modeling those real-world situations in which students have to operate under conditions that are uncertain and constantly evolving (Suriaman et al., 2024; Yupita et al., 2025). Meanwhile, Design Thinking is the creativity framework involving empathy, problem definition, ideation, prototyping, and testing (IDEO, 2012), which

helps students investigate user needs to provide solutions creatively (Dewi et al., 2023; Liedtka, 2015).

Combining TBPL and Design Thinking creates a solid learning approach because they complement each other so well. Through this collaboration, TBPL provides a structured team learning environment that simultaneously fosters better teamwork and a sense of shared ownership over the final results. In so doing, these two forms of collaborative-intensive, diversified approaches form an experiential environment in which students become intellectually, emotionally, and socially involved. This integration has also taken care of some restrictions that might accrue from executing each of the methods on its own, thus resulting in a relatively complete model for developing both academic and human-centered skillsets (Lor, 2017; Panke, 2019; Tschimmel & Santos, 2018; Zhou, 2017).

There is growing evidence showing that these teaching models are much more effective when used side-by-side. For instance, Kumar et al. (2021) and Thaduri et al. (2024) highlight that when students combine Development Thinking with Project-Based Learning, they tend to enjoy the process. They feel more in control of their own learning and see how their studies actually apply to the real world. The TBPL model has proven in helping students build core professional skills in various fields, whether it's engineering, business, or computer science (Cummings & Yur-Austin, 2021; Iserte et al., 2023).

While researches on TBPL and Design Thinking as separate methods are increasing, there is still a noticeable lack of studies on what happens when combine the two, especially in a developing country context like Indonesia. Most of the current literature tends to focus on grades or specific technical skills, which leaves us with a gap: we don't fully understand how this integrated model helps students develop more well-rounded, human skills. To address this, this study takes a closer look at students' actual learning experiences using both TBPL and Design Thinking. By diving into their perspectives, it will provide fresh evidence for innovative learning models that truly fit the current needs of higher education here in Indonesia

## RESEARCH METHOD

This study follows a descriptive quantitative design, utilizing student surveys to gather insights into the implementation of TBPL and Design Thinking. The focus is not only on capturing student perspectives but also on examining how this combined model impacts the development of vital human skills, ranging from communication and collaboration to critical thinking and adaptability.

The study involved 229 participants from various departments at Primakara University, and an integrated model of Team-Based Project Learning (TBPL) and Design Thinking was applied throughout the semester. To capture the results of this approach, data were gathered through a questionnaire administered at the conclusion of the course.

The research instrument features a questionnaire covering twelve categories of human skills. It assesses core competencies such as communication, collaboration,

and adaptability, alongside personal growth factors like motivation, problem-solving, and the ability to handle challenges. To provide a more comprehensive view, the survey also accounts for external influences, including lecturer support and the availability of learning facilities. The design of this instrument is rooted in the established frameworks of the OECD (2018) and the Partnership for 21st Century Learning (2019).

To ensure its quality, the instrument has been validated by three experts specializing in instructional design and learning assessment. The results yielded an Aiken's V coefficient of 0.83, confirming its content validity, while a Cronbach's alpha of 0.89 established strong reliability. These metrics were derived from a pilot test involving 30 respondents and processed using SPSS Version 26. Consequently, the instrument is confirmed to be valid, reliable, and fully prepared for data collection.

The data analysis involved descriptive statistics processed through SPSS Version 26, with a primary focus on calculating and ranking the mean scores for each human skills category. Every category was assessed using a four-point Likert scale, where 1 represented strongly disagree and 4 indicated strongly agree.

This research adhered to ethical standards for research involving human participants. All participants were informed about the purpose of the research and provided voluntary consent. Responses were collected anonymously, and no identifying personal information was recorded. Participants were permitted to withdraw at any stage without consequence.

