



A COLLABORATIVE MULTIDISCIPLINES LEARNING MODEL (CoMEL) FOR STRENGTHENING STUDENTS' EMPLOYEE COMPETENCIES

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Abstract. The need for graduates who are adaptive, creative, and able to create their own jobs drives the importance of innovation in entrepreneurship education in higher education. However, conventional learning approaches still focus heavily on theoretical aspects and do not develop practical skills that are relevant to the real world. This study develops the CoMEL (Collaborative Multidisciplinary Entrepreneurship Learning) learning model as an innovative framework to overcome the limitations of conventional entrepreneurship education in higher education. Conventional learning models often only emphasize cognitive aspects and ignore affective and psychomotor skills that are important in entrepreneurship. CoMEL integrates collaborative learning, experiential learning, and project-based activities to strengthen students' entrepreneurial competencies. This model was developed using the ADDIE (Analyze, Design, Develop, Implement, Evaluate) framework and was tested on 80 students participating in the Independent Campus Entrepreneurship Program at Yogyakarta State University. The results showed that the CoMEL model was able to improve team collaboration, creativity, problem solving, prototyping, and reflective learning of students. Students were involved in multidisciplinary teamwork, developing business ideas, building and testing prototypes, and conducting final presentations equipped with structured reflections. This study concludes that CoMEL is an effective model for preparing students to navigate entrepreneurial challenges through active, collaborative, and experiential learning strategies.

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INTRODUCTION

Indonesia's 2045 Golden Indonesia vision is to realise a sovereign, advanced, just and prosperous Indonesia. This vision emphasises four main pillars: human development and mastery of science and technology, sustainable economic development, equitable development, and strengthening national resilience and governance (Firman, 2023). An important component in realising this vision is the development of high-quality human resources. Despite consistent economic growth, Indonesia faces challenges in aligning the skills of its workforce with the demands of an evolving labour market.

The challenge faced is the still high Open Unemployment Rate in Indonesia, in August 2023 at 5.32 per cent down 0.54 per cent compared to August 2022 (BPS, 2023). One of the government's efforts to reduce the TPT is through the national entrepreneurship programme with the issuance of Presidential Regulation Number 2 of 2022 concerning National Entrepreneurship Development for 2021-2024 (Setneg, 2022), in an effort to create an entrepreneurial ecosystem and achieve a national entrepreneurship ratio target of 3.95% and new entrepreneurial growth of 4% through opening up the widest possible opportunities to millennial groups and budding entrepreneurs in the micro, small and medium business sector (Menparekraf, 2023). However, youth unemployment remains a pressing concern, with many young individuals struggling to find employment that matches their qualifications and aspirations (Firman, 2023). Addressing these challenges requires innovative approaches in education and skills development. Integrating collaborative, multidisciplinary and experiential

learning models into higher education can equip students with the competencies required for entrepreneurship and the wider workforce.

Despite its growing prominence, entrepreneurship education in Indonesia is often still dominated by theoretical, lecture-based methods and individual learning. This limits the development of students' practical competencies needed to navigate the complexities of a real entrepreneurial ecosystem. Research suggests that entrepreneurship learning should move beyond content delivery to active, reflective, and experiential practices, promoting critical competencies such as teamwork, innovation, and problem solving (Peltonen, 2015; Zeng & Honig, 2016).

Experiential learning, rooted in Dewey's reflective action theory and Kolb's learning cycle, provides a basis for designing entrepreneurship education that links theory with action (Scager et al., 2016). Similarly, collaborative and multidisciplinary approaches can foster deeper engagement, simulate real-world dynamics, and enhance entrepreneurial thinking (Secundo et al., 2017; Bolzani & Luppi, 2021). To address these needs, this study developed the Collaborative Multidisciplinary Entrepreneurship Learning (CoMEL) model. CoMEL integrates collaborative learning, experiential learning, and project-based learning to build students' entrepreneurial competence in a realistic and meaningful context. This model is in line with Indonesia's vision to develop globally competitive, innovative and resilient entrepreneurs, supporting the national agenda towards a Golden Indonesia 2045.

Learning refers to the relatively permanent change in a subject's behavior to a given situation brought about by his (or her) repeated experiences in that situation, provided that the behavior change cannot be explained based on native response tendencies, maturation, or temporary states of the subject (e.g., fatigue, drugs, etc.) (Schneider, 2024). Furthermore, it is explained that the characteristics of behaviour change are: Conscious change, meaning that someone who learns will realise the change or at least he feels that there has been a change in him (Hietanen & Kesälahti, 2017). Learning changes are sustainable and functional, meaning that due to learning, changes that occur in a person occur continuously, not statically. Changes in learning are positive and active, meaning that in the act of learning, changes always increase and are aimed at getting something better than before. Changes cover all aspects of behaviour, meaning that changes obtained after going through the learning process include changes in overall behaviour (Nabi et al., 2017).

Collaborative learning emphasises the construction of meaning by students from social processes based on the learning context. This collaborative method goes further and deeper than just co-operative. The basis of collaborative methods is interactional theory which views learning as a process of constructing meaning through social interaction (Purwati, 2020). Collaborative learning is an instructional approach that organizes students to work in groups to achieve shared academic goals. Collaborative learning is a learning activity that helps direct students to learn actively, namely by giving them tasks to complete their work in small groups. This approach shifts the focus from teacher-led instruction to learner-centred engagement, emphasising interaction, dialogue and mutual support (Bruffee, 1981; Göl & Nafalski, 2007).

