การศึกษาเกี่ยวกับประสิทธิผลของกรอบแนวคิด Creative Thinking Canvas ในการเสริมสร้างทักษะการแก้ปัญหาอย่างสร้างสรรค์ของนักศึกษาสื่อดิจิทัล

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บทคัดย่อ

การวิจัยนี้มุ่งเน้นการพัฒนาเครื่องมือส่งเสริมความคิดสร้างสรรค์ที่เรียกว่า "Creative Thinking Canvas" เพื่อเสริมสร้างทักษะการคิดอย่างสร้างสรรค์และการแก้ปัญหาของนักศึกษาระดับมหาวิทยาลัย โดยมีวัตถุประสงค์เพื่อศึกษาประสิทธิผลของเครื่องมือนี้ในการช่วยให้นักศึกษาสามารถรับมือกับความท้าทายที่มักพบในกระบวนการคิดสร้างสรรค์ การศึกษานี้ดำเนินการกับนักศึกษาสาขาสื่อดิจิทัลจำนวน 385 คนจากมหาวิทยาลัยกรุงเทพ ประเทศไทย โดยใช้แบบสอบถามเพื่อประเมินประสิทธิภาพของ Creative Thinking Canvas ในด้านต่างๆ ได้แก่ การกำหนดวัตถุประสงค์ การระบุกลุ่มเป้าหมาย ข้อจำกัดและข้อกำหนด การสร้างคีย์เวิร์ด การพัฒนาแนวคิด การตรวจสอบความสอดคล้องกับโจทย์ การพัฒนารายละเอียดและรูปแบบ การนำเสนอแนวคิด และการทำงานเป็นทีม นอกจากนี้ ยังมีคำถามปลายเปิดเพื่อรวบรวมความคิดเห็นเชิงลึกเพิ่มเติม โดยใช้แบบสอบถามจำนวน 10 ข้อ ประเมินตามมาตรวัดแบบฉันทามติ 5 ระดับ (Likert scale: 1 = ไม่เห็นด้วยอย่างยิ่ง ถึง 5 = เห็นด้วยอย่างยิ่ง)

ผลการสำรวจพบว่า Creative Thinking Canvas มีประสิทธิภาพในทุกด้าน โดยมีคะแนนเฉลี่ย 4.01 จาก 5 โดยด้านที่ได้รับคะแนนสูงสุดคือ การตรวจสอบแนวคิดให้ตรงกับโจทย์ การกำหนดวัตถุประสงค์ และการพัฒนาแนวคิดให้เป็นรูปธรรม ขณะที่ด้านการนำเสนอแนวคิดและการทำงานเป็นทีมได้รับคะแนนต่ำกว่า นอกจากนี้ นักศึกษากว่า 97% เห็นว่าเครื่องมือนี้เป็นประโยชน์ต่อกระบวนการคิดสร้างสรรค์ของตน ความคิดเห็นจากนักศึกษาที่ใช้ Creative Thinking Canvas ชี้ให้เห็นถึงประโยชน์หลายประการ เช่น ช่วยให้มีสมาธิกับปัญหาตลอดกระบวนการคิด ช่วยสร้างคีย์เวิร์ดที่เกี่ยวข้องเพื่อกระตุ้นการคิดแบบหลากหลาย และช่วยในการทำงานเป็นทีมผ่านการแสดงภาพรวมของกระบวนการคิด อย่างไรก็ตาม นักศึกษายังเสนอแนะการปรับปรุง เช่น การอธิบายวัตถุประสงค์ของเครื่องมือให้ชัดเจนขึ้น ความยืดหยุ่นในการกรอกข้อมูลในแต่ละส่วน และการมีเวอร์ชันภาษาไทย

สรุปผลการวิจัยสนับสนุนสมมติฐานที่ว่า "การใช้เครื่องมือหรือกรอบแนวคิด เช่น Creative Thinking Canvas Framework สามารถช่วยให้นักศึกษามหาวิทยาลัยรับมือกับความท้าทายที่พบในกระบวนการคิดสร้างสรรค์ เช่น ความยากในการกำหนดปัญหา การสร้างแนวคิดที่ใช้งานได้ และการนำไปสู่การแก้ปัญหาที่เป็นรูปธรรม" การศึกษานี้ให้ข้อมูลเชิงลึกที่มีคุณค่าสำหรับการปรับปรุงและพัฒนา Creative Thinking Canvas Framework ต่อไป และมีส่วนช่วยในการพัฒนาทักษะการคิดสร้างสรรค์ของนักศึกษาสาขาสื่อดิจิทัล รวมถึงการนำเสนอแนวทางที่มีโครงสร้างสำหรับกระบวนการคิดสร้างสรรค์และการแก้ปัญหา

