

Institutional Strategies for Building Competency-Based Learning Environments in Higher Education: Evidence from Dong Thap University, Vietnam

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ABSTRACT:

The rapid advancement of digital transformation and the Fourth Industrial Revolution (Industry 4.0) has fundamentally reshaped higher education, generating new demands for graduate competencies and institutional teaching practices. In response to these challenges, higher education institutions are increasingly required to develop competency-based learning environments that foster students' professional, digital, and lifelong learning capacities. This study investigates institutional strategies for building such an environment at Dong Thap University, Vietnam, with a particular focus on teacher education programs. A mixed-methods research design was employed, integrating theoretical analysis with empirical investigation. Quantitative data were collected through a five-point Likert-scale survey administered to 334 teacher education students and 65 lecturers, while qualitative data were obtained through in-depth interviews. Statistical analyses were conducted using SPSS to examine perceptions of the learning environment and its contribution to competency development.

The findings indicate that an effective competency-based learning environment is a multidimensional construct encompassing physical, psychological, socio-cultural, and academic dimensions. Institutional strategies identified as particularly influential include pedagogical innovation, learner-centered teaching, digital learning integration, collaborative learning, and the expansion of experiential and project-based learning opportunities. These strategies significantly enhance student engagement, self-regulated learning, research capacity, and professional competency development.

This study contributes to the literature on competency-based education by proposing an integrated institutional framework for designing learning environments that support competency development in higher education. The findings offer practical implications for universities seeking to advance digital transformation, strengthen institutional autonomy, and develop smart higher education ecosystems capable of meeting the evolving demands of the knowledge economy.

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1. Introduction

In the context of fundamental and comprehensive innovation in education and training, Vietnamese education, under Resolution No. 29-NQ/TW, requires "a strong shift in the educational process from mainly equipping students with knowledge to comprehensively developing learners' competencies and qualities." It also emphasizes the educational principle of aligning learning with practice and theory with reality (Central Committee, 2013), which is institutionalized in the 2018 General Education Program promulgated under Circular No. 32/2018/TT-BGDĐT. This poses an urgent requirement for higher education institutions to train a cohort of teachers who possess adequate qualities, professional expertise, pedagogical competencies, and the ability to adapt to the current general education environment. For pedagogical students, professional competence is shaped not only through the training curriculum but also through participation in practical educational activities.

A competency-development-oriented teaching environment needs to facilitate students' active participation in learning activities, professional experiential and practical training, the resolution of pedagogical situations, and self-assessment of their own development process. Recent research by Tran and Nguyen (2025) indicates that the quality of teacher training in universities plays a crucial role in preparing a teaching force that meets the requirements of educational innovation. Concurrently, studies on competency-based educational approaches emphasize that teaching and learning must bridge theoretical knowledge with practical skills and the ability to apply them in real-world contexts. Ponomariovienė, Jakavonytė-Staškuvienė, and Torterat (2025) argue that a competency-based educational approach aims to integrate

theoretical knowledge with practical skills, creating opportunities for learners to apply their learning outcomes to real-world situations. This suggests that in teacher training, if the teaching environment remains skewed toward traditional methods of mere knowledge transmission-lacking experiential activities, practice, collaborative learning organization, and frequent feedback-it will be difficult to foster professional competencies in pedagogical students.

Consequently, building a competency-development-oriented teaching and learning environment for pedagogical students at Dong Thap University has become a matter of theoretical and practical significance. Theoretically, this study helps clarify the role of the teaching and learning environment in the process of training, forming, and developing professional competencies for pedagogical students. Practically, the research assists in proposing appropriate measures to construct an innovative teaching and learning environment that renovates organizational methods, enhances experiential and professional practical activities, promotes student autonomy and creativity, and improves the quality of teacher training at the university. Therefore, this paper addresses the following research question: How should a teaching and learning environment be built to develop the competencies of pedagogical students at Dong Thap University in the current context of educational innovation?

2. Literature review and theoretical framework

2.1. Literature review

Designing training programs for pedagogical students in higher education toward competency development, using students' cognitive levels to determine competency objectives, and building professional competency evaluation criteria for

pedagogical students are aligned with the regulations on program learning outcomes; furthermore, the improvement of training programs is based on students' performance competencies (John W. B., 1995). The formation and development of learners' competencies should be integrated into the targeted learning outcomes, establishing core competency groups to be developed: self-study organization capacity, self-research capacity, and critical thinking capacity, based on practical educational outcomes. From this, the author asserts that when organizing teaching to develop pedagogical students' competencies, lecturers must apply active teaching methods, progressing from foundational competency groups to specialized professional competency groups. "Competency-development-oriented teaching for pedagogical students at universities involves organizing pedagogical interaction activities aimed at applying learned knowledge to learning tasks and integrating knowledge through the design of thematic teaching content" (Nguyen, N.T., 2024).

Building a favorable teaching and learning environment in higher education helps pedagogical students acclimate to new learning methods that differ entirely from those in high schools. University education demands critical, analytical, and reflective thinking capacities, requiring a simulated real-world teaching environment where educators and learners jointly explore approaches to learning problems and offer practical solutions; this is the key difference between a university teaching environment and a high school one (Grabinger & Dunlap, 1995).

According to Huynh (2005), a teaching and learning environment is a collection of physical factors, learning materials, human elements, and the social environment surrounding learners that possess the potential to stimulate and encourage the learning process. The natural and social environments are external environments of higher education institutions that exert an enormous influence, whereas the internal university environments reflect external realities and directly affect the perception of the subjects

involved in the teaching-learning process by impacting psychological factors such as memory, knowledge, proficiency, and individual experiential desires (Denomme, J.M., & Ray, M., 2000).

To build a teaching and learning environment that capitalizes on current students' thinking characteristics, lecturers need to recognize the role of the teaching environment and the factors affecting instructional activities. They must know how to organize teaching based on research into students' psychological characteristics and learning awareness, firmly believing that "knowledge constructed by the individual themselves becomes far more robust than that received from others" (Manninen, J. B. et al., 2007). Internal factors include the intellectual environment, which comprises the levels, intellectual activity skills, professional capacity, scientific worldview, and professional experience of the lecturers. Elements within the psychological environment involve personality, interest, volition, cognition, and pedagogical interaction embedded with the instructor's teaching methods and learning methods focused on the learner's intrinsic potential (Denomme & Roy, 2000). The competence of pedagogical students continues to be viewed as an integrated structure, encompassing not only specialized expertise but also self-study capacity, adaptability, digital competence, and sustainable professional development capacity (An et al., 2024; La, 2024).