## RESULTS AND DISCUSSION

### RESULTS

The data set out twelve skill categories as follows: lecturer support, facing a challenge, theory understanding, collaboration skills, adaptability, communication skills, ability to solve problems, understanding learning objectives, skill development, motivation to learn, support from learning facilities, and relevance of project themes. Each dimension was measured on a 4-point Likert scale, and results were summarized as average figures from the twelve subcategories that represent a high-level view of the potential efficacy of the methods applied in a pedagogical sense. Table 1 presents the results of the available questionnaire.

Table 1.
Survey Results on the Implementation of TBPL and Design Thinking

| No. | Skill Category | Mean Score | Rank |
|---|---|---|---|
| 1. | Lecturer Support | 3.48 | 1 |
| 2. | Ability to Face Challenges | 3.38 | 2 |
| 3. | Understanding of Theory/Concepts | 3.33 | 3 |
| 4. | Collaboration Skills | 3.32 | 4 |
| 5. | Adaptability | 3.31 | 5 |
| 6. | Communication Skills | 3.28 | 6 |
| 7. | Problem-Solving Ability | 3.28 | 7 |
| 8. | Learning Goal Clarity | 3.28 | 8 |

| No. | Skill Category | Mean Score | Rank |
|---|---|---|---|
| 9. | Skill Development Capacity | 3.24 | 9 |
| 10. | Learning Motivation | 3.22 | 10 |
| 11. | Learning Facility Support | 3.20 | 11 |
| 12. | Project Theme Relevance | 3.12 | 12 |

As indicated in Table 1, all skill categories received mean scores above 3.00, clearly indicating that the overall perceptions of students towards the integrated model of TBPL and Design Thinking were positive. Lecture Support had the highest average rating (3.48), emphasizing the role of facilitators when delivering instructions to support students in a collaborative and design-centered environment. Interestingly, the second level of the average rating (3.38) indicates Ability to Face Challenges, which shows that the model can improve students' endurance and confidence in coping with complex project problems.

Moderate scores or ratings, which include the Understanding of Theory/Concepts (3.33), Collaborative Skills (3.32), and Adaptability (3.31), evidence that the instructional approach has truly addressed conceptual understanding and the development of interpersonal skills. However, Learning Facility Support (3.20) and Project Theme Relevance (3.12) saw relatively lower scores. These results point toward specific areas that may require further refinement or adjustment in future iterations of the program.

## DISCUSSION

The The following discussion is organized from the highest-scored dimension to the lowest, emphasizing strengths and areas for enhancement. Each subtopic, therefore, consists of analytical interpretation, conceptual linkage, and supporting literature to contextualize the findings. This format evaluates the instructional strategies' effectiveness and also puts forward suggestions for improving student-centered learning practices in the digital age.

### *Lecturer Support*

The *Lecturer Support* category got the highest score on average (3.48), meaning that students felt that they received enough guidance and mentoring from instructors throughout the process of project implementation. This indicates effective transitioning into an instructor's role away from lecturing per se, into facilitative mentorship, in line with Hmelo-Silver (2004), who placed emphasis on instructors being guides in the cognitive processes of PBL-type learning. In project- and design-oriented approaches, strong facilitator support is important, as it enhances the student not only to overcome obstacles but also to manage teamwork and internalize the more complex cases (Barrows, 1996; Savery, 2006; Strobel and van Barneveld, 2009). This is in line with Tang's (2019) point that educators' soft skills, like facilitation and empathy, have a strong impact on the environments for 21st-century competencies.

Studies in ASEAN demonstrate that lecturer support is one of the most critical factors affecting students' experience. Chan et al. (2021) demonstrated that perceived support from lecturers significantly aids cross-cultural and academic adjustment for international students. Jamaludin et al. (2020) contended that while personal readiness among educators in the region is quite high, institutional readiness varies today with the changes at hand in the ASEAN region's higher education.

***Ability to Face Challenges***

The relatively high score in the *Ability to Face Challenges* category (3.38) indicates that students felt the ability to cope with obstacles in their project work. The nature of authentic challenge that TBPL and Design Thinking environments provide students with develops their capacities to navigate through complexities and to endure failure (Kolko, 2015). This is supported by Zimmerman (2002), in a self-regulated learning theory, stated that people equipped with good motivation and learning strategies would solve their challenges better. The real work problems and experimentations through iterations within Design Thinking expose learners to positive ways of looking at mistakes, which deepen their capacity for psychological resilience (Bransford et al., 2000; Razzouk & Shute, 2012).

