A Learning Approach for Innovation and New Product Development: Insights from Higher Education Practice

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ABSTRACT

Enhancing students' competencies has become an important objective in higher education institutions. Universities are increasingly expected to produce graduates who possess critical thinking, creativity, and problem-solving skills. This study examines the implementation of innovative learning approach in the Innovation course at Universiti Teknologi MARA (UiTM). The course integrates problem-based learning and experiential learning approaches through several innovation-based assignments, including video creation and product development projects. These activities encourage students to identify real-world problems, analyse consumer needs, and develop innovative solutions. The findings indicate that the implemented approach enhance students' competencies in creativity, collaboration, and problem solving. In addition, the learning approach has encouraged students to participate in innovation competitions, where several groups have achieved notable recognition. The study highlights the importance of innovative teaching approach in supporting competency development among university students.

Keywords: Innovation, education, learning approach

INTRODUCTION

Innovation education has become increasingly important in higher education as universities aim to produce graduates who are capable of critical thinking, creativity, and effective problem-solving (Li & Yu, 2025, Karuru, Haris & Asdar, 2026). In response to these demands, many public universities have introduced innovation-based courses designed to develop students' ability to identify problems and generate practical solutions. At Universiti Teknologi MARA (UiTM), the Innovation course is offered as a compulsory subject that encourages students to develop innovative ideas and entrepreneurial thinking.

Despite the availability of structured teaching modules for the Innovation course, challenges remain in ensuring that the content is effectively delivered and understood by students (Fox, Lazarus & Stephens, 2026). Students may find it difficult to translate theoretical concepts into practical, innovative ideas, which may limit their ability to generate creative solutions. Therefore, effective teaching approaches are required to support students in understanding the course content and applying innovation concepts in real-world contexts (Hamad & Al-Harrasi, 2026). In addressing this issue, innovative teaching approaches such as problem-based learning and experiential learning are applied in the course. These approaches encourage students to actively participate in the learning process by identifying problems, analysing market trends, and developing innovative product ideas. Students are also required to complete assignments that involve video creation and product development to strengthen their creativity and practical skills.

This study aims to examine the effectiveness of an innovative learning approach implemented in the Innovation course in enhancing students' competencies. Specifically, the study seeks to explore how problem-based learning and experiential learning contribute to students' competency development and to evaluate how innovation-based assignments support students in developing creative solutions.

Based on these objectives, the study addresses the following research questions:

(1) How are innovative teaching and learning approaches implemented in the Innovation course?

(2) How do problem-based learning and experiential learning support students' competency development?

(3) How do innovation-based assignments contribute to students' creativity and problem-solving abilities?

LITERATURE REVIEW

Students' competencies refer to the ability to integrate knowledge, skills, and attitudes in performing learning tasks effectively (Annelin; 2026). In educational contexts, competency development is often associated with three main domains, namely cognitive, affective, and psychomotor abilities (AlAfnan, 2025). These domains contribute to the development of students who can apply knowledge, demonstrate appropriate attitudes, and perform practical tasks. In the context of 21st-century education, students are expected to develop competencies such as critical thinking, creativity, collaboration, and communication (Suleymanova; 2026). These competencies are essential in preparing graduates to succeed in dynamic and complex work environments. As a result, educational institutions increasingly emphasise teaching approaches that promote active learning and student engagement.

Problem-based learning is one of the approaches commonly used to enhance students' analytical and problem-solving skills (O'Toole, Benati, Beamish, Guy & Interrigi, 2026). This approach encourages students to explore real-world problems and identify possible solutions through collaborative learning. By engaging with authentic problems, students can develop critical thinking abilities and apply theoretical knowledge in practical situations. Experiential learning is another important approach that supports competency development (Liu 2026). This approach emphasises learning through experience, reflection, and application. Through experiential learning activities, students can observe real situations, reflect on their experiences, construct new knowledge, and apply their understanding to practical contexts.