Domestic research also indicates that training self-study and independent learning capacities for pedagogical students is of particular importance, as this serves as a prerequisite for learners to adapt to higher education requirements and prepare for future professional activities (Nguyen, 2014; Nguyen & Ho, 2021). The more action-oriented, interactive, and connected to real-world situations a learning environment is, the more capable it is of fostering active learning and developing learners' competencies (Grabinger & Dunlap, 1995; Valtonen et al., 2021). In this direction, organizational forms such as experiential learning, project-based

learning, and integrated teaching tied to professional practice are evaluated as effective not only in developing pedagogical students' competencies but also as an element of the triad "learner - educator - environment," in which physical, psychological, social, and academic factors jointly impact the cognitive, emotional, and behavioral processes of the learning subject (Denomme & Roy, 2000).

This concept is consistent with the approach to the educational environment as a system of conditions and agents supporting the development of learners' personality, competence, and professional behavior (Pham, 2006). Project-based learning, integrated teaching, and instruction linked to professional practice are deemed highly effective in developing competencies for pedagogical students in an academic, active, and experiential manner (An et al., 2024; Nguyen, 2014; Grabinger & Dunlap, 1995). This represents a meaningful practical gap for researching solutions to build a competency-development-oriented teaching and learning environment for pedagogical students at Dong Thap University today.

2.2. Theoretical framework and concepts

2.2.1. Competence

According to Rychen and Salganik (2003), competence is the ability to successfully meet complex demands in specific contexts by mobilizing and mobilizing knowledge, cognitive and practical skills, values, and personal motives. Weinert (2001) posits that competence is a system of skills that helps individuals successfully perform tasks and solve problems under defined conditions. According to Hoidn (2017), a competency-based learning environment must be designed to be learner-centered, enhancing interactive participation and students' self-regulated learning capacity. This requires lecturers to act not merely as knowledge transmitters but as facilitators, supporters, and guides of learning activities to develop competencies for university students, enabling them to actively explore, experience, apply

knowledge, and develop necessary professional competencies.

Theoretically, this research is grounded in modern instructional approaches, such as constructivism, experiential learning, and competency-based education, aimed at developing learner competence. According to Piaget (1977), knowledge is not passively received but actively constructed by the learner through interaction with the environment. Vygotsky (1978) further developed this perspective by emphasizing the role of social interaction and the "Zone of Proximal Development" (ZPD) in the learning process. Practically, a competency-based teaching environment is a comprehensive aggregation of physical conditions, educational technologies, psycho-social-emotional environments, and academic environments organized to stimulate learners to develop competencies through experiential activities, interactive operations, and the application of knowledge to pedagogical practice. Kolb (1984) states that competence is formed through a cycle of experiencing - reflecting - conceptualizing - applying. This confirms that university teaching needs to provide opportunities for students to participate in practical activities, problem-solving, and professional reflection.

2.2.2. Teaching environment

The teaching environment in schools consists of elements serving the instructional process, such as beautifully decorated, cool, and safe walls, a pleasant atmosphere, and adequate facilities and equipment to encourage learners' cognitive self-development while enhancing their learning capacity. According to Kieu and Nguyen, a learning environment includes a collection of factors affecting teaching and learning; it is the physical environment inside or outside the classroom where the teaching and learning process occurs, featuring elements such as blackboards, desks, chairs, lighting, acoustics, air, and the arrangement of equipment within the classroom space. The spiritual environment encompasses the entire network of relationships among lecturers, among students, and between

lecturers and students, interacting dynamically within the school, family, and community (Kieu, T.B.T & Nguyen, T., 2015). Factors like classroom layout, lighting, acoustics, temperature, teaching aids, and spatial flexibility have direct impacts on students' concentration, interaction, and learning efficiency (Brooks, 2011; Granito & Santana, 2016).

Research on digital learning environments in higher education also reveals that modern learning spaces increasingly blend face-to-face and digital spaces, where technology plays a role in expanding opportunities for interaction, collaboration, and personalized learning activities (Kümmel et al., 2020). From these descriptions, the author defines the teaching environment in a narrow sense as physical conditions, including equipment, facilities, materials, and instructional software. In a broader sense, the teaching environment encompasses human and social factors, including educators and learners with their teaching methods, techniques, and forms of social interaction, including behavioral culture, traditional culture, and community academic culture.

2.2.3. Competency-development-oriented teaching environment

A competency-development-oriented teaching and learning environment is one designed and organized to enable learners to actively participate in the learning process, applying knowledge, skills, and attitudes to solve learning tasks and practice professional skills. Unlike traditional teaching environments that focus on knowledge transmission and content-based approaches, a competency-oriented environment emphasizes the active role of learners, the interaction between lecturers and students, and among students, as well as the relationship between curriculum content and real-world professional experiences. Recent studies on digital competence in higher education also confirm that digital learning environments play a vital role in developing digital and professional competencies for students amid digital transformation (Pham, 2025).

Therefore, a pedagogical training environment must enable students to cultivate self-study, research, and continuous professional development capacities. It should incorporate formative, summative, self-, and diagnostic assessments to adjust appropriately, utilizing learning products, portfolios, practical exercises, projects, or professional case studies. From the above analysis, it can be affirmed that constructing a competency-development-oriented teaching environment for pedagogical students is an inevitable requirement in current teacher education. For Dong Thap University, building such an environment brings practical significance to improving training quality, developing professional competencies for pedagogical students, and meeting innovative demands in the current period.

2.2.4. Importance of building a teaching environment

Constructing a teaching and learning environment is highly significant for training quality because an appropriate environment can trigger learning motivation, enhance engagement, foster collaboration, and support students in developing self-study capacities. Research findings on higher education learning spaces indicate that flexible spaces conducive to group discussions, mobility, and interactive activities better support active learning forms compared to fixed-layout classrooms that favor one-way transmission (Brooks, 2011; Granito & Santana, 2016).

