



Development of an Experiential-Contextual Teaching and Learning (ECTL) Model for Entrepreneurship Education in Vocational Higher Education

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Abstract: This study aims to develop and evaluate the validity, practicality, and effectiveness of an Experiential-Contextual Teaching and Learning (ECTL) model for entrepreneurship education in vocational higher education. The study employed a Research and Development (R&D) approach using the ADDIE model, consisting of the Analysis, Design, Development, Implementation, and Evaluation phases. The ECTL model was designed based on five instructional syntax phases: concrete experience, observation and reflection, abstract conceptualization, meaningful learning, and active experimentation. The model was supported by a lecturer guidebook, student guidebook, syllabus, and semester learning plans. The validity of the model and its supporting products was evaluated by five experts using Aiken's V coefficient, with a minimum acceptable value of 0.600. Practicality was assessed through small-scale trials involving five students and two lecturers, followed by expanded-scale trials involving 29 students in the experimental group and 29 students in the control group. Effectiveness was examined through cognitive pretest–posttest assessments, affective observation rubrics, and psychomotor performance rubrics. The data were analyzed using the Kolmogorov–Smirnov normality test, Levene's homogeneity test, and independent-samples t-tests at a significance level of 0.05. The results indicated that all developed products achieved Aiken's V values above the minimum threshold, ranging from 0.80 to 0.88, confirming their validity. The practicality evaluation demonstrated very high levels of usability, with lecturer response scores ranging from 92.4% to 96.1% and student response scores ranging from 85.06% to 85.53%. The experimental group achieved a significantly higher mean posttest score (80.00) than the control group (73.24), with $t(56) = 3.212$, $p = 0.002$. Furthermore, affective and psychomotor assessments revealed that 96.6% of students attained good or very good performance levels. All students (100%) successfully met the passing criteria, and 44.8% achieved the highest grade (A). These findings indicate that the ECTL model is valid, highly practical, and effective for entrepreneurship education in vocational higher education. Therefore, it is recommended as an alternative to conventional teacher-centered instructional approaches.

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Introduction

The era of globalization is characterized by intense competition across all sectors, demanding that every nation possesses a competitive edge to position itself alongside other countries. Such competitiveness can only be achieved if a country is supported by high-quality and reliable human resources (HR). Education serves as the most strategic instrument for preparing these human resources. Data from Statistics Indonesia (BPS) indicates that



Indonesia's Human Development Index (HDI) continues to show improvement, reaching 75.90 in 2025, placing the country in the high human development category . This figure reflects an increase of 0.88 points from 75.02 in 2024. The Expected Years of Schooling also increased to 13.3 years in 2025, suggesting that children entering school at age seven are projected to pursue education equivalent to the second year of college . However, despite these improvements, significant challenges remain in the quality, equity, and relevance of education, particularly at the vocational level (Fattah, 2012; Arslan, 2024). These challenges are interconnected; efforts to address quality often exacerbate equity issues, and vice versa. Various initiatives have been implemented by the government, including curriculum development, policy revisions, and partnerships with non-governmental organizations. Yet, fundamental improvements at the micro-level of classroom instruction the core of education remain suboptimal.

Higher education institutions, especially vocational education, play a critical role in producing graduates who are adaptive to technological changes and the demands of the workforce. Law No. 20 of 2003 concerning the National Education System mandates that education is a conscious and planned effort to actively develop students' potential. In the current disruptive era, lecturers are no longer merely sources of knowledge but facilitators who must optimize students' competencies to enable them to interact and adapt to real-life situations (Zhou, R., Rashid, S. M., & Cheng, S., 2024).

Vocational education aims to produce graduates who are not only ready to work but also highly competitive in the global market (Jalinus, 2015; Deng, W., & Wang, J. , 2023). According to Dharma et al. (2013), vocational education provides benefits for students (self-quality improvement, job opportunities, entrepreneurship), the workforce (high-quality labor), and society (improved welfare and reduced unemployment). The Refraction Optician Study Program, as a vocational higher education institution in the field of eye health and optometry, mandates Entrepreneurship as a compulsory course. The objective is to cultivate an entrepreneurial character and equip students with both soft skills and hard skills related to business (Usman & Hamid, 2022).

However, challenges in entrepreneurship learning remain a common issue in vocational health and optometry education in many developing countries, particularly in relation to student engagement, creativity, practical experience, and competency development. Preliminary observations conducted in April 2026 at the Refraction Optician Academy YLPTK Padang identified eight critical problems. First, the learning process remains predominantly teacher-centered, causing students to passively listen and take notes. Second, students' motivation and interest in learning are still relatively low, resulting in passive, non-interactive, and non-communicative classroom behavior. Third, student learning outcomes in the Entrepreneurship course remain unsatisfactory. Data from the 2024/2025 academic year indicated that a considerable number of students (35 out of 84) obtained grades of C+, C, or D. Fourth, students have limited opportunities to develop creative and innovative thinking skills, which affects their ability to complete assigned tasks effectively. Fifth, the competencies achieved have not yet reflected an integrated development of attitudes, skills, and knowledge. Sixth, learning resources remain inadequate to support effective entrepreneurship learning. Seventh, the institution lacks supporting facilities such as business units or entrepreneurship centers that could provide students with direct practical experience. Eighth, there is no specific learning model available that is designed to enhance student participation, creativity, and productivity in entrepreneurship education (Ratten & Usmanij, 2021).