คำสำคัญ: ความคิดสร้างสรรค์ การแก้ปัญหา กรอบแนวคิดการคิดสร้างสรรค์

A Study on the Effectiveness of the Creative Thinking Canvas Framework in Enhancing Creative Problem-Solving Skills for Digital Media Students.

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Abstract

This research study focuses on developing a creative thinking framework, called the Creative Thinking Canvas, to enhance the creative thinking and problem-solving skills of university level students. The aim is to investigate the effectiveness of the framework in addressing the challenges that university students commonly encounter in the creative thinking process. The study worked with 385 Digital Media major students from Bangkok University, Thailand, who participated in a survey —a 10-topic questionnaire rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree)— that assessed the effectiveness of the Creative Thinking Canvas framework, including objective setting, target identification, limitations and requirements, idea generation, idea visualization, idea validation, development of details and format, idea presentation, and teamwork. Additionally, open-ended questions were included to gain more in-depth opinions.

The survey results indicated that the Creative Thinking Canvas framework was effective in all areas, with an average rating of 4.01 out of 5. The highest rating areas were given for idea validation, objective setting, and idea visualization, while idea presentation and teamwork received lower ratings. Furthermore, over 97% of the students agreed that the framework was beneficial to their creative thinking process. Feedback from students who utilized the Creative Thinking Canvas revealed several benefits. The canvas helped students maintain focus on the problem throughout the thinking process, generated relevant keywords for divergent thinking, and facilitated teamwork by providing a visual representation of the thinking stages. However, students also provided suggestions for improvement, including the need for better explanation of the canvas's purpose, flexibility in filling out all sections, and the availability of a Thai language version.

In conclusion, the research findings support the hypothesis, which is "The utilization of a tool or framework, such as the Creative Thinking Canvas Framework, can facilitate university students in navigating the challenges they encounter during the creative thinking process, including difficulties in problem definition, generating usable ideas, and executing them to create practical solutions". The study provides valuable insights for refining and further developing the Creative Thinking Canvas framework. Ultimately, this research contributes to the advancement of creative thinking skills among Digital Media Major students and offers a structured approach to their creative thinking process and problem-solving abilities.

Keywords: creative thinking, problem-solving, creative thinking framework, Creative Thinking Canvas

Introduction

Today's fast-paced world, particularly the world of media and entertainment, has become increasingly important for university students [1]. Creative thinking skills enable students to propose innovative solutions, adapt to new situations, and find solutions to any challenges. Moreover, in the job search area, employers are seeking individuals who can think creatively, generate innovative ideas, and bring fresh perspectives to the table [2].

Creative thinking skills enable students to approach problems and challenges from new and original angles, leading to enhanced problem-solving abilities [3]. These skills encourage students to question assumptions, explore alternative perspectives, challenge conventional ideas, and foster a culture of innovation [4]. By developing their creative thinking skills, students become better equipped to tackle complex real-world problems that do not have straightforward solutions. Moreover, creative thinking skills have a positive impact on academic and professional success. Research has shown that students with strong creative thinking abilities demonstrate higher levels of academic achievement not only in media but across various disciplines as well [5]. These skills not only enhance academic performance but also prepare students for future career prospects that require adaptability and innovation.

However, learning creative thinking can be challenging for some students as it demands a departure from traditional thinking patterns. It requires students to break away from their comfort zones, challenge preconceived notions, and embrace more open-minded and divergent approaches [6]. Nevertheless, with proper guidance and structured frameworks, students can develop and hone their creative thinking skills, enabling them to thrive in the 21st-century landscape.

To face the challenge of creative thinking, several frameworks and thinking models have been developed as valuable tools for idea generation and thought organization. Two notable examples are the Creative Problem Solving (CPS) framework and the SCAMPER technique. These frameworks provide structured approaches to stimulate creativity and guide individuals in exploring new possibilities. In addition to these creative thinking frameworks, Business Model Canvas is another prominent example in business related areas that offers a creative visual representation of a company's value proposition, customer segments, channels, revenue streams, and more [7].