In addition, the teaching environment plays a guiding role in shaping students' qualities and learning behaviors. A positive psychological atmosphere and a democratic, respectful, and mutually supportive pedagogical relationship enable students to boldly express their viewpoints, develop critical thinking, and build problem-solving skills. Conversely, an discouraging environment with little interaction or heavy pressure can hinder cognitive needs, diminish learning motivation, and restrict learners' professional development (Granito & Santana, 2016). In higher education, particularly teacher training, the teaching environment carries

professional significance because students not only acquire specialized knowledge but also learn how to organize, behave, and create educational environments for their future learners. Thus, the teaching environment in pedagogical universities must be exemplary, practical, and development-oriented, thereby contributing to the formation of professional competence, pedagogical communication competence, collaborative skills, and self-fostering professional capacity for students. Some researchers suggest that an educational environment is vital to support individual or group activities for the benefit of individual and social community learning. The nature of the learning space depends on the learning task; a spacious, comfortable area for collaborative activities will foster an active learning environment. Higher education subjects often select large campus spaces, such as library resources centers and community living zones, as learning environments, validating the importance of physical space to pedagogical activities (Becker et al., 2018). In the most general sense, a teaching environment refers to all factors external to the learner that impact their individual learning process.

2.3. Practical context

Implementing the directive for comprehensive educational innovation according to the 8th Resolution of the 11th Central Committee in 2013 (Resolution 29, 2013), alongside guidelines for implementing the general education curriculum, guides teaching toward developing the competencies and qualities of high school students. Besides, organizing activities with professional situations, experiential activities, and pedagogical practice still needs further reinforcement. For pedagogical students, professional competence is shaped not only by learning according to the curriculum design but also through applying acquired and accumulated knowledge to specific educational situations. The OECD emphasizes that education and training institutions need to cooperate with vocational education institutions to offer practical teacher training: "*collaborate with VET institutions to offer*

practical teacher training" (OECD, 2021, para. 1). Although this context mentions vocational education, the suggestion remains valuable for teacher training in general, as professional practice is a critical condition helping pedagogical students develop the capacity to design, organize, manage, and evaluate educational activities in real-world environments.

In the context of educational digital transformation, digital competence has become an important component of a teacher's professional development. The European Commission's Digital Competence Framework for Educators (DigCompEdu) targets "*educators at all levels of education*" (Redecker, 2017). Concurrently, UNESCO (2023) points out that digital technology has significantly changed access to teaching and learning resources, but the use of technology must align with educational goals, learner conditions, and the implementation context. Therefore, if the exploitation of digital learning materials and interactive tools lacks synchronization, students will not have many opportunities to hone collaboration, creativity, and technological application competencies in teaching.

From the requirements of educational innovation oriented toward developing learners' qualities and competencies, building a learning environment for pedagogical students at Dong Thap University raises several issues. Although teaching activities in the pedagogical university have seen modern shifts, the environment does not yet truly facilitate students' active roles, self-study, self-research, and problem-solving. This is not fully aligned with current higher education principles: "Developing talents, training high-level human resources closely linked with scientific research, technology, and innovation" (Law No. 125), to equip learners with a foundation of knowledge, specialized skills, core capacities in research, innovation, entrepreneurship, and professional practice. Thus, the teaching environment in teacher training institutions in general, and Dong Thap University in particular, needs to be designed to

enhance active professional activities and encourage students to participate in knowledge construction. The educational development strategy with a vision for 2025–2035 aims to turn Dong Thap University into a research and human resource training center that meets socio-economic demands for the global industrial revolution phase, focusing on higher education innovation to develop high-quality human resources for society. Currently, Dong Thap University is commissioned to train teachers according to practical demands serving the Mekong Delta region (www.moet.gov.vn, 2021).

Research by Alt and Raichel (2023) shows that competency-oriented learning must be tied to regular assessment feedback to help students identify their progress and adjust their learning activities. Based on the analysis of theoretical and practical bases of the teaching environment at Dong Thap University, alongside achieved milestones, the author identifies this as a development opportunity for the university and a massive challenge for the current pedagogical staff regarding professional competency development and deep specialized qualifications. Recent studies on teaching environments from perspectives focusing on teaching organization have not addressed organizational capacities that extend beyond the university classroom space into a learning ecosystem connecting lecture halls, digital environments, and general education practice.

3. Research methodology and data

3.1. Research methodology

This paper employs theoretical research methods to analyze, synthesize, and systematize documents, scientific works, and legal texts related to competency-development teaching in training pedagogical students. In addition, observation and practical survey methods were utilized to identify the current status of the teaching environment at Dong Thap University. The retrieved research sample consisted of 312 subjects, including 247 students and 65 lecturers and administrators, selected via convenience sampling. Data collection tools included questionnaires using a 5-point Likert scale and in-depth interviews with 08 lecturers; data were processed using SPSS software. The questionnaire was constructed based on the structural dimensions of a competency-based teaching environment, while in-depth interviews were used to supplement, verify, and explain quantitative survey results.

3.2. Research data

3.2.1. Determination of assessment levels

A 5-point Likert scale questionnaire was administered to 312 subjects, including lecturers, students, and administrators. The classification of levels was based on mean scores.

3.2.2. Interval between levels

The interval was determined using the formula:
Interval = $(5 - 1)/5 = 0,8$

Table 1. Classification of assessment levels

No.	Classification	Score Range	Formula	Levels used in the questionnaire
1	Weak	$1.00 \leq \text{Mean} < 1.81$	E x1	Strongly disagree (1)
2	Average	$1.81 \leq \text{Mean} < 2.61$	D x2	Disagree (2)
3	Fair	$2.61 \leq \text{Mean} < 3.41$	C x3	Uncertain (3)
4	Good	$3.41 \leq \text{Mean} < 4.21$	B x4	Agree (4)
5	Excellent	$4.21 \leq \text{Mean} \leq 5.0$	A x5	Strongly agree (5)
Formula to calculate the Mean = $(Ax5) + (Bx4) + (Cx3) + (Dx2) + (Ex1)/N$				

Note: N is the total number of survey participants; A, B, C, D, E represent the number of respondents choosing each assessment level.