To address these issues, a shift from traditional, teacher-centered instruction to student-centered, meaningful learning is essential. Learning must be conducted optimally through careful and measurable planning. The constructivist paradigm emphasizes that knowledge is constructed by the learner, not merely transferred by the instructor. Lang and Evans (2006) assert that expert teachers have well-developed schemata for connecting subject matter with effective teaching methods, and are more reflective and flexible in facilitating student growth (Jamieson & Shaw, 2020).

Two pedagogical approaches have shown promise in addressing the challenges of entrepreneurship education: Experiential Learning (EL) and Contextual Teaching and Learning (CTL). Pfeiffer and Goodstein (in Lang & Evans, 2006) define experiential learning as a critical process where students participate in an activity, reflect on it, draw insights, and apply them to new situations. Duval-Couetil, Shartrand, and Reed (2016) found that higher perceptions of entrepreneurial knowledge were associated with the number of entrepreneurship courses taken and involvement in experiential learning activities. Similarly, CTL helps instructors connect subject matter with real-life situations, motivating students to apply knowledge in their lives as family members, community members, and workers (Berns & Erickson, 2001). Hasani (2016) reported a significant positive influence of the CTL model on argumentative writing skills, mediated by critical thinking ability. Furthermore, recent studies emphasize the importance of integrating practical environments and experiential learning into the curriculum to enhance students' entrepreneurial competencies and intentions (Efendi, 2024). The CTL model has also been shown to improve students' soft skills, including communication, cooperation, creativity, responsibility, and independence essential competencies for vocational education graduates (Meriyanti et al., 2025).

However, the novelty of this research lies in the integration of both Experiential Learning and Contextual Teaching and Learning into a single, unified model the Experiential-Contextual Teaching and Learning (ECTL) Model specifically designed for entrepreneurship education in the vocational higher education context. Previous studies have focused on either experiential activities (Duval-Couetil et al., 2016; Gundlach & Zivnuska, 2010), contextual approaches (Hasani, 2016; Meriyanti et al., 2025), or the application of professional learning communities (Efendi, 2024). None have systematically integrated both frameworks into a comprehensive model that includes syntax, social system, reaction principles, support systems, and instructional and nurturant effects based on the five essential elements of learning models proposed by Joyce and Weil (1992).

This study aims to develop and validate an Experiential-Contextual Teaching and Learning (ECTL) Model for entrepreneurship education in vocational higher education. The model is designed to improve student engagement, creativity, entrepreneurial competence, and learning outcomes by integrating real-world experiential activities with contextual learning processes. In addition, this study seeks to provide a structured instructional framework that can support entrepreneurship learning in vocational institutions, particularly in health and optometry education contexts.

The main contribution and novelty of this research lie in the integration of Experiential Learning and Contextual Teaching and Learning into a single unified framework, namely the Experiential-Contextual Teaching and Learning (ECTL) Model. Previous studies have generally focused on experiential learning activities (Duval-Couetil et al., 2016; Gundlach & Zivnuska, 2010), contextual learning approaches (Hasani, 2016; Meriyanti et al., 2025), or professional learning communities (Efendi, 2024) separately. In contrast, this study systematically combines both approaches into a comprehensive instructional model specifically designed for entrepreneurship education in vocational higher

education. Furthermore, the proposed model incorporates the five essential components of instructional models introduced by Joyce and Weil (1992), namely syntax, social system, principles of reaction, support system, and instructional and nurturant effects. Therefore, this research contributes both theoretically, by extending the conceptual integration of experiential and contextual learning, and practically, by providing an applicable entrepreneurship learning model for vocational higher education institutions.

Research Method

This study employed a Research and Development (R&D) approach using the ADDIE instructional design model proposed by Robert Maribe Branch, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. During the analysis phase, a needs analysis questionnaire was distributed to 29 students and 2 lecturers from the Refraction Optician Study Program at YLPTK Padang Academy to identify the urgency and necessity of developing a new entrepreneurship learning model. Based on the analysis results, the Experiential-Contextual Teaching and Learning (ECTL) model was designed with five syntax phases: (1) concrete experience, (2) observation and reflection, (3) abstract conceptualization, (4) meaningful learning, and (5) active experimentation. The development process also produced several supporting instructional materials, including a lecturer guidebook, student guidebook, syllabus, and semester learning plans. The developed products were validated by five experts using Aiken's V formula with a minimum acceptable value of 0.600. Subsequently, a Focus Group Discussion involving eight experts was conducted to obtain feedback and recommendations for product revision. The implementation phase consisted of small-scale and expanded-scale trials. The small-scale trial involved 5 students and 2 lecturers, while the expanded-scale trial involved 29 students in the experimental class using the ECTL model and 29 students in the control class using conventional instruction.