Therefore, to augment the learning of creative thinking, the researcher has created a custom creative thinking tool: the Creative Thinking Canvas. This tool, which spans three pages, captures the fundamental aspects of creative thinking: problems, ideas, and execution. The canvas was used as a comprehensive guide or framework in the Creative Thinking class at Faculty of digital media and Cinematic Art, Bangkok University.

Incorporating frameworks into educational curricula empowers students to approach complex challenges with a well-defined structure while encouraging them to think creatively and critically. The use of frameworks like the Business Model Canvas fosters an entrepreneurial mindset and prepares students for the demands of the modern workforce, where innovation and adaptability are highly valued.

In summary, frameworks and thinking models offer valuable guidance and structure to the creative thinking process. By utilizing these tools, students can enhance their problem-solving abilities, generate innovative ideas, and develop practical solutions. The Business Model Canvas, with its adaptability and visual representation, has proven effective in various domains, including education. Integrating frameworks into educational practices cultivates a creative and entrepreneurial mindset, equipping students with the skills needed to succeed in a rapidly evolving world.

Research Question and Hypothesis:

Research Question: Do university students require a guideline framework or tool to assist them in overcoming challenges in the creative thinking process, specifically in defining the problem, generating usable ideas, and executing them to create real-world solutions?

Hypothesis: The utilization of a tool or framework, such as the Creative Thinking Canvas, can facilitate university students in navigating the challenges they encounter during the creative thinking process, including difficulties in problem definition, generating usable ideas, and executing them to create practical solutions.

Literature Review

Creative thinking refers to the cognitive ability to produce a wide range of ideas and able to transform or modify them to produce unique and valuable outcomes [8,9]. Most models of creative problem-solving emphasize the interplay of three key cognitive processes: problem construction, idea generation, and idea evaluation and selection. These processes form the structural framework through which individuals engage in creative thinking and navigate through the complexities of creative problem-solving process [10].

The problem construction process involves the ability to define and elaborate the problems or challenges, understanding the underlying issues, identifying the goals, target group of audience, and framing the problem in a way that stimulates creative thinking [11]. By carefully constructing the problem, it provides a clear focus and direction for generating novel ideas.

Idea generation involves divergent thinking to generate a wide range of ideas, options, and possible solutions. Idea generation involves the capacity to think flexibly, make connections between seemingly unrelated concepts, and explore multiple perspectives and possibilities [6] After generating a pool of ideas, individuals engage in convergent thinking to evaluate and select the most promising ideas for further development and implementation. Idea evaluation involves assessing the feasibility, novelty, and potential effectiveness of each idea based on predetermined criteria [9].

To address these challenges, researchers and educators have developed various frameworks and tools aimed at supporting students in the creative thinking process. For instance, the Osborn-Parnes Creative Problem-Solving Process emphasizes stages such as problem finding, fact-finding, and idea selection [12]. The Design Thinking framework, widely used in various fields, emphasizes empathy, ideation, and prototyping [13]. Furthermore, in business area, the Business Model Canvas is another prominent example that has garnered significant attention and widespread application across various domains. Business Model

Canvas offers a visual representation of a company's value proposition, customer segments, channels, revenue streams, and more [7]. It serves as a comprehensive framework that allows entrepreneurs to face the challenge of creative thinking by gaining a holistic view of their business concept and aiding in the identification of key components.

Research found that the integration of structured frameworks into educational curricula provides students with enhanced capabilities to comprehend and address intricate questions or problems. It minimizes the potential for bias in the generation and assessment of ideas, promotes more effective collaboration within teams, and engenders a smooth flow in the thinking process. Moreover, it stimulates multidisciplinary approaches and collaborations across different theoretical and conceptual areas. Finally, such integration cultivates an engaging and enjoyable thinking process environment [14].

Research Methodology

The goal of this study is to create a creative thinking framework designed for university-level digital media students to help them through the creative thinking process from objective definition to concept execution. The framework aimed to provide students with a practical and systematic approach to developing their creative thinking skills in real-world situations.

The Creative Thinking Canvas is a framework that aims to enhance the creative problem-solving skills of digital media students. The framework consists of three pages, each with a specific purpose. The first page focuses on setting up the objective by identifying the problem, requirements, need, target demographic, and psychology. This information is used as a key for other divergent thinking tools such as mind-mapping.