4. Research results

4.1. Survey results on the status of competency-development-oriented teaching

environments for pedagogical students at Dong Thap University

4.1.1. Current perception of the role of constructing a competency-development-oriented teaching environment

Table 2.1. Survey results on the perception of the role of building a teaching environment

STT	Survey Content	$\bar{x}$	S	Rank
1	The competency-development-oriented teaching environment plays an important role in shaping the professional competencies of pedagogical students.	4,29	0,85	1
2	Constructing a competency-development-oriented teaching environment is a necessary requirement in current teacher training innovation.	4,21	0,85	2
3	A competency-development-oriented teaching environment contributes to promoting students' activeness, autonomy, and creativity.	4,08	0,91	3
4	A competency-development-oriented teaching environment helps students enhance their ability to apply knowledge to professional practice.	3,98	0,96	4
5	A competency-development-oriented teaching environment creates conditions for students to develop self-study skills and collaborative capacity.	3,88	1,00	5
6	A competency-development-oriented teaching environment holds a decisive meaning for the quality of teacher training at universities.	3,79	1,03	6
	Overall Mean	4,04		

Note: $\bar{x}$: Mean; S: Standard Deviation; Rank: Priority ranking

The results in table 2.1 indicate that Dong Thap University students hold a relatively positive perception regarding the role of a competency-development-oriented teaching environment in teacher training, with an overall mean score of 4.04, falling into the "Agree" range. This reflects an awareness of the importance of building a learning environment that does not just transmit knowledge but aims to form and develop professional competence, self-study capacity, collaborative capacity, and the ability to apply knowledge into pedagogical practice.

The criterion "The competency-development-oriented teaching environment plays an important role in shaping the professional competencies of pedagogical students" achieved the highest mean ($\bar{x} = 4.29$, $S = 0.85$), ranking 1st. This shows that the majority of students clearly perceive the teaching environment as a foundational factor directly affecting the process of shaping the qualities and professional capacities of future teachers. The low dispersion of scores indicates that students' opinions are highly concentrated and unified. The criterion

ranked 2nd, "Constructing a competency-development-oriented teaching environment is a necessary requirement in current teacher training innovation" ($\bar{x}=4.21$, $S=0.85$), reveals that students have begun linking the construction of the teaching environment with educational innovation and teacher training transformation demands, showing that their awareness extends beyond individual aspects to the general development requirements of the university and the education sector. The content "A competency-development-oriented teaching environment contributes to promoting students' activeness, autonomy, and creativity" ($\bar{x}=4.08$, $S=0.91$) ranked 3rd, indicating consensus that a suitable teaching environment will encourage more active participation in learning activities, gradually shifting from passive reception to active engagement, experience, and knowledge construction.

The criterion linked to professional practice, "a competency-development-oriented teaching environment helps students enhance their ability to apply knowledge to professional practice," had a mean score of ($\bar{x}=3.98$) and a standard deviation of ($S=0.96$), ranking at a "fairly good" level. However, this score suggests that a segment of students has not yet clearly felt the efficiency of transitioning from learning to professional application. The criterion "a competency-development-oriented teaching environment creates conditions for students to develop self-study skills and collaborative capacity" obtained a mean score of ($\bar{x}=3.88$), ranking 5th, indicating that the perceived impact of the teaching environment on self-study and collaboration capacities, while positive, is not yet prominent. The standard deviation of ($S=1.00$) stems from uneven opportunities for experience, pedagogical practice, or learning activities tied to actual professional contexts. The criterion with a mean

score of ($\bar{x}=3.79$), "a competency-development-oriented teaching environment holds a decisive meaning for the quality of teacher training at universities," ranked lowest. Although still within a relatively positive level, this item had a standard deviation of ($S=1.03$), representing the lowest consensus and highest dispersion among the surveyed criteria. This reveals that a portion of students does not fully grasp the decisive, long-term, and systemic nature of the teaching environment on teacher training quality. In other words, students tend to perceive the role of the teaching environment through its direct, immediate manifestations rather than from a strategic and holistic perspective.

Quantitative survey results were further clarified through in-depth interviews. Administrator 1 stated: "A competency-development-oriented teaching environment is not just a supportive learning condition but a foundation for forming professional competence for pedagogical students. However, current students usually notice close elements such as learning methods, group activities, and practice, while the strategic role of the teaching environment toward training quality is not yet fully recognized." Lecturer 1 shared: "Through teaching, I noticed that students quite agree on the need to build a new teaching environment oriented toward competency development. Yet, some of them still do not fully comprehend the connection between the teaching environment and the development of self-study capacity, professional competence, and future adaptation to practical teaching."

4.1.2. Status of implementing the objectives of constructing a competency-development-oriented teaching environment

This section assesses students' perceptions of how lecturers thoroughly master and define competency development goals during the organization of the teaching environment.

Table 2.2. Survey results on the objectives of constructing a competency-based teaching environment

No.	Survey Content	$\bar{x}$	S	Rank
1	Competency development objectives are clearly stated in the course syllabus.	3,71	1,05	2
2	Teaching objectives emphasize forming the capacity to apply knowledge to professional practice.	3,79	1,02	1
3	Competency development objectives are reflected in the organization of learning activities.	3,56	1,08	3
4	Students are clearly guided on the qualities and competencies required to achieve in each course.	3,43	1,10	4
5	The objectives of constructing a competency-based teaching environment are consistently mastered across different courses.	3,32	1,12	5
	Overall Mean	3,56		

Note: $\bar{x}$: Mean; S: Standard Deviation; Rank: Priority ranking.

The results in table 2.2 show that the implementation of building competency-development-oriented teaching environment goals at Dong Thap University achieved an overall mean score of 3.56, which sits at a "Fairly Good" level. The criterion "Competency development objectives are clearly disseminated by lecturers in the course" yielded a mean of ($\bar{x}$ = 3.79). The criterion "Competency development objectives are reflected in the organization of learning activities for students" scored a mean of ($\bar{x}$ = 3.56). Criterion 4, "Students are clearly guided on the qualities and competencies required to achieve in each course," reached a mean of ($\bar{x}$ = 3.43). These scores show that most students notice that lecturers have provided relatively specific teaching objective guidelines, helping them recognize the required standards in each course, and the transformation of objectives into specific learning activities has been carried out. However, the standard deviations of these items are above 1.00, indicating a certain discrepancy in student perceptions across different courses; students do not truly grasp which specific competencies they need to achieve after each course, leading to a lack of active

learning toward competency development, and consistency among lecturers remains uneven.