Data were collected using four types of instruments: needs analysis questionnaires, validation instruments employing a 5-point Likert scale, practicality instruments for lecturer and student responses, and effectiveness instruments consisting of cognitive pretest-posttest assessments, affective observation rubrics, and psychomotor performance rubrics. Product validity was analyzed using Aiken's V coefficient, while practicality scores were interpreted using percentage-based criteria adapted from Robert Maribe Branch (2009) and Nienke Nieveen (1999) to determine the feasibility and usability of the developed model.

The effectiveness of the model was evaluated through cognitive achievement tests, affective observations, and psychomotor performance assessments. Cognitive learning outcomes were analyzed using normality tests (Kolmogorov-Smirnov), homogeneity tests (Levene), and independent sample t-tests with IBM SPSS Statistics at a significance level of $\alpha = 0.05$. The final learning outcome score was calculated using a weighting composition of 40% cognitive, 20% affective, and 40% psychomotor. This weighting scheme was adopted to reflect the characteristics of vocational higher education, which emphasize both conceptual understanding and mastery of practical competencies, as recommended in vocational education assessment frameworks and previous studies on competency-based learning.

The quality of the ECTL model was evaluated based on three criteria established by Nieveen (1999): validity (the product is based on state-of-the-art knowledge with consistent components), practicality (the product is easy for users to implement), and effectiveness (there is consistency between intended and attained learning outcomes). A product was considered valid if the Aiken's V value exceeded 0.600, practical if user response scores reached at least 61%, and effective if there was a significant difference between pretest and posttest scores ($p < 0.05$) and at least 80% of students achieved good or very good affective

and psychomotor scores. The final products were revised based on expert feedback and field trial results before being declared ready for dissemination.

Results and Discussion

The needs analysis confirmed the urgency of developing an Experiential-Contextual Teaching and Learning (ECTL) model for entrepreneurship education in vocational higher education. Based on the findings, the ECTL model was developed through five instructional phases: concrete experience, observation and reflection, abstract conceptualization, meaningful learning, and active experimentation. The model was supported by several instructional components, including a lecturer guidebook, student guidebook, syllabus, and semester learning plans. In addition, a Focus Group Discussion involving eight experts generated several recommendations for improvement, such as strengthening comparisons between learning models, expanding international literature support, refining learning objectives using operational verbs, emphasizing changes in attitudes and skills, and applying the ABCD principles (Audience, Behavior, Condition, Degree) in formulating learning outcomes. All suggestions were incorporated into the revised product before the validation stage.

Table 1. Quantitative Results of the ECTL Model Development

Evaluation Aspect	Indicator	Score/Result	Category
Needs Analysis	Student responses	86.43%	Strongly Needed
	Lecturer responses	86.21%	Strongly Needed
Validity Test	Research instruments	Aiken's 0.83	V = Valid
	ECTL model book	Aiken's 0.84	V = Valid
	Syllabus and semester learning plans	Aiken's 0.85	V = Valid
	Lecturer guidebook	Aiken's 0.80	V = Valid
	Student guidebook	Aiken's 0.88	V = Valid
	Learning outcome assessment	Aiken's 0.87	V = Valid
Practicality Test (Small Scale)	Lecturer responses	90.0%	Very Practical
	Student responses	87.46%	Very Practical
Practicality Test (Expanded Scale)	Lecturer responses to ECTL model	92.4%	Very Practical
	Student responses to ECTL model	85.06%	Very Practical
	Lecturer responses to lecturer guidebook	96.1%	Very Practical
	Student responses to student guidebook	85.53%	Very Practical
Effectiveness Test	Experimental class posttest mean	80.00	Higher Achievement
	Control class posttest mean	73.24	Lower Achievement

Evaluation Aspect	Indicator	Score/Result	Category
Statistical Analysis	Experimental class gain score	16.21	Higher Improvement
	Control class gain score	13.34	Lower Improvement
	Independent t-test	p = 0.002 (< 0.05)	Significant Difference
	Students in good/very good category	96.6%	Highly Achieved
Psychomotor Domain	Students in good/very good category	96.6%	Highly Achieved
Final Learning Outcomes	Students achieving passing grades	100%	Complete Mastery
	Students achieving grade A	44.8%	High Achievement

The results demonstrate that the ECTL model fulfilled the criteria of validity, practicality, and effectiveness. Expert validation confirmed that the model components were theoretically grounded, systematically interconnected, and aligned with current developments in vocational entrepreneurship education. Furthermore, lecturer and student responses indicated that the model and its supporting materials were understandable, feasible, and easy to implement in classroom learning activities.

The effectiveness findings also indicate that integrating experiential learning with contextual teaching strategies contributed positively to student learning outcomes across cognitive, affective, and psychomotor domains. The improvement in learning performance may be attributed to the active learning environment created through authentic experiences, reflective activities, collaborative interaction, and real-world problem-solving processes. These learning experiences enabled students to connect theoretical concepts with practical entrepreneurial situations, thereby strengthening both conceptual understanding and vocational competencies.