Entrepreneurship education is increasingly seen as a key strategy to address youth unemployment and prepare graduates for an uncertain labour market. Traditional or conventional models of entrepreneurship education tend to emphasise cognitive learning through lectures and theoretical instruction. However, this approach is often inadequate to foster the practical competencies and attitudes that are essential for entrepreneurial success. As noted by Peltonen (2015) and Zeng & Honig (2016), the lack of hands-on experience and interdisciplinary collaboration remains a critical gap in most entrepreneurship programmes. To address this, collaborative learning has emerged as a transformative approach. It emphasises group interaction, peer dialogue, and mutual accountability to simulate real-world entrepreneurial environments. According to Scager et al. (2016) and Warhuus et al. (2017), key principles in collaborative learning include positive interdependence, individual accountability, and social interaction which are all essential for entrepreneurial development.



In the context of entrepreneurship education, collaborative learning not only fosters critical thinking and creativity but also reinforces entrepreneurial behaviour by exposing students to authentic team-based problem-solving scenarios. [Bolzani & Luppi \(2021\)](#) highlights that collaborative business challenges enhance students' ability to navigate complexity and ambiguity, conditions that reflect real-life entrepreneurship. Complementing collaborative learning, experiential learning provides another foundational pillar. Rooted in the theories of John Dewey and David Kolb, experiential learning emphasises the importance of action, reflection, conceptualisation and reapplication (Kolb's learning cycle). Dewey in [Miettinen \(2000\)](#) argues that learning should be based on experience and refined through reflection. [Thian et al. \(2022\)](#) emphasise that entrepreneurship education should integrate theory with real-world practice through simulations, business projects and community engagement.

Multidisciplinary learning adds another layer of relevance, especially in complex entrepreneurial ecosystems where innovation comes from diverse perspectives ([Nielsen & Stovang, 2015](#)). Programmes that integrate students from different academic backgrounds foster creative friction and encourage unconventional solutions, which are critical for venture creation and adaptation in uncertain markets. This approach comes together in the CoMEL (Collaborative Multidisciplinary Entrepreneurship Learning) model developed in this study. CoMEL synthesises collaborative learning, experiential learning and multidisciplinary teamwork into a unified framework. Students are immersed in real-world business challenges, encouraged to develop prototypes, and required to engage in structured reflection, all of which reinforce the EntreComp Framework (Entrepreneurial Competencies).

EntreComp outlines 15 entrepreneurial competencies across three domains: Ideas and Opportunities (e.g., creativity, ethical thinking), Resources (e.g., self-efficacy, financial literacy), and Taking Action (e.g., taking initiative, working with others) ([Bacigalupo et al. 2016](#)). These competencies are integrated into CoMEL through project-based tasks, peer collaboration, and mentorship engagement, thus aligning educational objectives with industry-relevant entrepreneurial skills. Research by [Nabi et al. \(2017\)](#) and [Secundo et al. \(2017\)](#) supports the effectiveness of such models, showing that student engagement increases when entrepreneurship is taught through active, collaborative, and applied methods. Moreover, collaborative learning has been shown to enhance learners' social skills, self-regulation, and autonomy ([Damanaik, 2023](#); [Darko & Wang, 2021](#)) which are crucial in forming resilient entrepreneurs in the face of uncertainty. Contemporary entrepreneurship education must go beyond traditional content delivery and adopt integrative pedagogies such as collaborative and experiential learning to build entrepreneurial competencies. The CoMEL model embodies this paradigm shift, offering a structured yet flexible framework for universities to equip students with the necessary competencies to thrive in the 21st century economy.

Collaborative learning in entrepreneurship formation is realised through a multidisciplinary approach that emphasises the active involvement of all group members. In this process, there are several key principles that underpin the effectiveness of collaborative learning, namely positive interdependence, individual accountability and meaningful social interaction ([Scager et al. 2016](#); [Warhuus et al. 2017](#)). Positive interdependence indicates that the success of the group is highly dependent on everyone's contribution, while individual accountability ensures that each participant is responsible for his or her role in the achievement of the common goal. Intensive social interaction through dialogue and discussion not only strengthens teamwork but also triggers critical thinking and deepens the learning process.

In the context of higher education, this collaborative approach is particularly valuable as it bridges the gap between theoretical knowledge and its application in real-life situations. Specifically in entrepreneurship education, collaborative learning has proven to be effective in encouraging creativity, problem-solving ability, and teamwork skills that are essential in the business world ([Margunani et al. 2020](#); [Bolzani & Luppi, 2021](#)). Research by [Nabi et al. \(2017\)](#) and [Bolzani & Luppi \(2021\)](#) underlines that structurally designed collaborative tasks can foster entrepreneurial mindsets and behaviours by simulating the challenges and dynamics of



businesses faced in the real world. Thus, collaborative learning not only enriches students' learning experience, but also strengthens their readiness to face the business world concretely.

Entrepreneurship learning is ideally implemented through an experiential learning approach rooted in the thinking of John Dewey and further developed by Dewey and Kolb (Miettinen, 2000). This approach emphasises three main elements: learning through action, deep reflection on thoughts and experiences to gain greater insight, and application of knowledge in a complex real-world context. These principles emphasise that the learning process is not only passive, but also active and reflective, where students act as subjects who actively shape their understanding through direct experience.

Furthermore, the stages in experiential learning formulated in Kolb's cycle-including concrete experience, reflective observation, abstract conceptualisation and active experimentation-offer a systematic framework to promote sustained and meaningful learning. This cycle not only allows students to build theoretical understanding based on real experiences but also strengthens skills in evaluating and adapting to new challenges. In the context of entrepreneurship learning, this approach is particularly relevant as it directly aligns with the collaborative learning framework, creating an immersive and impactful educational experience (Miettinen, 2000; Luzzatto & DiMarco, 2009). Collaboration integrated with hands-on experience strengthens knowledge uptake and forms a solid foundation for the development of entrepreneurial competencies.