The lowest-scoring criterion ($\bar{x}$ = 3.32) was "The objectives of constructing a competency-based teaching environment are consistently mastered across different courses," with a standard deviation of (S = 1.12) highlighting the most apparent limitation in this group of criteria. The results reflect low consistency in perception and deployment of competency development goals across courses; objectives in some courses remain heavily focused on content transmission rather than orientation toward comprehensive competency development for students. Standard deviations ranging from 1.02 to 1.12 indicate a relatively high dispersion of student opinions. This reflects diverse student evaluations and shows that implementing competency-based teaching environment goals is influenced by the characteristics of each course, individual lecturers, and specific teaching organization styles.

Questionnaire survey results were further detailed by interviews. Administrator 2 noted: "The university has clearly directed the construction of a competency-oriented teaching

environment for pedagogical students, but during implementation, differences remain across units and lecturers. Some courses present objectives very clearly, while in others, the concretization of competency objectives remains generic." Lecturer 2 shared: "We have tried to incorporate competency development goals into organizing teaching activities, especially application and professional practice capacities. However, to master it synchronously across courses and help students clearly identify competency requirements, more specific guidelines are still needed." From these results, it is clear that the objectives of building a competency-development-oriented teaching environment at Dong Thap University have been defined and deployed at a moderate level. Nevertheless, the

alignment of goals across courses is not yet completely synchronized, and the specification of environmental requirements within each course or by each lecturer remains unclear, affecting the consistency of constructing a competency-based teaching environment.

4.1.3. Status of building content for a competency-development-oriented teaching environment

To evaluate the status of building content for a competency-oriented teaching environment for pedagogical students at Dong Thap University, the study focused on specific constituent dimensions.

a. Current status of constructing academic content within the competency-development teaching environment

Table 2.3. Survey results on academic content orientation in the teaching environment

No.	Survey Content	$\bar{x}$	S	s ²
1	Lecturers frequently use traditional teaching method groups: lecturing, organizing discussions, group presentations.	4,19	1,01	1,03
2	Lecturers regularly apply information technology in teaching, using electronic lesson plans and managing software for teaching and learning activities.	4,11	1,13	1,27
3	Lecturers utilize their experience and professional capacity to provide motivation and frequent feedback to students through practical experiential sessions.	4,09	1,08	1,16
4	Lecturers organize teaching based on real-world situations occurring in society, helping students develop problem-solving methods and critical thinking skills during interactions.	4,02	1,24	1,53
5	Lecturers design the classroom setup to help students easily interact with one another and present ideas before group and class members.	4,22	0,88	0,77

Note: $\bar{x}$: Mean; S: Standard Deviation; s²: Variance.

The results in table 2.3 reveal that students rated all criteria from items 1 to 5 with a mean value of 4.0 or higher, corresponding to the "Strongly Agree" range on the Likert scale. This result confirms that the academic element in teaching practices at Dong Thap University has been performed positively and reliably; however, in terms of nature, the intellectual environment does not show prominent innovations that meet

the demands for enhancing teaching quality for university students.

The criterion "lecturers design the classroom setup to help students easily interact with one another and present ideas before group and class members" attained the highest mean ($\bar{x}$ = 4.22), showing that lecturers possess the pedagogical capacity to arrange interactive classrooms. Its low standard deviation (S = 0.88) indicates tight

concentration around the mean and student consensus. However, the item "Lecturers frequently use traditional teaching method groups: lecturing, organizing discussions, group presentations" had a mean of ($\bar{x}$ = 4.19), ranking 2nd, with rather dispersed opinions (S = 1.01). This criterion requires refinement when constructing new teaching models. Meanwhile, lecturers' application of IT in teaching and providing motivation/feedback through practical experiences scored relatively high means ($\bar{x}$ = 4.11) and S = 4.09 respectively), and teaching based on real-world situations was rated highly with a mean of ($\bar{x}$ = 4.02). Nonetheless, these three criteria exhibited high dispersion with standard deviations greater than 1 (S = 1.13, 1.08,

and 1.24). Thus, the academic element concerning the professional proficiency and capacity of lecturers has not yet fully manifested its decisive role in the success of the instructional process. When designing a modern teaching environment, attention must be paid to improving these criteria by fostering the capacities and professional levels of lecturers, thereby creating an active cognitive environment for students through practical teaching and research experiences. It is necessary to build an academic environment with profound meaning, aligned with smart higher education trends.

b. Current status of constructing cultural content within the competency-development teaching environment

Table 2.4. Survey results on building cultural content in the teaching environment

No.	Survey Content	$\bar{x}$	S	s2
1	Lecturers are exemplary in communicating with students inside and outside the pedagogical environment, creating opportunities for students to communicate openly, respect each other, and encourage critique in all classroom pedagogical interactions.	4.11	1.02	1.05
2	Lecturers need to guide students in establishing classroom principles, such as punctuality, honesty in learning activities, and mutual respect.	3.97	1.12	1.25
3	Lecturers need to build a democratic, collaborative relationship between lecturers and students, and among students in academic activities, encouraging students to voice their opinions.	4.08	1.10	1.22
4	Lecturers need to recommend that the University support facilities to renovate classroom spaces to be safe, cool, and comfortable for learning.	4.02	1.08	1.17
5	Lecturers are exemplary in civilized behavior and cultured communication at school, fostering a studious attitude and promoting self-discipline among students.	4.21	0.96	0.92

Note: $\bar{x}$: Mean; S : Standard Deviation; s^2 : Variance

The results from table 2.4 indicate that all criteria achieved mean scores between 3.97 and 4.21, showing that students highly evaluate the role of lecturers in building a positive school cultural environment. The criterion "Lecturers are exemplary in civilized behavior and cultured communication at school" reached the highest mean ($\bar{x}$ = 4.21), reflecting students' high

expectations regarding lecturers' behavioral models. The criterion "guide students in establishing classroom principles" had the lowest mean ($\bar{x}$ = 3.97) and the largest standard deviation (S = 1.12), indicating that consensus among students was not as high as other criteria. The item "Lecturers are exemplary in civilized behavior and cultured communication" had the

lowest standard deviation ($S = 0.96$), proving high unity in learners' evaluations.