The synergy between Team-Based Project Learning (TBPL) and Design Thinking has proven effective in building student resilience, particularly when navigating uncertainty or project setbacks. This mirrors the perspectives of Dweck (2006) and Brown (2009), who suggest that Design Thinking fosters a proactive mindset where challenges are viewed as learning opportunities rather than mere obstacles. Through continuous reflection and iterative improvements, students tend to develop a more mature intellectual outlook over time (Martin, 2009). These findings are further reinforced by European studies (Ryan, 2022; Donelan & Kear, 2024; Johnsen et al., 2024), which highlight how the inherent friction in group work actually serves to strengthen communication, teamwork, and reflective skills.

***Understanding of Theory/Concepts***

A mean score of 3.33 in the *Theoretical Understanding* category suggests that students were able to effectively bridge the gap between classroom concepts and practical application. Tackling authentic problems in this way is key to fostering deeper comprehension (Dochy et al., 2003; Strobel & van Barneveld, 2009), reinforcing the principle that professional learning thrives when knowledge is put into action (Eraut, 2004; Dehler et al., 2001). This shift marks a clear transition from passive to active learning patterns (Briggs & Tang, 2011). These findings are consistent with research in European higher education, which shows that combining real-world tasks with reflection leads to a far more substantial and meaningful mastery of theory (Asikainen & Gijbels, 2017).

***Collaboration Skills***

The average score of 3.32 for *Collaboration Skills* highlights how effective this model is at fostering teamwork. This outcome resonates with the work of Luthans et al. (2006) and Shuman et al. (2005), who emphasize collaboration as a vital competency for success in the modern professional landscape. Beyond basic cooperation, research by Prince (2004), Chan (2012), and Carlgren et al. (2016) suggests that working together in this capacity also boosts self-confidence, social interaction, and critical decision-making abilities.

***Adaptability***

With an average score of 3.31, *Adaptability* emerged as a significant strength, reflecting students' growing proficiency in managing change and uncertainty. This development is rooted in the iterative nature of TBPL and Design Thinking, where learning is driven by the evaluation of errors and the ability to pivot based on feedback (Dosi et al., 2018; Thomas, 2000; Liedtka & Ogilvie, 2011). Such a process not only fosters independent learning but also cultivates a readiness to respond to challenges and an openness to new ideas (Jonassen, 2000; Kereluik et al., 2013). These observations mirror findings from research in Germany, which identifies adaptability as a key factor in promoting both positive student well-being and stronger academic performance (Stockinger et al., 2021).

***Communication Skills***

An average score of 3.28 in *Communication Skills* underscores a notable shift in how students perceive their ability to convey ideas effectively. The inherent demand for stakeholder engagement within the TBPL and Design Thinking frameworks pushes students to refine a broad set of competencies, from presenting concepts and negotiating to the subtle art of persuasion (Lombardi, 2007; Kruchin, 2017; Maher, 2020). These practical gains are echoed by a large-scale study in Spain, which identified strong communication as the backbone of successful idea-sharing and role clarity in collaborative environments (De Prada et al., 2022). Ultimately, these results align with the World Economic Forum's (2020) ranking of communication as a critical skill for the future workforce.

***Problem-Solving Ability***

The average score of 3.28 in P*roblem-solving Ability* reflects clear improvement in identifying, analysing, and tackling complex issues. TBPL places students in real-world contexts where they analyse problems and suggest solutions (Mourshed et al., 2012). Through teamwork and discussion, they refine their strategies, a recent German study confirmed improvement skills for complicated tasks (Knöpfel et al., 2024). Design Thinking further helps them find root causes, brainstorm ideas, and create solutions (Brown, 2009; Liedtka & Ogilvie, 2011; Carstensen & Bason, 2012), developing both creative and focused thinking as well as skills valued in school and work (Aditomo et al., 2013; Sarooghi et al., 2019).