The purpose of this study is to evaluate the implementation of collaborative learning in higher education and its impact on the development of entrepreneurial skills, assess the effectiveness of the CoMEL model in improving student entrepreneurial competencies, problem solving, and teamwork. The implementation of the model was piloted in the Independent Entrepreneurship Programme (Wirausaha Merdeka [WMK]), which is part of the Freedom of Learning Independent Campus (Merdeka Belajar Kampus Merdeka [MBKM]) programme. MBKM is an effort to encourage students to master knowledge that is useful for entering the world of work. One of the objectives of the MBKM Policy is to provide additional competencies such as skills in analysing and solving complex real problems including abilities related to professional ethics and others (Leha et al. 2024). Finally, comparing CoMEL results with conventional learning methods to determine their relative effectiveness in preparing students for entrepreneurship. This research makes significant contributions both practically and theoretically in the context of entrepreneurship education. Practically, the findings of this study indicate that the CoMEL (Collaborative Multidisciplinary Entrepreneurship Learning) model is more effective than conventional methods in equipping students with entrepreneurial competencies and readiness. This has direct implications for higher education institutions to adopt more innovative, collaborative and technology-based learning approaches to improve the quality of graduates in facing the challenges of the business world. Meanwhile, theoretically, this research extends the understanding of the effectiveness of mobile-based and collaborative learning models in the context of entrepreneurship and adds to the literature on technology integration in entrepreneurship pedagogy. By comparing CoMEL and conventional methods, this study also strengthens the theoretical framework on the importance of active and contextualised approaches in the development of entrepreneurial skills in the digital era.

RESEARCH METHODS

This study uses a research and development design that produces a product in the form of a learning model using the ADDIE research model. Research and development is a strategy or research method that is quite effective in improving products. Research and development is a process or step to develop new products or improve existing products that can be accounted for. The research and development method is a research method used to produce certain products and test the effectiveness of these products (Sugiyono, 2013). The ADDIE development model consists of five stages, namely analysis, design, development, implementation, and evaluation.

The learning model developed is called CoMEL (Collaborative Multidisciplinary Entrepreneurship Learning). Research instruments to test the validity of the model were



developed from collaborative learning and project-based learning research (Göl & Nafalski, 2007; Bell, 2021; Warhuus et al. 2017). Table 1 is the research instrument used to measure the effectiveness of the CoMEL learning model.

Table 1. Research instruments

Activity Variable	Indicators	Answer scale
Team Collaboration	1. Tasks are distributed evenly and fairly among team members. 2. Team members communicate and collaborate openly 3. Conflicts are dealt with constructively and in a timely manner. 4. Each member actively contributes to achieving team goals.	1: Bad, 2: Needs Improvement, 3: Satisfactory, 4: Okay, 5: Excellent
Creativity and Innovation	1. The ideas presented are original and demonstrate innovative thinking. 2. The solution developed was aligned with the project objectives and added value. 3. Teams effectively integrate diverse perspectives to enhance creativity.	1: Bad, 2: Needs Improvement, 3: Satisfactory, 4: Okay, 5: Very Good
Problem Solving	1. The problem is accurately identified and clearly articulated. 2. Problem-solving solutions are logical, feasible and sustainable. 3. Strategies are flexible and adaptive to challenges.	1: Bad, 2: Needs Improvement, 3: Satisfactory, 4: Okay, 5: Excellent
Prototype Development	1. Prototypes fulfil functional requirements and defined user needs 2. Feedback from testing is systematically incorporated into refinements. 3. The design is user-friendly, visually appealing and accessible.	1: Bad, 2: Needs Improvement, 3: Satisfactory, 4: Okay, 5: Excellent
Final Presentation	1. The presentation was well structured, interesting and easy to follow. 2. Visual aids (slides, charts) effectively complement the delivery. 3. The team handled audience questions confidently and knowledgeably.	1: Bad, 2: Needs Improvement, 3: Satisfactory, 4: Okay, 5: Excellent
Reflection and Learning	1. Reflection demonstrates thoughtful insight and critical analysis. 2. The lessons learnt are clearly related to personal or team growth. 3. Adaptation to feedback and implementation of improvements is evident.	1: Bad, 2: Needs Improvement, 3: Satisfactory, 4: Okay, 5: Excellent

The CoMEL model was tested on 80 students who participated in the Independent Entrepreneurship (Wirausaha Merdeka [WMK]) programme at Universitas Negeri Yogyakarta.

RESULTS AND DISCUSSION

Collaborative Multidisciplinary Entrepreneurship Learning (CoMEL) is an innovative learning model designed by integrating collaborative approaches, experiential learning, project-based learning, and entrepreneurial competencies that refer to the EntreComp framework. This model aims to create a holistic and contextual learning experience through the incorporation of various complementary pedagogical approaches.

Innovative learning models designed by integrating collaborative approaches can increase student motivation and facilitate the achievement of better learning goals (Loes, 2022). Thus, CoMEL has the potential to arouse students' enthusiasm for learning and positive behavior in



the context of entrepreneurship. This model can provide a more immersive and relevant learning experience for students, so they are better prepared to face the challenges of the entrepreneurial world in the future. This learning model can also help students develop communication and cooperation skills, which are especially important in an entrepreneurial environment (Trongtorsak et al. 2021). By applying the CoMEL model, it is hoped that students can better understand the concept of entrepreneurship and develop the skills necessary to succeed in the competitive business world (Nisa & Subhan, 2024).