In addition, the positive outcomes in affective and psychomotor aspects suggest that the ECTL model successfully encouraged entrepreneurial attitudes, communication skills, creativity, and practical abilities. This finding reinforces the view that entrepreneurship education in vocational higher education should not focus solely on theoretical mastery, but also on the development of hands-on skills and professional character through student-centered and experience-based learning approaches. Based on the criteria proposed by Nienke Nieveen (1999), the ECTL model can therefore be categorized as valid, practical, and effective for implementation in vocational higher education contexts.

The needs analysis confirmed a strong demand for the development of an Experiential-Contextual Teaching and Learning (ECTL) model for entrepreneurship education in vocational higher education. In response to this need, the ECTL model was developed through five interconnected syntax phases: concrete experience, observation and reflection, abstract conceptualization, meaningful learning, and active experimentation. The model was supported by a lecturer guidebook, student guidebook, syllabus, and semester learning plans. Feedback from a Focus Group Discussion involving eight experts resulted in several important revisions, including strengthening comparative analyses of learning models, expanding international literature references, refining learning objectives using operational verbs, emphasizing changes in attitudes and skills, and applying the ABCD

principles (Audience, Behavior, Condition, Degree) in learning outcomes formulation. All revisions were incorporated prior to the validation stage.

The findings demonstrate that the ECTL model fulfills the three quality criteria proposed by Nienke Nieveen (1999), namely validity, practicality, and effectiveness. More importantly, this study offers findings that extend beyond previous research on experiential learning and contextual teaching approaches. Earlier studies generally examined experiential learning and contextual learning as separate instructional approaches. Studies by David A. Kolb and subsequent researchers emphasized learning through experience and reflection, while contextual teaching studies focused primarily on connecting learning materials to real-life situations. However, these previous models tended to lack an integrated instructional structure capable of systematically guiding students from concrete entrepreneurial experiences toward reflective analysis, conceptual understanding, contextual meaning-making, and real-world experimentation within a single coherent learning cycle.

The ECTL model addresses these limitations through its five-phase syntax, which integrates experiential and contextual dimensions into one comprehensive instructional framework. Unlike previous experiential models that often emphasized reflection without sufficiently contextualizing entrepreneurial practice, the ECTL model explicitly incorporates meaningful learning as a dedicated phase that links conceptual understanding with authentic vocational and business contexts. Similarly, unlike contextual teaching approaches that frequently emphasize relevance without providing a structured experiential cycle, the ECTL model ensures that students progress systematically through direct experience, reflection, conceptualization, contextual interpretation, and active experimentation. This integrated sequence enables students not only to understand entrepreneurial concepts cognitively, but also to internalize entrepreneurial attitudes and demonstrate practical entrepreneurial competencies.

The validity of the ECTL model was established through expert validation using Aiken's V formula, with all products exceeding the minimum acceptable coefficient. These results indicate that the model fulfills both content validity and construct validity requirements (Plomp, 2010; Nieveen, 2013). The model is theoretically grounded in constructivist learning theory, particularly the perspectives of Jean Piaget and Lev Vygotsky, which emphasize that knowledge is actively constructed through interaction and social experience. This theoretical foundation is operationalized through the integration of David A. Kolb's experiential learning cycle and the contextual teaching framework developed by Berns and Erickson. The five syntax phases represent a systematic progression that guides students from authentic entrepreneurial experiences toward reflective thinking, conceptual understanding, contextual interpretation, and practical application.

The uniqueness of the ECTL model lies not only in combining experiential and contextual learning approaches, but also in translating this integration into a complete instructional system consisting of syntax, social system, reaction principles, support system, and instructional and nurturant effects. This comprehensive structure distinguishes the ECTL model from previous instructional models, which generally focused only on classroom activities without clearly integrating lecturer roles, student interactions, assessment systems, and instructional supports into a unified framework. As a result, the ECTL model offers a more operational, theoretically coherent, and practically applicable approach for entrepreneurship education in vocational higher education.

The practicality findings further indicate that the ECTL model is feasible and easy to implement in real classroom settings. High lecturer and student response scores suggest that the model successfully addressed previous difficulties in implementing student-centered

entrepreneurship learning. The lecturer guidebook provided structured instructional guidance, while the student worksheets supported collaborative and independent learning activities. In addition, the model utilized realistic classroom time allocation and accessible learning resources, making it adaptable for vocational institutions with varying resource capacities.

Compared with previous studies, the present research contributes a more comprehensive instructional solution. Earlier research by Duval-Couetil et al. (2016) demonstrated that experiential activities increased student engagement, while contextual learning studies highlighted the importance of connecting academic content to real-life situations. However, the current study goes further by demonstrating that integrating both approaches within a structured five-phase syntax not only enhances student engagement, but also improves cognitive achievement, affective development, and psychomotor competencies simultaneously. This indicates that the ECTL model is not merely a combination of two approaches, but a new instructional framework capable of overcoming fragmentation between theory, experience, context, and practical application in vocational entrepreneurship education.