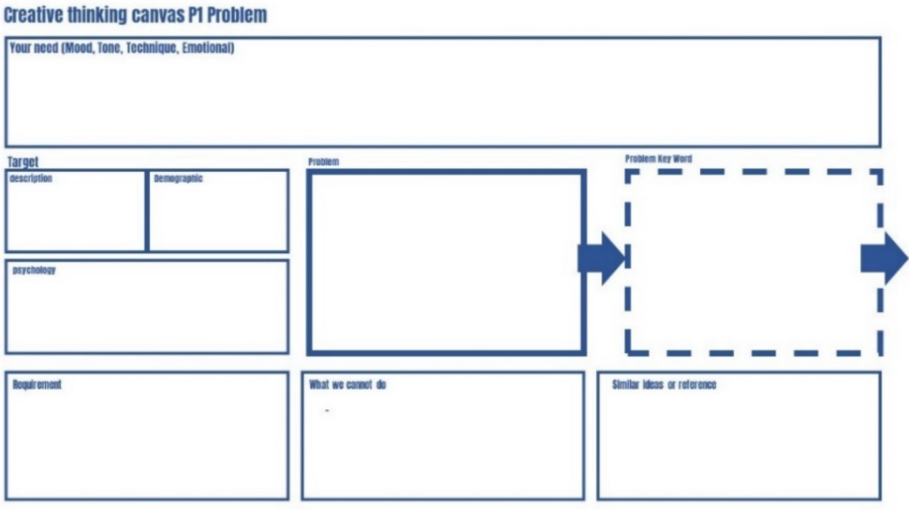

Figure 1. Creative Thinking Canvas page 1 (problems)

The second page lists the ideas generated from the divergent thinking process and evaluates them based on five criteria: creating solutions, meeting requirements, attracting the targets, loving the idea, and being realistic.

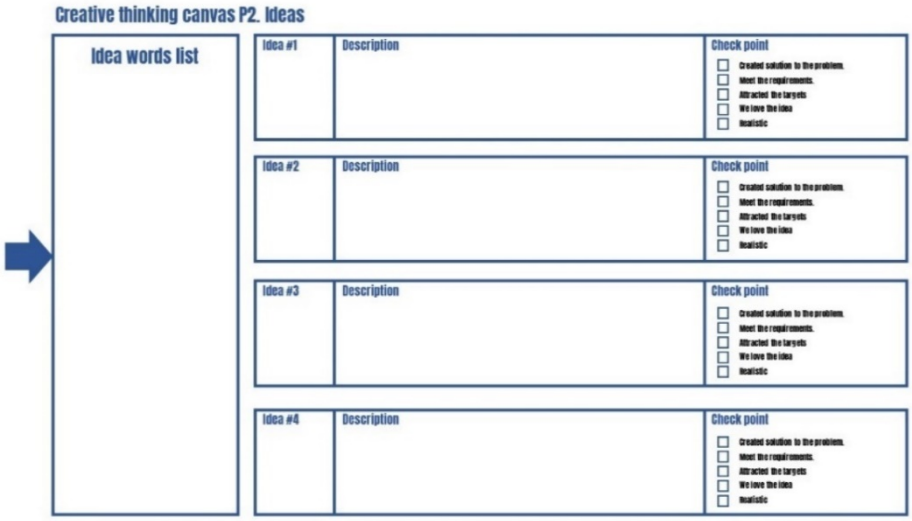

Figure 2. Creative Thinking Canvas page 2 (ideas)

Finally, the third page provides an execution plan for the selected idea by adding references, a story, key messages, mechanics, and output. Overall, the Creative Thinking Canvas provides students with a structured approach to creative thinking, enabling them to generate innovative ideas and turn them into tangible solutions.