The CoMEL model has five main elements that form the basis of its learning. First, collaboration, which emphasizes the importance of interdisciplinary teamwork to create complex and relevant solutions. Second, creativity and innovation, which are realized with design thinking methodologies to explore original and innovative ideas in facing entrepreneurial challenges. Third, experiential learning engages students directly in real entrepreneurial challenges so that they can learn contextually and applicatively. Fourth, competency-based assessments that use the EntreComp framework to evaluate learners' skills and abilities in a structured and comprehensive manner. Fifth, reflection and feedback encourage a continuous learning cycle through introspection and reassessment of learning experiences. The CoMEL model is expected to improve students' critical thinking skills and facilitate more active and participatory learning, in line with the principles of experiential learning that have been proven to be effective (Utami et al. 2014). The CoMEL model is also in line with participatory learning approaches that have been shown to increase student motivation and learning outcomes in the context of entrepreneurship (Hastuti et al., 2022). By integrating these elements, it is hoped that students can be better prepared to face challenges in the business world. This model has the potential to increase student readiness in facing job uncertainty, in line with the Freedom of Learning Independent Campus policy which encourages entrepreneurial development (Antang et al., 2023).

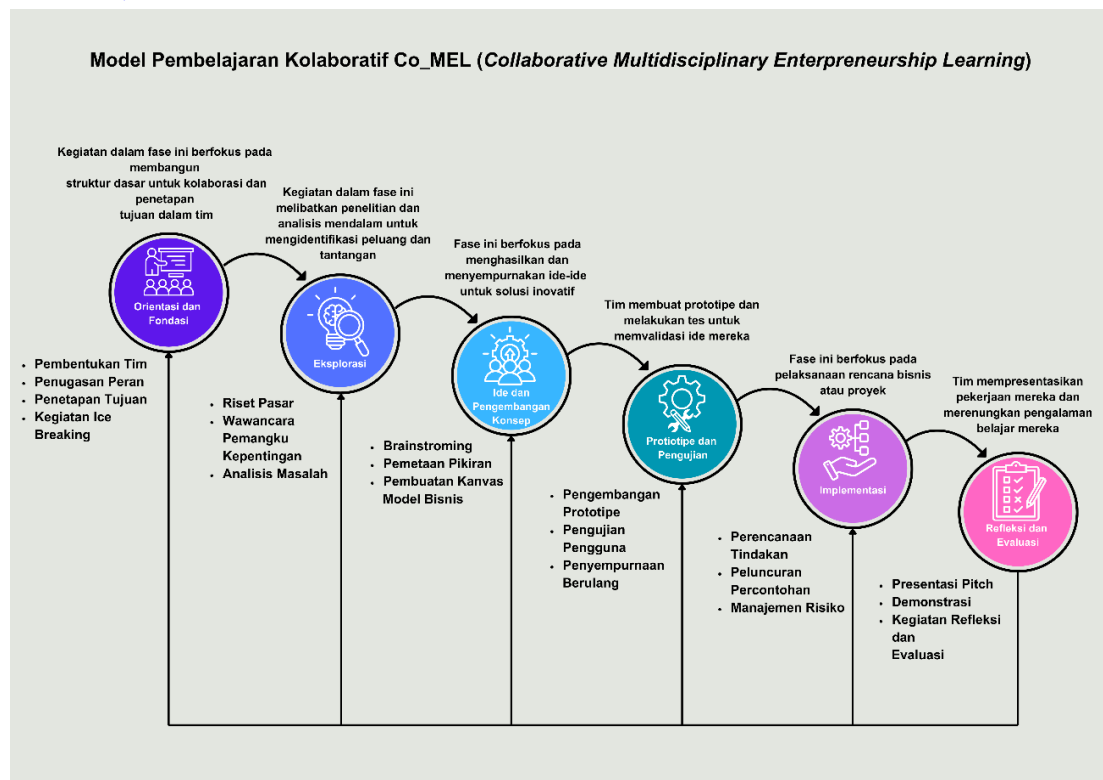


Figure 1. CoMEL model

The development of the CoMEL model is carried out through six main stages. The first stage is the orientation and foundation of learning, which focuses on understanding the fundamentals of entrepreneurship and introducing a multidisciplinary approach. The second stage is exploration, where learners identify problems or opportunities that are relevant to the

real world. The third stage is the development of ideas and concepts, which is the process of formulating creative solutions based on the results of exploration. The fourth stage, prototyping and testing, involves the creation of an initial model of the developed idea as well as the initial testing of the solution. The fifth stage is implementation and execution, where participants implement solutions in a real context or simulation that resembles real conditions. Finally, the sixth stage is the final presentation and reflection, where participants present their final learning outcomes as well as evaluate and reflect on the process. This process not only equips learners with practical skills, but also fosters the entrepreneurial attitude needed to face the challenges of the modern workforce. According to [Idkhan \(2017\)](#) and [Kartika et al. \(2022\)](#) students can better understand entrepreneurial practices and increase their entrepreneurial motivation through collaborative learning.

The CoMEL model serves as a comprehensive and dynamic learning framework in shaping entrepreneurial competencies through a collaborative and multidisciplinary approach. The model can be visualized in the form of a diagram to provide a more comprehensive picture of the learning process and stages ([Figure 1](#)). The stages and structure of CoMEL's work are outlined in [Table 2](#).