***Learning Goal Clarity***

The 3.28 score for *Learning Goal Clarity* shows that students understood the expected outcomes. Clear objectives enhance self-motivation (Hattie, 2009; Schunk et al., 2014), and when tasks are relevant to outcomes, engagement will rise; thus, students will focus their efforts and have a better impact (Marzano, 2003; Biggs & Tang, 2009). Clear objectives also help students to plan and evaluate their progress (Knowles et al., 2015). Students know what and why they work; this makes learning more relevant to them (Asikainen & Gijbels, 2017).

***Skill Development Capacity***

The 3.24 score for *Skill Development Capacity* shows active engagement in improving students' abilities. Design Thinking and TBPL demand support, reflection, and growth (Biggs & Tang, 2009; Van den Akker et al., 2006). It changes the learning process to an active and lifelong growth-oriented process (OECD, 2018). European Liberal Arts programs show that multidisciplinary, student-centred methods make students active in their growth (Dekker, 2024).

***Learning Motivation***

The 3.22 score for *Learning Motivation* shows these methods enhanced enthusiasm that improves students' engagement (Deci & Ryan, 2000; Fredricks et al., 2004) and increases their motivation (Dweck, 2006). TBPL and Design Thinking add emotional engagement that leads to deep involvement and effective collaboration (Pekrun & Linnenbrink-Garcia, 2012; Tuan et al., 2005), as a study in the Netherlands linked autonomous motivation to more effort, deeper strategies, and better performance (Kusurkar et al., 2013).

***Learning Facility Support***

A mean score of 3.20 for L*earning Facility Support*, though generally positive, points to a clear need for further investment in collaborative spaces and resources. The quality of the learning environment remains a cornerstone of effective skill development (Keller, 1987; Merriam & Bierema, 2013; Knowles et al., 2015). This observation is consistent with research in Poland and Spain, which demonstrates that adequate facilities are directly linked to both student satisfaction and overall academic success (Marciniak & Rembielak, 2022).

***Project Theme Relevance***

At 3.12, *Project Theme Relevance* recorded the lowest average score, though it remains within a positive range. This finding highlights a potential area for adjustment, as student engagement often stems from how relevant they perceive their tasks to be. This resonates with the work of Kolmos et al. (2006), who argue that a real-world context is the backbone of effective problem-based learning. By selecting themes that tackle actual societal issues, educators can drive higher levels of student interest (Strobel & van Barneveld, 2009; Aditomo et al., 2013). Such a link

between authenticity and deeper motivation is also supported by recent European research (Markula & Aksela, 2022).

Reflecting on these twelve dimensions as a whole, it is evident that the integration of TBPL and Design Thinking has created a transformative learning environment, with every category achieving a positive mean score above 3.00. The results paint a picture of a learning journey where strong mentorship and the psychological safety provided by lecturer support (3.48) acted as the primary catalysts for students to embrace complex challenges (3.38). As students navigated this process, they did not merely memorize theory; they actively internalized it through a suite of developing human skills, including collaboration, adaptability, and communication. While the slightly lower scores for facility support and project relevance (3.12–3.20) signal practical areas for institutional growth, they do not diminish the overall success of the model. Instead, they provide a realistic roadmap for refinement, confirming that while the pedagogical 'software' is functioning at a high level, the 'hardware' of the learning environment must now evolve to keep pace.

## CONCLUSION

This research introduces a pedagogical framework that bridges Team-Based Project Learning (TBPL) with Design Thinking, prioritizing a student-centered and experiential approach. The synergy between these methods effectively nurtures a broad spectrum of human skills, ranging from empathy and communication to critical thinking and adaptability. While the outcomes are largely positive, the findings also highlight a need for deeper attention to project relevance and the adequacy of physical learning resources. Ultimately, this study underscores the necessity of a paradigm shift in higher education toward prioritizing human-centered competencies. Although the current scope was limited to a single institution, the framework offers a scalable model with significant potential for collaborative implementation across wider university networks.

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