According to table 2.4, students completely agree and feel enthusiastic about the improved learning environment, as shown by mean values from 4.11 upward for the factor "communicating openly, respecting each other, and encouraging critique in all classroom pedagogical interactions"; however, the standard deviation of 1.02 implies that

student evaluations on this aspect remain somewhat dispersed. The survey results indicate that constructing the cultural element in a competency-oriented teaching environment is highly urgent in the context of higher education moving toward university autonomy.

c. Current status of constructing psychological content within the competency-development teaching environment

Table 2.5. Survey results on building psychological content in the teaching environment

No.	Survey Content	$\bar{x}$	S	s2
1	Lecturers need to construct a comfortable learning atmosphere for students, encouraging them to voice opinions and practice critical thinking.	3,90	1,29	1,66
2	Lecturers need to learn about students' personalities to understand their cognitive levels and learning methods, stimulating them to actively engage in interactions with lecturers to meet knowledge acquisition needs.	4.03	0.99	0.99
3	Lecturers actively approach students to understand and support them through learning difficulties, inspiring curiosity and guiding the younger generation to succeed in conquering new knowledge.	4,05	1,08	1,17
4	Lecturers listen to feedback from students and respond to all student activities and professional training needs as fully as possible during the training process.	4,24	0,77	0,60
5	Lecturers need to help students understand that intellect is the key to their future career, and work together with students to adjust teaching and learning methods appropriately, cultivating a growth mindset for students.	4,30	0,89	0,80

Note: $\bar{x}$: Mean; S: Standard Deviation; s2: Variance

Table 2.5 reveals that the mean scores of the criteria ranged from 3.90 to 4.30, demonstrating that students highly appreciate the lecturer's role in building a positive learning environment. The criterion "work together with students to adjust teaching and learning methods appropriately" reached the highest score ($\bar{x} = 4.30$), reflecting students' significant need for companionship and learning support from lecturers. The criterion "construct a comfortable learning atmosphere, encouraging critical thinking" had the lowest mean ($\bar{x} = 3.90$) and the largest standard deviation ($S = 1.29$), demonstrating lower consensus compared to other criteria.

The standard deviations of most surveyed contents were below 1.30; specifically, the item "listen to feedback from students" had the lowest standard deviation ($S = 0.77$), reflecting high unity among learners regarding lecturers. Items 4, 5, 2, and 3 within the psychological factor displayed stable and reliable dispersion values ($S = 0.77, 0.89, 0.99$, and 1.08 , respectively). Item 1, however, had the highest standard deviation ($S = 1.29$), making it the only item exceeding 1.0 in this group. This shows the highest dispersion of opinions, meaning it was not highly rated, which implies that the learning atmosphere has not truly encouraged active critical thinking among

students-a point requiring focused attention when building a competency-development teaching environment.

d. Current status of constructing physical content within the competency-development teaching environment

Table 2.6. Survey results on building physical content in the teaching environment

No.	Survey Content	$\bar{x}$	S	s2
1	The university arranges classrooms that are always airy and meet modern standards: anti-glare boards, desks and chairs with adjustable heights, easy to move, serving flexible learning and easy organization of exchange activities.	4,04	1,05	1,10
2	Students need separate spaces for group work and events, equipped with smart facilities, a campus zone for relaxation, or educational games and other activities.	4,06	1,05	1,09
3	The university needs to equip smart interactive screens to serve professional practice in training.	3,99	1,15	1.31
4	Classrooms need improved standard lighting conditions, appropriate green arrangements, and multi-functional spaces that can be used for teaching, events, and professional seminars.	4,04	0,98	0,96
5	Living environments and learning support tools-sound systems, bulletin boards, classroom medicine cabinets, clean floors, window curtains, and other factors-ensure physical and mental safety for students during learning.	4,07	1,01	1,03

Note: $\bar{x}$: Mean; S: Standard Deviation; s2: Variance

The majority of items in Table 2.6 obtained a mean score around ($\bar{x}$ = 4.0), showing that respondents strongly agreed. The highest-rated criterion was "living environments and learning support tools" ($\bar{x}$ = 4.07), though its standard deviation and variance close to 1.0 indicate some dispersion in answers. The criterion "equip smart interactive screens" had the lowest mean ($\bar{x}$ = 3.99) and the largest standard deviation (S = 1.15), indicating more dispersed opinions. The criterion "lighting, greenery, and multi-functional space" had the lowest standard deviation (S = 0.98), reflecting higher consensus. In terms of priority ranking for physical contents, respondents indicated that the university first needs to build a "living environment and learning support tools," followed by creating "group zones and event spaces for students," thirdly

improving "classrooms meeting modern standards," fourthly enhancing "lighting and adding greenery for multi-functional spaces," and finally, the school needs to "equip smart interactive screens" to facilitate effective professional activities and enhance higher education quality. If physical elements are simulated to match student satisfaction, it will allow students and lecturers to work in a consistently comfortable environment, sparking a passion for discovery backed by digital technology, where fully equipped functional classrooms serve as excellent spaces for student learning and creativity.

4.3. Discussion

The research findings demonstrate that competency-based teaching for pedagogical

students in universities still faces certain constraints in organizing higher education teaching and learning activities. Physical factors limit the operational capacity of university lecturers within the academic environment, and several factors affect the psychology and culture of the school environment. In the current higher education context, students are densely packed into large lecture halls with capacities ranging from two to three hundred, sitting tightly on rigid desks and chairs that are hard to rearrange. This is unsuitable for guiding practical modules belonging to pedagogical professional skills and restricts interaction. Lecturers face difficulties organizing competency-based practical activities for pedagogical students within the confines of 2 or 3 credits, whereas these modules actually require 5 or 6 credits. Consequently, students lack intellectual activity training, which limits the sustainability of their pedagogical competence.