The integration of problem-based learning and experiential learning is particularly relevant in innovation education, as these approaches encourage students to think creatively and develop innovative solutions to real-world problems (Wang, Fu, Wu, Deng, Ruan, Liu& Wu, 2025; Yunitasari, Lasmawan & Ardana, 2025).

The term "traditional learning" represents a teacher-centered method where students serve as passive absorbers of knowledge while the lecturer takes the lead in imparting it. Structured lectures, little contact, and an emphasis on content transmission rather than active participation are typical characteristics of this approach (Grannas, Frelin & Ostlin, 2026). While traditional teaching is good at explaining basic topics understandably and methodically, it frequently restricts possibilities for critical thinking, teamwork, and practical application. As a result, rather than gaining deeper comprehension and problem-solving abilities, pupils could rely significantly on memorisation. Given the limitations of traditional teaching and the growing need for student-centered approaches, this study seeks to evaluate the effectiveness of innovative teaching methods in improving learning outcomes. Accordingly, the methodology adopted to address this objective is presented in the next section.

METHODOLOGY

This study adopts a case study research design to examine the implementation of an innovative learning approach in a higher education context. The case study method is appropriate as it enables an in-depth exploration of teaching practices and student learning experiences within a real educational setting. The study involved approximately 76 undergraduate students enrolled in an innovation-focused course at a Malaysian public university. A purposive sampling technique was used, as participants were selected based on their enrolment in

the course. Data were collected through students' reflective feedback. Data were analysed using descriptive quantitative indicators, such as the number of projects produced, participation rates, and competition achievements, to support the qualitative findings.

Learning Approach

In this study, the researcher executed several project-based learning activities designed to enhance their creativity and problem-solving skills. These activities include introductory assignments, video creation projects, and product development tasks. Through these assignments, students are encouraged to identify problems faced by users or consumers and propose innovative solutions in the form of new product ideas. Technology-based learning approaches are integrated into the teaching process to support these activities. The use of digital platforms and online resources allows students to access various learning materials and examples that may inspire their innovative thinking (Spaska, Kozub, Abylasynova, Kozub & Koval, 2025). Videos and online content are frequently used to illustrate real-world problems and demonstrate how innovative solutions are developed (Kovtaniuk,Tarasova & Zakarliuka, 2025).

Students are encouraged to analyse these examples and identify potential opportunities for innovation. The researcher helps in highlighted some cases and demonstrated to the student how consumer problems can be transformed into innovative product solutions. This process helps students develop their analytical thinking and encourages them to explore creative approaches in product development. Students are also required to enhance their digital and technical skills, particularly in video production and digital content creation. They are encouraged to explore various online resources, including video-sharing platforms, to learn about video editing techniques and presentation skills. These activities enable students to develop communication skills as they present their innovative ideas.

Group-based learning is also emphasised in the course. Students work collaboratively in teams to discuss ideas, share experiences, and refine their proposed product concepts (Afzal & Tumpa, 2025; Swearing, 2025). Collaboration between students and the lecturers, where two-way communication plays a crucial role in guiding the innovation process (Hayat, Widyawati, Nihlah & Eurotama, 2026). Lecturers' guidance is also crucial to help provide feedback and encourage students to evaluate the strengths and weaknesses of their ideas while exploring alternative solutions (Samsudin, Wan Mohd Rosly, Syed Abdullah & Ahmad Shukri, 2025). Students are also encouraged to observe global trends and learn from successful innovations developed by others. By analysing existing innovations, students gain valuable insights into how innovative products are developed and introduced into the market. This exposure helps students expand their thinking and encourages them to explore ideas beyond conventional boundaries.