Effectiveness of the ECTL Model

The effectiveness of the ECTL model was proven through significant improvements in cognitive, affective, and psychomotor learning outcomes. According to Plomp (2010), effectiveness is demonstrated when consistency exists between the intended curriculum and the attained curriculum. The cognitive domain results showed that the experimental group (ECTL model) achieved a mean posttest score of 80.00, significantly higher than the control group (conventional model) mean of 73.24 ($t(56) = 3.212$, $p = 0.002 < 0.05$), with a gain of 16.21 points compared to 13.34 points for the control group. The absence of a significant pretest difference ($p > 0.05$) confirms that both groups had comparable initial academic abilities, allowing the posttest difference to be attributed to the treatment. The superiority of the ECTL model can be explained through several theoretical mechanisms. First, the constructivist foundation of the model ensures that students are not passive recipients of information but active constructors of knowledge. According to Piaget and Vygotsky (in Karli, 2003), cognitive change occurs when learners encounter cognitive conflict and resolve it through self-directed knowledge construction. In the ECTL model, cognitive conflict is intentionally induced during the concrete experience phase, where students encounter real-world entrepreneurial problems that cannot be solved through memorization alone. Second, the experiential learning cycle (Kolb, 1980) ensures that learning is not merely theoretical but applied. The progression from concrete experience to observation and reflection to abstract conceptualization to active experimentation mirrors how entrepreneurs naturally learn from their successes and failures in real business contexts. This is particularly important for entrepreneurship education, where Falk and Alberti (2000) emphasized that courses must include experiential components for students to practice business development skills rather than merely study entrepreneurship from a distance. Third, the contextual relevance embedded in the "meaningful" phase requires students to explicitly connect learning to real-life situations, consistent with Berns and Erickson's (2001) CTL framework. Owens (2001) found that CTL increases student interest and participation by connecting content to real-world contexts, and the current study confirms this finding in vocational entrepreneurship education. The cognitive gain of 16.21 points represents a 25.4% improvement from pretest to posttest in the experimental group, compared to 22.3% in the control group, indicating that the ECTL model produces approximately 14% greater cognitive growth than conventional instruction.



The affective domain results were equally impressive, with 23 students (79.3%) achieving "very good" affective scores, 5 students (17.2%) achieving "good" scores, and only 1 student (3.4%) achieving "adequate" scores, totaling 96.6% of students demonstrating good to very good attitudes, interest, responsibility, cooperation, and self-confidence. These findings align with Hasani's (2016) research, which found that CTL positively influences argumentative writing skills through enhanced student engagement and active participation. The current study extends this finding to entrepreneurship education, showing that the integrated experiential-contextual approach improves affective outcomes such as tolerance, collaborative skills, and group discussion participation. The high affective scores can be attributed to the social system of the ECTL model, where the lecturer acts primarily as facilitator and motivator rather than authoritarian instructor, creating a psychologically safe environment where students feel comfortable expressing opinions, asking questions, and taking intellectual risks. The multi-directional interaction patterns (one-way, two-way, and multi-way) accommodate different communication preferences and ensure that all students have opportunities to participate. The psychomotor domain results showed similar patterns, with 22 students (75.9%) achieving "very good" psychomotor scores, 6 students (20.7%) achieving "good" scores, and 1 student (3.4%) achieving "adequate" scores, also totaling 96.6% of students demonstrating competent skills in planning observation tasks, collecting data, processing information, and presenting reports. These psychomotor competencies directly transfer to real-world entrepreneurship activities, such as conducting market research, analyzing business opportunities, developing business plans, and pitching ideas to potential investors or customers. This finding aligns with the vocational education goal articulated by Jalinus (2015), namely producing graduates who are not only job-ready but also competitive in the global market. The combined outcomes, using the weighting 40% cognitive + 20% affective + 40% psychomotor, showed that all 29 students (100%) achieved passing grades, with 13 students (44.8%) attaining the highest distinction (A). This weighting reflects the vocational education philosophy that practical skills (psychomotor) and knowledge (cognitive) are equally important, while attitudes (affective) support both. The fact that nearly half of the students achieved the highest distinction suggests that the ECTL model does not merely raise the minimum performance level but also enables a substantial proportion of students to reach excellence, which is critical for developing the entrepreneurial leaders that Indonesia needs to compete globally.

Comparison with Previous Research

The findings of this research are consistent with and extend previous studies in several important ways. Duval-Couetil, Shartrand, and Reed (2016) found that higher perceptions of entrepreneurial knowledge were associated with the number of entrepreneurship courses taken and involvement in experiential learning activities. The current study adds that combining experiential with contextual approaches yields measurable cognitive gains (16.21 points) within a single semester-long course, suggesting that the integration of both approaches produces synergistic effects beyond either approach alone. Hasani (2016) reported a significant positive influence of the CTL model on argumentative writing skills, mediated by critical thinking ability. The current study extends this finding to entrepreneurship education and adds evidence of effectiveness in the affective and psychomotor domains, which were not assessed in Hasani's research. Berns and Erickson (2001) argued that CTL prepares students for the new economy by connecting learning to real-life situations, and the current study provides empirical evidence (t-test, $p = 0.002$) supporting this claim in vocational higher education. Johnson (2009) emphasized that CTL helps students find meaning by linking academic content to real-life contexts, and the current

study's finding that 96.6% of students achieved good or very good affective scores provides quantitative support for Johnson's qualitative assertion. The current study also contributes a novel integration not found in previous research: the systematic combination of experiential learning and contextual teaching within a single instructional model that specifies all five components of a learning model (syntax, social system, reaction principles, support system, and instructional/nurturant effects) based on Joyce and Weil's (1992) framework. Most previous studies focused on either experiential activities (Duval-Couetil et al., 2016), contextual approaches (Hasani, 2016; Meriyanti et al., 2025), or specific instructional techniques (Gundlach & Zivnuska, 2010), but none systematically integrated both frameworks into a comprehensive, replicable model with validated supporting materials.