Table 2. CoMEL work structure

Stage	Destination	Activities	Expected results
Learning Orientation and Foundations	Build basic entrepreneurial knowledge and form interdisciplinary teams	1. Workshop: introduction to basic concepts of entrepreneurship and multidisciplinary collaboration 2. Team Building Exercise: based on complementary skills and common interests 3. Tools required: Entrepreneurship Competency Framework (EntreComp)	Formed a team with a common goal and understanding of the basics of entrepreneurship
Exploration Phase	Identify and validate entrepreneurial opportunities	1. Empathy Mapping Workshop: Understanding customer needs using design thinking 2. Market Research: Identify gaps and opportunities in the market 3. Entrepreneurial Mindset Training: Focus on problem solving and opportunity recognition	Validated problem statements and opportunity areas.
Idea and concept development	Develop entrepreneurial concepts and innovative solutions	1. <i>Brainstorming</i> Session: Generate many ideas for the identified problem 2. Business Model Canvas Workshop: Translate ideas into a structured business model 3. Feedback Session: Peer and mentor review to refine concepts	Clear and innovative business concept with initial feasibility assessment.
Prototyping and Testing	Prototype and test solutions with stakeholders	1. Prototype Workshop: Hands-on prototyping of a product or service 2. Field Testing: Collect user feedback and refine the prototype 3. Iteration Cycle: Applying feedback to mature the solution	Testing prototypes and improving business concepts.
Implementation on planning and execution	Preparing for real-world business implementation and scaling	1. Resource Planning Workshop: Identify financial, human, and technological needs 2. <i>Pitch Deck</i> Preparation: Develop presentation materials for stakeholders 3. <i>Mock Pitches</i> : Practising and perfecting presentations	Final business plan and <i>pitch deck</i> .
Final presentation and reflection	Present solutions and reflections on the learning process	1. <i>Pitch Day</i> : Presenting solutions to an audience of industry experts, academics, and peers 2. Reflection Workshop: Discuss lessons learnt, challenges faced, and future. 3. Feedback Session: Receive constructive criticism from the evaluator	Comprehensive entrepreneurship project ready for real-world application.



From [Table 2](#), it can be concluded that there is a major improvement through Collaborative Multidisciplinary Entrepreneurship Learning (CoMEL), namely:

1. Skill development: collaborative learning enhances transversal entrepreneurial competencies, such as creativity, critical thinking and teamwork.
2. Multidisciplinary collaboration: CoMEL emphasises the integration of multiple disciplines, aligning with the focus of collaborative learning to utilise multiple perspectives.
3. Depth of experience: combining collaborative tasks with experiential learning (e.g., prototyping, user feedback) ensures students gain practical, real-world insights.

Through the application of the CoMEL model, students not only gain theoretical knowledge, but also practical experience that can improve their readiness to face challenges in the world of entrepreneurship. The CoMEL model was tested on participants in the Independent Entrepreneurship programme (Wirausaha Merdeka-WMK) held by Universitas Negeri Yogyakarta with a sample of 80 students. The following presents the research results for the CoMEL model test

a. Respondent Profile

The results showed that 60 female respondents or 75% were greater than men who were only 20 people or 25%. Age range, most respondents are in the age category of 20-22 years, namely 71 people or 88.8%. The distribution of college origin is presented in [Table 3](#).

Table 3. Respondents Based on College Origin

Higher Education	Frequency	Percentage (%)
Universitas Negeri Yogyakarta	38	47,5
PGRI University Yogyakarta	17	20,7
Gunung Kidul University	1	1,3
Nahdatul Ulama University Yogyakarta	1	1,3
Garut University	14	17,5
Cokroaminoto University Yogyakarta	1	1,3
Universitas Nusantara	1	1,3
Katolik Charitas University Palembang	1	1,3
STMIK Mardira Indonesia	2	2,6
STKIP Catur Sakti Yogyakarta	2	2,6
Muhammadiyah University Purwokerto	1	1,3
Universitas Nusantara PGRI Kediri	1	1,3
Total	80	100

Source: primary data 2024

b. Description of Variable Categories

The research variables used in this study refer to the stages of the learning process with CoMEL. Based on the Descriptive Analysis of Variables shows that of the six variables observed in the CoMeL-based learning process, the *Team Collaboration* variable has the highest mean value of 16.01 with a standard deviation of 3.10, indicating a strong level of collaboration but with considerable variation between individuals. Meanwhile, other variables such as *Creativity and Innovation* ($M = 12.76$; $SD = 1.774$), *Problem Solving* ($M = 12.50$; $SD = 1.793$), *Prototyping* ($M = 12.95$; $SD = 1.606$), *Final Presentation* ($M = 12.88$; $SD = 1.649$), and *Reflection and Learning* ($M = 12.80$; $SD = 1.578$) have relatively close averages with low standard deviations, indicating homogeneous data distribution and consistent participant involvement in each learning stage. These findings show that participants generally performed well and were stable in all aspects of CoMeL learning.

Based on the data of the categorization of the Team Collaboration variable, the results of the study showed that most of the respondents were in the middle category, as many as 54 people or 68%. Meanwhile, 7 respondents (24%) were in the low category with a score of less than 12, and only 19 respondents (9%) were in the high category with a score of more than or equal to 19. These findings suggest that participants' collaborative abilities in the learning process are still largely at a moderate level, with only a small percentage showing very strong collaboration. Furthermore, in the categorization data of the Creativity and Innovation variables, it is known that most respondents are also in the middle category, as many as 53 people or 66%.



Respondents in the low category were 10 people (13%) with a score of less than 11, while the highest category was 17 people (21%) with a score of more than or equal to 14. This indicates that in general the level of creativity and innovation of the participants is quite good, with a larger proportion in the medium category and a small proportion already in the high category. The results of the study show that the application of the CoMEL model can improve students' collaborative skills and creativity, which are important aspects in entrepreneurial development in the modern era (Masnunah, 2019), as well as prepare them for the challenges of an increasingly competitive entrepreneurial world (Haq, 2022).

Based on the data on the categorization of the Problem-Solving variable, it is known that most of the respondents are in the medium category as many as 45 people or 56%. Meanwhile, 10 respondents or 13% were in the low category, and 25 respondents or 31% were in the high category. The results of this study show that most of the participants have quite good problem-solving skills, but there are still small groups with low abilities, as well as other groups that have shown high ability in solving problems faced during the learning process. Problem-solving skills that are indeed needed in the world of entrepreneurship (Baggen et al. 2017; Camacho et al. 2016).

In the Prototyping variable, the results showed that most respondents were also in the middle category, as many as 54 people or 68%. A total of 20 people or 24% are in the highest category, and only 6 people or 8% are in the low category. These findings suggest that most participants already have adequate ability to prototype as part of the project-based learning process, although few still require further guidance. create prototypes to improve their practical skills in entrepreneurship (Noyes, 2018; Petrakis et al. 2021). Furthermore, in the Final Presentation variable, 52 respondents or 65% were in the medium category, 20 respondents or 25% were in the high category, and 8 respondents or 10% were classified as low. The results showed that the ability of the participants to present their work was quite good in general, with a large proportion having been able to present effectively, although there were still participants who experienced difficulties.