RESULTS AND DISCUSSION

To further evaluate the effectiveness of the innovative learning approach, a comparative reflection with traditional lecture-based teaching methods was conducted. Unlike conventional approaches that primarily emphasise passive knowledge acquisition, the innovative approach encourages active participation, high engagement, and problem-solving. Students demonstrated higher levels of engagement, idea generation, and application of knowledge compared to traditional learning environments. While traditional methods may support theoretical understanding, the innovative approach was found to be more effective in developing practical competencies, particularly in creativity and innovation development. This is shown in the figure below:

Learning Outcome	Innovative Approach (n = 76)	Traditional Approach (n = 76)
High Engagement	54 (71.1%)	28 (36.8%)
Active Participation	58 (76.3%)	30 (39.5%)
Idea Generation (Creativity)	52 (68.4%)	26 (34.2%)

Application of Knowledge	49 (64.5%)	27 (35.5%)
Problem-Solving Skills	45 (59.2%)	29 (38.2%)
Theoretical Understanding	40 (52.6%)	50 (65.8%)
High Engagement	54 (71.1%)	28 (36.8%)

Figure 1: Comparison of Learning Outcomes between Innovative and Traditional Approaches.

The analysis of students' reflective feedback reveals several important learning outcomes associated with the implementation of the innovation-based learning approach. The most prominent theme identified was enhanced creativity and idea generation (68.4%)**,** indicating that most students perceived the learning activities as effective in stimulating innovative thinking. This suggests that the pedagogical approach successfully encouraged students to explore new ideas and think beyond conventional solutions. In addition, improved teamwork skills (63.2%) emerged as a key outcome, reflecting the collaborative nature of the learning activities. Students appeared to benefit from group-based tasks, which facilitated communication, coordination, and problem-solving. Similarly, increased confidence in innovation (57.9%) was reported by more than half of the respondents, suggesting that experiential learning activities such as project development and competition participation helped students build self-efficacy in generating and presenting innovative ideas. Furthermore, better problem-solving ability (53.9%) indicates that students developed critical thinking skills through engaging with real-world challenges. This aligns with the objectives of innovation and new product development education, which emphasise solution-oriented thinking. However, despite these positive outcomes, a notable proportion of students (38.2%**)** reported challenges in time management**.** This highlights a common difficulty associated with project-based and experiential learning approaches, where students are required to balance multiple tasks within limited timeframes.

Dimension	Frequency	Percentage
Enhanced Creativity & Idea Generation	52	68.4%
Improved Teamwork Skills	48	63.2%
Increased Confidence in Innovation	44	57.9%
Better Problem-Solving Ability	41	53.9%
Challenges in Time Management	29	38.2%

Figure 2: The descriptive analysis of student's reflective feedback

The implementation of an innovative learning approach in the Innovation course has shown positive outcomes in enhancing students' competencies. Through these assignments, students are encouraged to conduct research on current market trends and analyse customer feedback to better understand consumer needs. This process helps students develop analytical thinking and supports the transformation of problems into potential product opportunities. Students also engage in group discussions and collaborative activities where they share ideas and improve their proposed product concepts. Collaboration between students and lecturers plays an important role in guiding the innovation process, as lecturers provide feedback and encourage students to evaluate the strengths and weaknesses of their ideas.

In addition, the use of digital resources such as videos and online materials helps students understand innovation processes and observe examples of successful products. These resources inspire students and encourage them to explore creative solutions. Participation in innovation competitions further demonstrates the effectiveness of the implemented learning approach. Several student groups have successfully achieved recognition in such competitions, indicating that the applied teaching approach contributes positively to the development of

students' innovative capabilities. This study highlights the importance of an innovative teaching learning approach in enhancing students' competencies in higher education. The integration of problem-based learning and experiential learning in the Innovation course encourages students to actively participate in the learning process and apply theoretical knowledge to practical situations. It is suggested that similar study could be conducted in the future in different universities or countries to improve on the generality.

CONCLUSION

This learning approach indicates that innovation-based assignments such as product development and video creation contribute significantly to the development of students' creativity, collaboration, and problem-solving skills. These learning activities also increase the students' confidence to participate in innovation competitions and apply their knowledge beyond the classroom environment. Overall, the study suggests that the implementation of an innovative learning approach can support competency development among university students and enhance the effectiveness of innovation education in higher learning institutions. Attached are a few pieces of evidence of this learning approach outcome for the students involved in the innovation competition.

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