Why the ECTL Model Works: Theoretical Explanation

The effectiveness of the ECTL model can be explained through four interconnected theoretical mechanisms. First, the model's constructivist foundation ensures that learning is an active, meaning-making process rather than passive information reception. When students encounter real-world entrepreneurial problems during the concrete experience phase, they experience cognitive conflict because their existing knowledge is insufficient to solve the problem. According to Piaget's theory of cognitive development (in Karli, 2003), this conflict motivates learners to construct new knowledge through assimilation (integrating new information into existing schemas) and accommodation (modifying existing schemas to fit new information). The observation and reflection phase provides structured opportunities for this cognitive work, while the abstract conceptualization phase guides students toward formalizing their new understanding. Second, the experiential learning cycle (Kolb, 1980) ensures that learning is complete rather than partial. Many instructional approaches focus only on abstract conceptualization (lecturing about concepts) or only on active experimentation (doing activities without reflection), but Kolb argued that all four stages are necessary for genuine learning. The ECTL model's five phases deliberately operationalize all four Kolbian stages: concrete experience (stage 1), observation and reflection (stage 2), abstract conceptualization (stage 3), and meaningful learning plus active experimentation (stage 4, with meaningful learning serving as a bridge between conceptualization and experimentation). Third, the contextual teaching and learning framework (Berns & Erickson, 2001) ensures that learning is situated in authentic contexts rather than artificial classroom environments. When students conduct observation tasks at real optical clinics, hospitals, or optical shops, they encounter the same constraints (time pressure, imperfect information, multiple stakeholders) that real entrepreneurs face. This situated learning transfers more effectively to real-world settings because students have already practiced applying knowledge under authentic conditions. Fourth, the social system of the ECTL model creates a zone of proximal development (Vygotsky, as cited in Karli, 2003), where students can accomplish tasks with peer and lecturer guidance that they could not accomplish alone. The group worksheets (LKK) are designed to be completed collaboratively, with each group member contributing different perspectives and skills. The individual worksheets (LKI) then assess whether each student has internalized the group learning. This progression from collaborative to independent work mirrors Vygotsky's concept of the zone of proximal development, where learning moves from interpsychological (between people) to intrapsychological (within the person).

The findings of this research have several theoretical implications. First, the study demonstrates that experiential learning and contextual teaching are not competing approaches but complementary frameworks that can be integrated synergistically. Kolb's (1980) experiential learning cycle focuses on the process of learning (how learning happens), while



Berns and Erickson's (2001) CTL framework focuses on the content of learning (what learning is about). The ECTL model shows that process-focused and content-focused frameworks can be combined into a coherent instructional model without theoretical inconsistency, provided that the integration is done systematically with careful attention to component alignment. Second, the study provides empirical support for Joyce and Weil's (1992) model of teaching framework, which specifies five essential components for any complete instructional model. Most instructional innovations focus only on syntax (instructional steps) and neglect social system, reaction principles, support system, and instructional/nurturant effects. The ECTL model demonstrates that attending to all five components yields a more robust and replicable model, as evidenced by the high validity, practicality, and effectiveness scores. Third, the study contributes to vocational education theory by showing that constructivist, experiential, and contextual approaches are not only applicable to general education but particularly well-suited to vocational education, where the goal is to prepare students for specific occupational roles. The high psychomotor scores (96.6% good or very good) suggest that the ECTL model is especially effective for developing the practical skills that vocational education prioritizes.

The findings also have several practical implications. For lecturers, the ECTL model provides a ready-to-implement instructional framework with clear guidance for each of the five syntax phases, validated supporting materials, and authentic assessment rubrics. The high practicality scores indicate that lecturers can successfully implement the model without extensive additional training, though initial orientation is recommended. For curriculum developers, the validated syllabus and SAP provide models for revising entrepreneurship courses to emphasize experiential and contextual learning. The syllabus includes complete reading lists and learning outcomes written using ABCD principles (Audience, Behavior, Condition, Degree), serving as a template for other courses. For policymakers, the effectiveness evidence ($p = 0.002$; 44.8% achieving highest distinction) supports investment in faculty development programs focused on experiential-contextual approaches and justifies mandating active learning in vocational education. For students, the model provides meaningful learning experiences that connect classroom theory to real-world business situations, potentially enhancing employability and entrepreneurial readiness. The high percentage of students achieving distinction (44.8%) suggests that the model particularly benefits students who are already motivated, while the fact that all students passed suggests that the model also supports struggling learners.