Finally, in the Reflection and Learning variable, the data showed that 45 respondents or 56% were in the medium category, 29 respondents or 36% were in the high category, and only 6 respondents or 8% were in the low category. These results show that most of the participants can reflect on the learning process and outcomes quite well, and there is a significant proportion who have shown high reflective ability, indicating increased learning awareness among the participants. Reflection is an important part of learning, as it helps participants understand their experiences and identify areas for future improvement (Kāposta, 2015; Scott & Sewchurran, 2008).

Furthermore, in the discussion section, as a collaborative-based entrepreneurship learning model, CoMEL can be applied to entrepreneurial learning in universities. The use of a multidisciplinary approach in the formation of collaborative teams is an added value in efforts to create young student entrepreneurs through the establishment of start-ups on campus. The involvement of Industry practitioners as mentors is expected to strengthen the entrepreneurial learning process through the creation of projects from the designed business plan. The involvement of industry practitioners as mentors can provide valuable practical insights and facilitate the connection between theory and practice in entrepreneurship. This is in line with an experiential learning approach that has been proven effective in increasing student motivation and learning outcomes. The application of the CoMEL model is expected to increase the entrepreneurial spirit of students, which is an important factor in the success of the business in the real world (Cindy, 2017). Thus, students gain not only theoretical knowledge but also relevant practical experience

The testing of the CoMEL model for students participating in the Independent Entrepreneurship (WMK) of Universitas Negeri Yogyakarta obtained the average results of students who scored high in the aspects of reflection and learning (36%), then problem solving (31%), final presentation (25%), prototyping (25%), team collaboration (24%) and creativity and innovation (21%). These results show that it is still necessary to improve the aspects of



creativity and innovation in students, because the foundation of entrepreneurship is creativity and innovation. Students want to be able to solve problems immediately through a team collaboration approach. The WMK UNY program has illustrated that multidisciplinary collaborative learning and mentor participation can make students have the confidence to create a business startup. The pre-immersion stage as the initial stage of CoMEL begins with basic knowledge about entrepreneurship and business models that can be developed. The relationship between the stages of WMK activities and CoMEL can be explained in the [Table 4](#).

Table 4. Stages of WMK and CoMEL Activities

WMK Stage	CoMEL
Pre-Immersion	Orientation and Foundation Creativity and Innovation
Immersion	Troubleshooting Prototype
Post Immersion	Final Presentation Reflection and Learning

Source: Processed by the researcher

From [Table 4](#), it is concluded that entrepreneurship learning that combines collaborative, experiential and project-based learning will be able to form an entrepreneurial spirit and at the same time real entrepreneurial practices in the form of student startup businesses. The CoMEL model not only supports the development of entrepreneurship among students but also has the potential to increase community economic independence through relevant and applicative training ([Hastuti et al. 2022](#)). The CoMEL model can be adapted for a variety of educational contexts, including in Community Learning Activity Centers, to improve entrepreneurial skills ([Hastuti et al. 2022](#)). Thus, the application of the CoMEL model is not only beneficial for students but also has a positive impact on the development of entrepreneurship in the wider community.

CONCLUSIONS AND SUGGESTIONS

CoMEL (Collaborative Multidisciplinary Entrepreneurship Learning) is a teaching and learning model designed to foster entrepreneurial and multidisciplinary competencies through collaboration, experiential learning, and real-world application. The approach integrates theoretical knowledge with practical experience to prepare students for complex problem solving and innovation in diverse environments. The CoMEL approach provides an effective framework for improving entrepreneurial outcomes in higher education. By integrating theory and practice through collaborative and experiential learning, CoMEL not only helps students create startups, but also provides a lasting impact on the entrepreneurial ecosystem in Indonesia.

Collaborative entrepreneurship learning model can develop entrepreneurial competencies such as team collaboration, creativity and innovation, problem solving, entrepreneurial skills, reflection and adaptability. However, there are several barriers to implementing this collaborative learning model, including the reliance on effective team collaboration. If the group dynamics are not good then the learning process will be hampered. Another obstacle is the need for considerable resources, such as prototyping, the need for mentors, interdisciplinary expertise and other infrastructure limitations. CoMEL also requires a considerable amount of time from the idea generation stage to reflection on the results. The collaborative entrepreneurship learning model can be implemented at a wider scope, not only at the faculty but at the university level. Although the constraints are cross-programme and multidisciplinary, this will be a trigger for students in the formation of student entrepreneurs. Entrepreneurship learning is not only classical but needs to be combined with field experience formed through business practices and joint project creation.