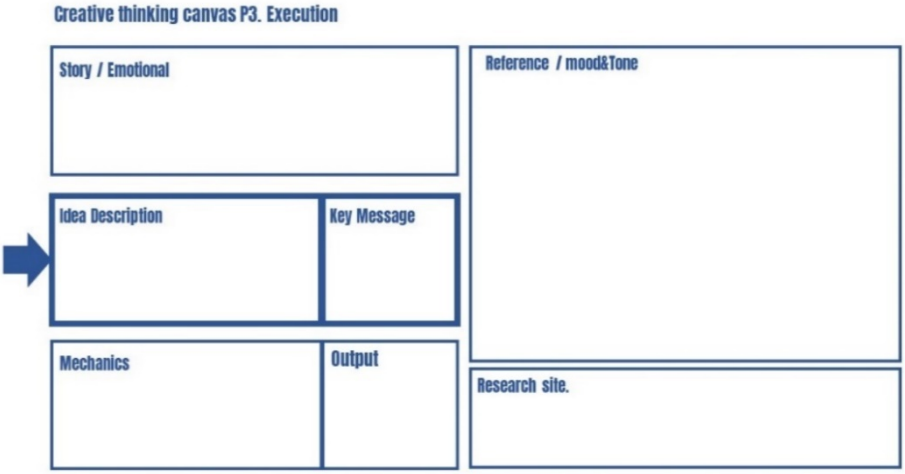

Figure 3. Creative Thinking Canvas page 1 (Execution)

Research design:

This study utilizes a quasi-experimental design with a pre-test, training, and post-test structure to evaluate the effectiveness of a creative thinking framework for university students. The research design consists of three key phases: pre-training, training with the Creative Thinking Canvas, and post-training evaluation. In the pre-training phase, students engage in an assignment that integrates the tools and concepts they have learned regarding creative thinking. This assignment serves as a baseline measure of their initial creative thinking abilities before being exposed to the Creative Thinking Canvas. Following the pre-training phase, students undergo training where they are introduced to the Creative Thinking Canvas

framework. The training focuses on equipping students with the necessary skills and knowledge to effectively utilize the Canvas in their creative thinking process. Students are guided on how to define problems clearly, generate usable ideas, and execute them to create real-world solutions using the Canvas as a structured approach. After completing the training, students undertake a post-training assignment where they apply the Creative Thinking Canvas to solve a different problem or challenge. This assignment allows students to demonstrate their acquired skills and assess the practical impact of the Canvas on their creative thinking abilities.

Subsequently, students were asked to provide feedback through a carefully developed questionnaire that compared their experiences and perceptions of using the Creative Thinking Canvas before and after the training. The instrument consisted of ten topic areas—objective setting; target identification; limitations and requirements; idea generation; idea visualization; idea validation; development of details and format; idea presentation; teamwork; and overall satisfaction—each rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Prior to data collection, the questionnaire was piloted with ten students to ensure that each item was clear and easily understood.

The combination of the pre-training assignment, the training phase with the Creative Thinking Canvas, the post-training assignment, and the questionnaire survey provides a comprehensive evaluation of the effectiveness of the Canvas in improving the creative thinking abilities of university students. This research design allows for a thorough examination of the impact and usability of the Creative Thinking Canvas, as well as gathering students' insights and suggestions for further improvement.

Participants and sampling methods:

All 385 Digital Media students enrolled in the Creative Thinking class at Bangkok University in 2021 and 2023 participated in the survey. A purposive sampling approach was used, with the entire class included because Creative Thinking is a required core course for their program.

Results:

A total of 385 digital media students participated in the study. The survey asked the students to rate the effectiveness of the Creative Thinking Canvas framework in different areas related to creative thinking. The areas included objective setting, target identification, limitations and requirements, idea generation, idea visualization, idea validation, development of details and format, idea presentation, and teamwork. In addition to the ratings, the survey also included open-ended questions to gather more in-depth opinions and suggestions from the students regarding their experience with the Creative Thinking Canvas framework. This allowed the researchers to gain further insights into the strengths and weaknesses of the framework and gather valuable feedback for future improvements.

Table 1: Results of the survey

Aspect	Average (AVE)	Standard Deviation (SD)
Defining the objective of creative thinking	4.11	0.8
Defining the target audience	4.04	0.82
Defining constraints and requirements of creative thinking	4.04	0.76
Helping to identify keywords to initiate thinking	4.13	0.88
Developing ideas into concrete concepts	4.07	0.83
Verifying that the concept aligns with the brief	4.17	0.82
Developing details, formats, and providing references	3.89	1.01
Presenting the idea	3.85	0.84
Assisting in teamwork	3.72	1.11
Do you think the Creative Thinking Model Canvas helps improve your creativity?		95.74%