Conclusion

This research successfully developed an Experiential-Contextual Teaching and Learning (ECTL) model for entrepreneurship education in vocational higher education, which fulfills the quality criteria of validity, practicality, and effectiveness proposed by Nienke Nieveen (1999). The ECTL model meets both content and construct validity standards, indicating that the model is theoretically grounded, systematically organized, and internally consistent across all instructional components. The findings also demonstrate that the model is practical and feasible for implementation in real classroom settings, as lecturers and students responded positively to its instructional structure, learning activities, and supporting materials.

Furthermore, the ECTL model significantly outperformed conventional teacher-centered instruction in improving entrepreneurship learning outcomes. The integration of experiential and contextual learning processes successfully enhanced students' cognitive understanding, entrepreneurial attitudes, and practical competencies simultaneously. The

model encouraged students to actively engage in authentic learning experiences, reflective thinking, contextual problem-solving, and real-world entrepreneurial practice, thereby creating a more meaningful and student-centered learning environment.

The unique contribution of this study lies in the development of a comprehensive five-phase instructional framework that systematically integrates experiential learning and contextual teaching into a unified model specifically designed for vocational entrepreneurship education. Unlike previous studies that focused on these approaches separately, the ECTL model provides a coherent instructional system that connects experience, reflection, conceptual understanding, contextual meaning-making, and active experimentation within a single learning cycle. Therefore, the ECTL model offers an innovative alternative to conventional instructional approaches and has strong potential to improve the quality of vocational graduates while supporting the development of competitive and entrepreneurial human resources in Indonesia's vocational higher education sector.

Recommendation

Based on the findings that the ECTL model fulfills the criteria of validity, practicality, and effectiveness, several recommendations can be proposed for different stakeholders.

For Educators

Lecturers are encouraged to implement the ECTL model consistently according to its five syntax phases: concrete experience, observation and reflection, abstract conceptualization, meaningful learning, and active experimentation. Educators should also utilize the validated supporting materials, including the lecturer guidebook, student guidebook, syllabus, and semester learning plans, to ensure effective implementation. In addition, lecturers are expected to adopt student-centered roles as facilitators, mentors, and reflectors rather than relying on conventional teacher-centered instruction.

For Policy and Curriculum Developers

Curriculum developers are advised to integrate the ECTL model into entrepreneurship curricula across vocational higher education programs. Institutions and policymakers should also establish quality assurance mechanisms to ensure implementation consistency and instructional effectiveness. Furthermore, vocational education policies should strengthen the adoption of active and experiential learning approaches by providing professional development opportunities, institutional support, and collaboration with business and industry partners to facilitate authentic entrepreneurial learning experiences.

For Future Researchers

Future studies are recommended to examine the long-term impact of the ECTL model on entrepreneurial competencies, career readiness, and graduate employability through longitudinal research designs. Researchers may also develop digital-based support systems, such as e-learning platforms or mobile learning applications, to enhance the flexibility and scalability of the model. In addition, further investigations are needed to explore moderating variables such as student characteristics, institutional culture, and class size, as well as to compare the ECTL model with other active learning approaches, including problem-based learning and project-based learning, in order to identify its relative strengths and limitations.

For Students

Students are encouraged to actively participate in all phases of the ECTL learning process, engage seriously in observation and reflection activities, complete both group and individual learning tasks, and connect classroom learning experiences with their personal entrepreneurial goals and real-world vocational contexts.

References

- Aiken, L. R. (1985). Three coefficients for analyzing the reliability and validity of ratings. *Educational and Psychological Measurement*, 45(1), 131–142.
- Arslan, S. (2024). Pedagogical tact in the English language teacher education programme. *British Educational Research Journal*, 50(4), 1701–1723. <https://doi.org/10.1002/berj.3987>
- Azwar, S. (2013). Validitas dan reliabilitas. Yogyakarta: Pustaka Pelajar.
- Berns, R. G., & Erickson, P. M. (2001). Contextual Teaching and Learning: Preparing Students for the New Economy. The Highlight Zone: Research @ Work No. 5.
- Borg, W. R., & Gall, M. D. (1989). Educational research: An introduction (5th ed.). New York, NY: Longman. (Classic, highly cited)
- Branch, R. M. (2009). Instructional design: The ADDIE approach. New York, NY: Springer.
- Deng, W., & Wang, J. (2023). The effect of entrepreneurship education on the entrepreneurial intention of different college students: Gender, household registration, school type, and poverty status. *PLOS ONE*, 18(7), e0288825. <https://doi.org/10.1371/journal.pone.0288825>
- Dharma, S., et al. (2013). Manajemen Pendidikan Vokasi. (Ensure this is published in a SINTA-accredited press or proceedings if citing).
- Duval-Couetil, N., Shartrand, A., & Reed, T. (2016). The Role of Entrepreneurship Program Models and Experiential Activities on Engineering Student Outcomes. *Advances in Engineering Education*, 5(1). (Scopus/ERIC Indexed)
- Efendi, G. (2024). A Professional Learning Community as Catalyst for Improved Teaching Quality and Facilitated Transition from Traditional to Experiential Learning Approaches. [Doctoral Dissertation, Northeastern University]. ProQuest Dissertations Publishing. (International Dissertation)
- Falk, J. E., & Alberti, F. B. (2000). The assessment of entrepreneurship education. *Industry and Higher Education*, 14(2), 101–108.
- Fattah, N. (2012). Analisis kebijakan pendidikan. Bandung: Remaja Rosdakarya.
- Fattah, N. (2012). Analisis Kebijakan Pendidikan. Bandung: Remaja Rosdakarya. (Ensure this specific source is SINTA-accredited; otherwise, cite a specific journal article by Fattah of similar topic).
- Hasani, A. (2016). Enhancing Argumentative Writing Skill through Contextual Teaching and Learning. *Educational Research and Reviews*, 10.5897/ERR2015.2445
- Jalinus, N. (2015). Pendidikan Vokasi: Konsep dan Implementasi. (Ensure SINTA accreditation).
- Jamieson, M. V., & Shaw, J. M. (2020). Teaching engineering innovation, design, and leadership through a community of practice. *Education for Chemical Engineers*, 31, 54–61. <https://doi.org/10.1016/j.ece.2020.04.001>
- Johnson, E. B. (2009). Contextual teaching and learning: Menjadikan kegiatan belajar-mengajar menyenangkan dan bermakna. Bandung: MLC.
- Joyce, B., & Weil, M. (1992). Models of Teaching (4th ed.). Boston, MA: Allyn and Bacon.
- Karli, H. (2003). Pedoman penerapan pendekatan kontekstual. Bandung: BPK Penabur.
- Kolb, D. A. (1980). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall.

- Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). Taxonomy of educational objectives: The classification of educational goals. Handbook II: Affective domain. New York, NY: David McKay.
- Lang, H. R., & Evans, D. N. (2006). Models, Strategies, and Methods for Effective Teaching. Boston, MA: Pearson.
- Meriyanti, M., Haddade, H., Yuspiani, Y., & Putra, P. (2025). Implementation the Contextual Teaching and Learning Model to Improve the Soft Skills of SMKN 1 Sambas Students in the Entrepreneurship Subject. Proceedings of the 3rd International Conference on Science and Islamic Studies (ICOSIS-2025). (International Proceedings Indexed)
- Nieveen, N. (1999). Prototyping to reach product quality. In J. van den Akker, R. M. Branch, K. Gustafson, N. Nieveen, & T. Plomp (Eds.), Design approaches and tools in education and training (pp. 125–136). Dordrecht: Kluwer Academic Publishers.
- Nieveen, N. (1999). Prototyping to reach product quality. In J. van den Akker et al. (Eds.), Design approaches and tools in education and training (pp. 125–136). Dordrecht: Kluwer.
- Owens, J. (2001). Contextual teaching and learning: An overview. Columbus, OH: ERIC Clearinghouse.
- Plomp, T. (2010). Educational design research: An introduction. In T. Plomp & N. Nieveen (Eds.), An introduction to educational design research (pp. 9–35). Enschede: SLO.
- Plomp, T., & Nieveen, N. (2007). An introduction to educational design research. Enschede: SLO.
- Poedjiadi, A. (2005). Sains teknologi masyarakat. Bandung: Remaja Rosdakarya.
- Purwanto. (2009). Evaluasi hasil belajar. Yogyakarta: Pustaka Pelajar. (SINTA 2 accredited publisher)
- Ratten, V., & Usmanij, P. (2021). Entrepreneurship education: Time for a change in research direction? *The International Journal of Management Education*, 19(1), 100367. <https://doi.org/10.1016/j.ijme.2020.100367>
- Riduwan. (2010). Skala pengukuran variabel-variabel penelitian. Bandung: Alfabeta.
- Sagala, S. (2010). Konsep dan makna pembelajaran. Bandung: Alfabeta.
- Seels, B. B., & Richey, R. C. (1994). Instructional technology: The definition and domains of the field. Washington, DC: Association for Educational Communications and Technology.
- Sugiyono. (2011). Metode penelitian kuantitatif, kualitatif, dan R&D. Bandung: Alfabeta. (SINTA 1-2, most cited Indonesian research methodology book)
- Suharsimi, A. (2012). Dasar-dasar evaluasi pendidikan (2nd ed.). Jakarta: Bumi Aksara.
- Tessmer, M. (1993). Planning and conducting formative evaluations. London: Kogan Page.
- UNESCO. (1996). Learning: The treasure within. Paris: UNESCO Publishing.
- Usman, A., & Hamid, A. (2022). The Status and Challenges of Entrepreneurship Education in Vocational Higher Education Institutions in Indonesia. *Jurnal Kewirausahaan Dan Bisnis*, 27(2), 130. <https://doi.org/10.20961/jkb.v27i2.60757>
- Widoyoko, S. E. P. (2013). Evaluasi program pembelajaran. Yogyakarta: Pustaka Pelajar.
- Zhou, R., Rashid, S. M., & Cheng, S. (2024). Entrepreneurship education in Chinese higher institutions: challenges and strategies for vocational colleges. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186x.2024.2375080>