REFERENCES

- Antang, E. U., Sulistiyanto, Y., Bungas, K., Mahrita, S., Sutrisno, H., Susi, T., Harinie, L. T., Redin, H., Winerungan, S. A. J., & Faridawaty, E. (2023). Pembimbingan Wirausaha Mahasiswa dan Pemuda Gereja Melalui Kegiatan Budidaya Jamur Tiram. *Pengabdian Kampus : Jurnal Informasi Kegiatan Pengabdian Pada Masyarakat*, 10(1), 97–107. <https://doi.org/10.52850/jpmupr.v10i1.9916>
- Bacigalupo, M., Kamylyis, P., Punie, Y., & Brande, G. Van Den. (2016). EntreComp: The Entrepreneurship Competence Framework. In *JRC Science for Policy Report*. <https://doi.org/10.2791/593884>
- Baggen, Y., Mainert, J., Kretzschmar, A., Lans, T., Biemans, H. J. A., Niepel, C., & Greiff, S. (2017). Complex Problems in Entrepreneurship Education: Examining Complex Problem-Solving in the Application of Opportunity Identification. *Education Research International*, 2017(1). <https://doi.org/10.1155/2017/1768690>
- Bell, R. (2021). Underpinning the entrepreneurship educator's toolkit: conceptualising the influence of educational philosophies and theory. *Entrepreneurship Education*, 4(1), 1–18. <https://doi.org/10.1007/s41959-020-00042-4>
- Bolzani, D., & Luppi, E. (2021). Assessing entrepreneurial competences: insights from a business model challenge. *Education and Training*, 63(2), 214–238. <https://doi.org/10.1108/ET-04-2020-0072>
- BPS. (2023). *Tingkat Pengangguran Terbuka*. <https://www.bps.go.id/id/pressrelease/2023/11/06/2002/tingkat-pengangguran-terbuka--tpt--sebesar-5-32-persen-dan-rata-rata-upah-buruh-sebesar-3-18-juta-rupiah-per-bulan.html>
- Bruffee, K. (1981). Collaborative learning. *NCTE*, 43(7), 745–747. <https://doi.org/10.5367/0000000000101294922>
- Camacho, A. P., Janowski, A., Konak, A., & Kulturel-Konak, S. (2016). Creative problem solving builds entrepreneurial mindset. *ISEC 2016 - Proceedings of the 6th IEEE Integrated STEM Education Conference*, 65–70. <https://doi.org/10.1109/ISECon.2016.7457556>
- Cindy, R. R. (2017). Pengaruh Jiwa Kewirausahaan Dan Kreativitas Terhadap Keberhasilan Usaha Pada Sentra Industri Keripik Pedas Setiamanah Cimahi. *Universitas Komputer Indonesia*. <https://repository.unikom.ac.id/52000>
- Damanaik, F. (2023). Pengembangan Model Pembelajaran Kolaboratif Untuk Pendidikan Sosiologi Dan Antropologi Di Era Digital. *Prosiding Ilmu Pendidikan Dan Keguruan*, 1(November), 1–18. <https://e-journal.unmuhkupang.ac.id/index.php/pps/article/view/1308>
- Darko, E. N. K. O., & Wang, X. (2021). Research on the Influence of Collaborative Learning among Bachelor of Education (Management) Students in University of Cape Coast, Ghana. *Open Journal of Business and Management*, 09(06), 2816–2833. <https://doi.org/10.4236/ojbm.2021.96157>
- Firman, T. (2023). *Indonesia Emas 2045: Perlunya Mempersiapkan SDM, Industrialisasi, dan Kewirausahaan*. Lpdp.Kemenkeu. <https://lpdp.kemenkeu.go.id/informasi/berita/indonesia-emas-2045-perlunya-mempersiapkan-sdm-industrialisasi-dan-kewirausahaan>
- Göl, Ö., & Nafalski, A. (2007). Collaborative Learning in Engineering Education. *Global Journal of Engineering*, 11(2), 173–180. <https://doi.org/10.4324/9781003287483-23>
- Haq, S. (2022). Model Pembelajaran Berbasis Proyek Dalam Ranah Kewirausahaan. *Cived*, 9(2), 184. <https://doi.org/10.24036/cived.v9i2.117804>
- Hastuti, H., Tamsir, I., Vindi, W. O., & Leni, L. (2022). Peningkatan Peran Perempuan Dalam Upaya Mendorong Kemandirian Ekonomi Keluarga Melalui Pelatihan Kewirausahaan. *Jurnal Pengabdian Multidisiplin*, 2(1), 10–16. <https://doi.org/10.51214/japamul.v2i1.205>