In-depth interview results with *Lecturer 01* revealed: *"Basic equipment meets teaching requirements, but exploiting digital resources and the LMS system has not been truly effective."* *Lecturer 02* stated: *"Current learning spaces remain traditional and do not facilitate active and creative learning activities for students."* This shows that facilities and technology serving teaching at the school reach a fair level, meeting basic demands. However, continuous investment is required toward synchronizing technological infrastructure, developing digital learning resources, and designing flexible learning spaces to enhance the efficacy of building a competency-based teaching environment for pedagogical students. *Lecturer 03* noted: *"Using project-based methods or technology is limited due to time pressure and facility conditions."* *Lecturer 04* shared: *"Students are interested in group discussions but remain passive in exploratory learning activities."* Therefore, while the use of instructional methods at Dong Thap University has shifted positively, it still leans toward traditional approaches. Competency-based teaching methods are not exploited evenly, especially project-based learning and IT application. This requires synchronized solutions to elevate the efficiency of organizing a competency-based teaching environment for

pedagogical students. *Lecturer 05* stated: *"Students possess self-study awareness but lack guidance and depth in exploiting materials."* *Lecturer 06* remarked: *"Applying knowledge into reality remains weak due to a lack of experiential environments and professional practice."* These results show that student learning activities exhibit positive signs but remain uneven across elements, particularly limited in application capacity and learning skills within digital environments. This forms an important basis for proposing solutions to build a competency-oriented teaching environment in the coming time.

In-depth interviews show that lecturers perceive the teaching environment as an educational ecosystem. Although they care about student interaction through experienced teaching techniques, interacting evenly with all students remains difficult due to analyzed objective factors. Conducting digital teaching in universities still faces obstacles, currently lacking a vast source of digital learning materials for all courses in the curriculum. Applying active teaching methods integrated with IT is still constrained by time for practice and creative experience to produce learning products. The proposed teaching environment model can be viewed as an ideal blueprint to realize a simulated teaching environment, rapidly driving Dong Thap University to become a center for economic development and the first modern, autonomous university in the Mekong Delta region during the nation's era of advancement.

5. Solutions for building a teaching environment in the university

5.1. Solution 1: Constructing academic elements in the teaching environment through active teaching methods

5.1.1. Objectives, to promote lecturers' awareness of self-fostering and upgrading professional qualifications, clearly recognizing their role in improving academics to meet active teaching demands in higher education; to enhance pedagogical capacity, regular self-fostering awareness, and self-research through

implementing higher education teaching innovations.

5.1.2. Content, lecturers build academic elements in the teaching environment for pedagogical students by establishing a digital knowledge system to satisfy digital teaching, organizing interactive pedagogical activities to develop student competencies, fostering technological application capacities in university teaching, and defining and shaping digital competence frameworks for students to enhance higher education quality according to digital university trends.

5.1.3. Implementation

a. Lecturer capacity: To build an academic environment in higher education, lecturers must possess comprehensive pedagogical capacity to guarantee quality, leaving a strong impression on students and learners in general.

- The university needs to facilitate lecturers' professional advancement and academic capacities through training courses on digital lesson design techniques and blended learning, creating opportunities for community experience sharing, and encouraging digital teaching among all university lecturers. It is vital to standardize and synchronize learning management systems (LMS) and copyright access to AI tools within the university's teaching environment toward an autonomous digital university.

- Lecturers organize pedagogical activities applying active teaching techniques such as project-based learning, problem-based learning, and collaborative learning through open educational resources and applied research project assignments. This environment drives students to experience and execute learning tasks according to their own capacities, forming an applied knowledge base in the university academic environment to self-elevate higher education academic quality.

b. Lecturers' professional competence

- *Knowledge system*: Lecturers must perceive innovation as an inevitable educational need,

applying digital teaching methods to university instructional activities. Digital teaching involves using digital technology and the internet to manage and transmit knowledge when organizing instructional activities; it completely transforms teaching interaction, allowing for the personalization of students' learning journeys. Implementing digital teaching requires learning management systems, digitized teaching resources, and support from digital teaching devices such as VR and AR. Lecturers must create an AOM (Academic Organization Memory) for their specialization to store textbooks, professional data, scientific research, research methodologies, and teaching materials.

- *Professional community*: Lecturers need to coordinate with colleagues, creating fine collaborative relationships in scientific research, and regularly organizing thematic operations connecting different units to form an expanded professional community, enabling students to participate in deep professional exchanges.

- *Academic culture*: Within scientific community operations and classroom teaching, it is necessary to build an academic culture, creating an orderly lifestyle that respects academic titles and degrees, adheres to scientific ethical standards, and maintains standard norms in relationships, scientific debates, and daily life communication.

5.1.4. Significance of building academic elements: Good academic elements overcome the sluggish innovation of traditional teaching perspectives held by the majority of lecturers. Weak academic elements imply that the pedagogical staff's expertise does not truly meet training needs according to global learning and employment demands. Fostering learning, research, solution seeking, discoveries, and new theories creates new knowledge. Regarding human resource training: Lecturers transmit the essence of human knowledge and train independent critical thinking for students; they boost social progress, as academia serves as the cradle of knowledge providing objective evaluations, offering professional consultation for community practical issues.

5.2. Solution 2: Constructing physical elements in the higher education teaching environment

5.2.1. Objectives, to create a greener, brighter new higher education teaching environment for pedagogical students, fully equipped with modern teaching facilities and learning equipment for functional classrooms tailored to each training major, aligned with educational innovation requirements and satisfying students' dynamic and creative learning needs in the 4.0 era.

5.2.2. Content:

- *Spaces and teaching facilities*: Design physical elements in the teaching environment including multi-functional classrooms with diverse smart teaching aids (interactive boards, glare-free, non-thermal lighting systems with appropriate brightness to reduce eye strain). Design green spaces inside classrooms, with modern, independent, and easily movable desks and chairs to support active teaching and professional competency development for pedagogical students.

- *Psychologically safe spaces*: Design friendly colors and cool spaces suitable for hosting events and community activities. There should be small private corners appropriate for independent self-study, relaxation, and entertainment.