The results of the survey show that the students found the Creative Thinking Canvas framework to be effective in all areas, with an average rating of 4.01 out of 5. The highest rating was given for idea validation (4.17), followed by Defining the objective of creative thinking (4.11) and Developing ideas into concrete concepts (4.07). The lowest rating was given for idea presentation (3.85) and teamwork (3.72).
Furthermore, more than 97% of the students agreed that the Creative Thinking Canvas framework was helpful in developing their creative thinking skills. This indicates that the framework has a significant impact on the students' ability to approach problems and challenges in new and innovative ways.
In addition to the ratings, further feedback was gathered from the students who used the Creative Thinking Canvas framework in their projects. The following insights were obtained:

1. The Creative Thinking Canvas helps students to maintain focus on the problem throughout the entire thinking process. One student stated, "Before using the canvas, we would often get lost in a pool of ideas and sometimes forget about the original questions. The canvas provides a way for us to check back and evaluate our ideas."

2. The canvas assists students in generating relevant keywords to initiate their divergent thinking process, such as mind mapping or brainstorming. This helps them establish a stronger starting point for their thinking process.

3. The Canvas facilitates teamwork by providing a visual representation of the thinking stages. It helps students record and evaluate ideas collectively, fostering effective collaboration among team members.
While the majority of students found the Creative Thinking Canvas beneficial, there were some suggestions for improvement:

1. Some students noted that the canvas initially required explanation to fully understand its purpose and usage. They found it challenging to use it effectively without proper guidance.

2. A few students expressed the perception that they needed to fill out every box on the canvas, even when they felt it was not necessary. They suggested more flexibility in using the canvas based on the specific needs of each project.

3. Students recommended the availability of a Thai language version of the Creative Thinking Canvas to cater to the linguistic preferences of local students.

These comments and suggestions provide valuable insights for further refinement and development of the Creative Thinking Canvas framework.

Discussion

The present study aimed to investigate the effectiveness of the Creative Thinking Canvas framework in enhancing the creative problem-solving skills of digital media students. A survey was conducted with 385 digital media students. The result provides a clear indication that the Creative Thinking Canvas framework is a beneficial tool in the context of creative problem-solving.

Overall, students rated the effectiveness of the Creative Thinking Canvas favorably, with an average rating of 4.01 out of 5. Crucially, the framework was seen to be most effective in the area of idea validation, objective setting, and idea visualization. The positive responses suggest that the Creative Thinking Canvas is particularly effective in aiding the development and validation of ideas, as well as facilitating clarity in the initial stages of problem-solving. However, the areas that received the lowest ratings were idea presentation and teamwork, indicating possible areas for further improvement. Feedback collected from open-ended survey responses confirmed the value of the Creative Thinking Canvas, highlighting its utility in maintaining focus on problem-solving, initiating divergent thinking processes, and fostering effective collaboration within team environments.

Nonetheless, the feedback also highlighted certain limitations and areas of potential improvement. A number of students suggested that additional guidance was needed to maximize the effectiveness of the framework, indicating that the Canvas may initially be challenging for some students to navigate. Similarly, a desire for more flexibility and the provision of localized language versions were also mentioned, suggesting that the framework could benefit from additional refinements to increase its accessibility and applicability. The future steps of the researcher involve broadening the application of the Creative Thinking Canvas framework beyond its current scope. The intention is to implement this tool across various educational institutions and levels, as well as within professional areas. To accomplish this expansion, however, may more elaborate implementation instruction of the tool. Furthermore, modifications to the framework may be required to ensure its relevance and efficacy across different topics and disciplines. This endeavor represents a promising direction for future research, potentially leading to a broader understanding and application of the Creative Thinking Canvas in fostering creative problem-solving skills.

Conclusion and Recommendation

In summary, the Creative Thinking Canvas appears to be an effective tool in enhancing the creative problem-solving skills of digital media students, as demonstrated by the overall positive feedback and high

average rating received from students. The framework was particularly useful in facilitating idea validation and objective setting but showed potential for improvement in aspects of idea presentation and teamwork. Moreover, students' suggestions for improvement - specifically concerning usage instruction, flexibility in application, and linguistic customization - offer valuable insights for future refinement and development of the Creative Thinking Canvas framework. It is seemed that, through continued refinement based on feedback and systematic research, the Creative Thinking Canvas can further evolve as a tool that significantly contributes to the teaching and learning of creative thinking skills, preparing students to effectively approach complex real-world problems in creative and innovative ways.

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