- Hietanen, L., & Kesälahti, E. (2017). *The Role of the University in Supporting Teachers in General Education to Develop Learning Environments Related to Working Life and Entrepreneurship*. 10, 57–71. <https://doi.org/10.1108/s2055-36412017000010004>
- Idkhan, A. M. (2017). Analisis Model Pembelajaran Berbasis Proyek pada Mata Kuliah Kewirausahaan di Perguruan Tinggi. *Seminar Nasional Lembaga Penelitian UNM*, 2(1), 66–68. <https://eprints.unm.ac.id/18186>
- Kāpostā, I. (2015). Reflection As a Means for Learning Skill Improvement in Students. *SOCIETY, INTEGRATION, EDUCATION. Proceedings of the International Scientific Conference*, 1, 425. <https://doi.org/10.17770/sie2014vol1.780>
- Kartika, Y., Sumartono, B. G., & Syamsuri, S. (2022). Pengaruh Praktik Kewirausahaan terhadap Motivasi Berwirausaha Peserta Didik. *Tarbiyah Wa Ta'lim: Jurnal Penelitian Pendidikan Dan Pembelajaran*, 9(2), 129–140. <https://doi.org/10.21093/twt.v9i2.4505>
- Leha, E., Nona, R. V., Banda, F. L., Meke, K. D. P., Suryani, L., Supardi, P. N., & Djou, A. M. G. (2024). Persepsi Mahasiswa Tentang Desain Implementasi Program Merdeka Belajar Kampus Merdeka. *Prima Magistra: Jurnal Ilmiah Kependidikan*, 5(1), 81–92. <https://doi.org/10.37478/jpm.v5i1.3549>
- Loes, C. N. (2022). The Effect of Collaborative Learning on Academic Motivation. *Teaching and Learning Inquiry*, 10. <https://doi.org/10.20343/teachlearninqu.10.4>
- Luzzatto, E., & DiMarco, G. (2009). Collaborative learning: Methodology, types of interactions and techniques. In *Collaborative Learning: Methodology, Types of Interactions and Techniques*. <https://cir.nii.ac.jp/crid/1971149384886036102>
- Margunani, Nurjanah, S., & Melati, I. S. (2020). The role of collaborative learning in higher education to improve students' entrepreneurial commitment. *International Journal of Advanced Science and Technology*, 29(5), 4830–4840. <https://lib.unnes.ac.id/43251>
- Masnunah, M. (2019). Keterampilan Dosen Dalam Mengadakan Variasi Mengajar Terhadap Hasil Belajar Memahami Puisi Dan Menulis Puisi. *Wahana Didaktika: Jurnal Ilmu Kependidikan*, 17(2), 205–215. <https://doi.org/10.31851/wahanadidaktika.v17i2.2798>
- Menparekraf. (2023). *Mahasiswa berperan tingkatan persentase wirausaha indonesia*. <https://www.kemenparekraf.go.id/berita/siaran-pers-menparekraf-mahasiswa-berperan-tingkatan-persentase-wirausaha-di-indonesia>
- Miettinen, R. (2000). The concept of experiential learning and john dewey's theory of reflective thought and action. *International Journal of Lifelong Education*, 19(1), 54–72. <https://doi.org/10.1080/026013700293458>
- Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning and Education*, 16(2), 277–299. <https://doi.org/10.5465/amle.2015.0026>
- Nielsen, S. L., & Stovang, P. (2015). DesUni: university entrepreneurship education through design thinking. *Education and Training*, 57(8–9), 977–991. <https://doi.org/10.1108/ET-09-2014-0121>
- Nisa, I. R., & Subhan, R. (2024). Wirausaha Sukses Melalui Strategi Komunikasi Yang Efektif Dalam Bisnis. *Jurnal Industri Kreatif Dan Kewirausahaan*, 7(1), 70–80. <https://doi.org/10.36441/kewirausahaan.v7i1.2176>
- Noyes, E. (2018). Teaching Entrepreneurial Action Through Prototyping: The Prototype-It Challenge. *Entrepreneurship Education and Pedagogy*, 1(1), 118–134. <https://doi.org/10.1177/2515127417737289>
- Peltonen, K. (2015). How can teachers' entrepreneurial competences be developed? A collaborative learning perspective. *Education and Training*, 57(5), 492–511. <https://doi.org/10.1108/ET-03-2014-0033>
- Petrakis, K., Wodehouse, A., & Hird, A. (2021). Prototyping-Driven Entrepreneurship: Towards a Prototyping Support Tool Based on Design Thinking Principles. *Design Journal*, 24(5), 761–781. <https://doi.org/10.1080/14606925.2021.1957531>



- Purwati, Z. D. (2020). Collaborative Learning Dalam Pembelajaran Bahasa Indonesia. *Eprints.Uad.Ac.Id*, 102. http://eprints.uad.ac.id/20206/1/Buku_Ref_Collaborative_Learning_Dalam_Pembelajaran_Bahasa_Indonesia.pdf
- Scager, K., Boonstra, J., Peeters, T., Vulperhorst, J., & Wiegant, F. (2016). Collaborative learning in higher education: Evoking positive interdependence. *CBE Life Sciences Education*, 15(4), 1–9. <https://doi.org/10.1187/cbe.16-07-0219>
- Schneider, K. (2024). What Is Learning? *Psychology*, 15(05), 779–799. <https://doi.org/10.4236/psych.2024.155047>
- Scott, E., & Sewchurran, K. (2008). Reflection-in-action: Using experience to reconstruct meaning in a learning environment. *Proceedings - International Conference on Computer Science and Software Engineering, CSSE 2008*, 5(January 2008), 81–86. <https://doi.org/10.1109/CSSE.2008.1492>
- Secundo, G., Del Vecchio, P., Schiuma, G., & Passiante, G. (2017). Activating entrepreneurial learning processes for transforming university students' idea into entrepreneurial practices. *International Journal of Entrepreneurial Behaviour and Research*, 23(3), 465–485. <https://doi.org/10.1108/IJEBR-12-2015-0315>
- Setneg. (2022). *Perpres No 2 tahun 2022*. <https://peraturan.bpk.go.id/Details/196126/perpres-no-2-tahun-2022>
- Sugiyono. (2013). *Metodologi Penelitian Kuantitatif, Kualitatif dan R & D*. <https://id.scribd.com/document/671612229/Sugiyono-2013-Metode-Penelitian-Kuantitatif-Kualitatif-dan-R-D-1>
- Thian, L. B., Choong, W. K., & Chang, Y. H. (2022). Entrepreneurship through Multidisciplinary Learning: A Cooperative Procedural Framework for Implementation. *International Journal of Information and Education Technology*, 12(10), 1118–1125. <https://doi.org/10.18178/ijiet.2022.12.10.1729>
- Trongtorsak, S., Saraubon, K., & Nilsook, P. (2021). Collaborative Experiential Learning Process for Enhancing Digital Entrepreneurship. *Higher Education Studies*, 11(1), 137. <https://doi.org/10.5539/hes.v11n1p137>
- Utami, W. B., Sholikhah, R. A., & Munadi. (2014). Pengaruh Model Pembelajaran Inovatif Terhadap Kemampuan Matematika dan Pembentukan Jiwa Kewirausahaan. *Cakrawala: Jurnal Pendidikan*, 8(2), 69–75. <https://doi.org/10.24905/cakrawala.v8i2.73>
- Warhuus, J. P., Tanggaard, L., Robinson, S., & Ernø, S. M. (2017). From I to We: collaboration in entrepreneurship education and learning? *Education and Training*, 59(3), 234–249. <https://doi.org/10.1108/ET-08-2015-0077>
- Zeng, Z. E., & Honig, B. (2016). How should entrepreneurship be taught to students with diverse experience? a set of conceptual models of entrepreneurship education. *Advances in Entrepreneurship, Firm Emergence and Growth*, 18, 237–282. <https://doi.org/10.1108/S1074-754020160000018007>