5.2.3. Implementation:

- Renovate current classrooms into open-space models that are easily reconfigured, equipped with adequate, modern teaching materials and equipment to generate interest in learning and teaching. Request the university to provide desks and chairs with appropriate dimensions, aesthetics, and flexibility (easy to move and arrange for diverse group learning activities); proper and quality seating ensures comfortable learning, smooth movement, and prevents back pain during prolonged sitting.

- Equip appropriate sound and lighting systems to help alleviate physical and mental fatigue for students. The university must build a diverse

range of learning resources and recognize the importance of departments serving professional operations.

- Arrange functional rooms, specialized digital library systems, instructional support software, learning management systems, and modern educational technology equipment. Create favorable conditions for teaching to deploy modern instructional methods, strengthening visual and experiential traits. Diversify forms and types of activities during in-class and out-of-class hours to stimulate students' interest and participation. Provide open curricula, content, learning resources, and project exercises, utilizing multiple reference sources and organizing various learning activities to expand knowledge for students' learning journeys.

5.2.4. Significance of building physical elements: When physical elements in the university teaching environment are flexible and modern, they eliminate barriers to organizing teaching activities via active methods, such as educational games, experiential teaching, and thematic teaching.

5.3. Solution 3: Constructing psychological elements in the teaching environment

5.3.1. Objectives, to refine psychological elements for both lecturers and students through a cool university teaching space, jointly creating a cheerful, warm atmosphere in pedagogical students' learning interactions.

5.3.2. Content:

- Lecturers need to pay attention to students' needs when guiding learning tasks based on respect and tolerance, reducing stress and pressure regarding hierarchical concepts in academic environments, and interacting smoothly in social relationships.

- The university needs to perfect democratic higher education management mechanisms to support lecturers and students in innovating interactive teaching activities, stimulating critical thinking within collegial relationships, and creating new relationships filled with social affection and sustainable academic bonds.

5.3.3. Implementation:

- Lecturers need to care for and encourage colleagues to spark learning interest in students, giving them more motivation to overcome difficulties and shifting innovative attitudes in a positive direction. Help students feel satisfied with achieved learning outcomes, training their volition to pursue career goals with better achievements.
- Building a friendly learning environment in universities is deemed necessary to cool down the haste and effort required to catch up with the rapid changes in scientific and living values. A university learning environment is where students find like-minded friends, adding close student-student and lecturer-student relationships, among others.
- Through this, students gain opportunities to share learning, daily life, and teamwork, creating a mutually supportive learning community on their future paths. A friendly and safe school environment helps students feel attached and actively participate in learning activities, thereby triggering self-confidence, a passion for learning, maintaining community emotional intelligence indices, human love, professional love, and nurturing good thoughts for their future careers.

5.3.4. Significance: Psychological elements play a crucial role in pedagogical students' cognitive processes within the higher education teaching environment. A cheerful psychology, enthusiastic guidance, and the teacher's love and trust in students generate a positive socio-emotional environment, stimulating learning motivation to develop student capacities. Lecturers' attitudes when communicating with students can affect emotional management, social personality formation, professional personality, and students' striving motives. Therefore, lecturers also need to train openness, patience, mental flexibility, trust in interactive subjects, open-mindedness in critique, and self-fostering emotional management capacities according to standard norms when directly controlling the teaching process.

5.4. Solution 4: Constructing cultural elements in the higher education teaching environment

Organize educational activities aimed at building a culture of civilized behavior and communication within the teaching environment.

5.4.1. Objectives: Conducting teaching to develop pedagogical students' competencies in universities means mobilizing the entire school's educational force to innovate instructional methods, comprehensively self-assessing each individual, and planning professional development. Concurrently, the pedagogical staff establishes learning and research cultures aligned with modern trends, sharing experiences, collaborating, and supporting one another to progress through healthy competition.

5.4.2. Content: Core elements creating the university cultural environment structure include: Subjects within the university pedagogical cultural environment (lecturers, students, staff, workers); the system of pedagogical cultural behavioral relationships; and forms of cultural activities.

5.4.3. Implementation:

- Lecturers, with their leading role in the teaching process, serve as vital factors in building the cultural elements of the teaching environment. It is necessary to strengthen education to raise awareness of the importance of culture, not only in school behavior and communication but also in academic and scientific research activities.

- Regarding the system of pedagogical cultural behavioral relationships and cultural institutions: The teaching environment must have certain regulations to help students learn to comply with organizational rules and collective standards, making the learning atmosphere enthusiastic and joyful. When students learn in an orderly environment, they demonstrate better discipline, and a joyful, comfortable mood from lecturers helps control classrooms effectively, generating more motivation to guide and organize high-quality teaching.

- Forms of cultural activities: Build a school cultural environment of solidarity, democracy, discipline, and efficient working standards, helping to harmoniously resolve relationships among pedagogical forces and with students.

5.4.4. Significance: Pedagogical culture is the soul of the university during educational development, reflecting the level of academic cultivation, learning spirit, identity, and the university's awareness of pursuing values. Lecturers need to correctly perceive the meaning of school culture, maximizing their role in building a pedagogical cultural environment. Lecturers' behavioral culture serves as a blueprint for pedagogical students to admire and follow. Communication styles in teaching and inspiring guidance traits from lecturers exert a major influence on shaping professional qualities and specialized competencies for pedagogical students.

6. Conclusion

This study underscores the importance of developing competency-based learning environments in higher education to meet the demands of digital transformation and the evolving workforce. The findings indicate that effective learning environments are multidimensional, integrating physical,

psychological, socio-cultural, academic, and digital components that collectively support student competency development.

The study highlights the critical role of institutional strategies, including learner-centered pedagogy, pedagogical innovation, digital learning integration, experiential learning, and project-based learning, in enhancing students' professional competencies, self-directed learning, and engagement. Lecturers play a central role in facilitating active learning and creating interactive learning spaces that foster autonomy, collaboration, and creativity.

The findings provide practical implications for higher education institutions seeking to improve educational quality, advance digital transformation, and strengthen institutional autonomy. By offering empirical evidence from a teacher education context in Vietnam, this study contributes to the growing literature on competency-based education and provides a framework for developing more adaptive and future-oriented learning environments in higher education.

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