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A STUDY ON THE COMPETENCY-BASED EDUCATION OF LECTURERS IN UNIVERSITIES OF TECHNOLOGY AND EDUCATION

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ABSTRACT

Education and training are critical components for the development of high-quality human resources. Teachers are the most important factor in determining the overall quality of education and training system in any country. As a result, in order to improve the quality of human resource training, it is necessary to first improve the quality of teacher education. It is necessary to have a contingent of teachers who are capable of teaching according to the approach to practicing competence; that is, they must know how to accurately determine the standards of practice competence of the students and then design programs, organize teaching, and evaluate teaching results according to those competency standards in order to train qualified human resources to practice. This study resulted in the development of a scale to evaluate teaching in the direction of approaching the performance capacity of technical pedagogy universities. The results also revealed that both lecturers and students had access to competency-based education during the entire academic duration. The old methods, on the other hand, were still used extensively and frequently up to 90-100 percent of the time in the teaching process. Fifty to one hundred percent of modern methods and materials, however, have not yet been fully explored or utilized. The study recommends arranging adequate funds to universities for conducting additional research into other aspects of teaching and learning to ensure performance improvement.

Contribution/Originality: This article contributes to the enhancement of the value of Competency-Based Education, which is widely implemented in universities of technology and education within the context of Vietnam, despite the fact that lectures continue to place a high value on traditional teaching methods and materials.

1. INTRODUCTION

An affordable postsecondary education of high quality and relevance in the twenty-first century is essential for both national competitiveness and individual success in today's world. This does not surprise public policymakers, college students and their families, or business leaders who express a sense of urgency when it comes to higher education policies and practices. This is reflected in the widespread concern about a misalignment between college graduates' skills and the demands of the labor market. For the most part, successful models have demonstrated that competency-based education (CBE) can be integrated into existing campus structures if certain guidelines are followed such as: a robust and valid set of competencies is represented in the curriculum; students are able to learn

at their own pace and are encouraged to do so; high-quality learning resources are readily available at all times and can be reused; and assessments are secure and dependable (Johnstone & Soares, 2014). Competency-based education (CBE) is a new discourse in professional education that is gaining traction. According to Lytras et al. (2010) competency-based learning, also known as competency-based education, is a framework for the teaching and assessment of learning that emphasizes the development of skills. A type of education based on predetermined "competencies" that emphasizes outcomes and real-world performance is also described as competency-based education. As an alternative to traditional methods of assessment in education, competency-based learning is sometimes advocated as a viable option (TeachThought, 2021). The global trend in human resource training is moving away from qualification training toward competency training (Nguyen & Le, 2010), which means developing workers who possess both knowledge and skills, professional abilities, and attitudes toward practice while learning. These workers must also possess creative capacity, the ability to self-change and adapt to the advancement of science and technology, as well as new careers. As Klein-Collins (2012) asserted, when we speak of competencies, we are referring to far more than just learning outcomes. Skills must be demonstrated, quantifiable, and applicable in a variety of contexts to be considered. In order to distinguish this educational approach from traditional higher education models, scholars have proposed a number of definitions of CBE that are discussed below. CBE, according to Erisman and Steele (2015), is a type of higher education in which credit is awarded based on the amount of learning achieved by students rather than the number of credits earned or clock hours spent in class. Most recently, the Council of Regional Accrediting Commissions referred to CBE programs as an outcome-based approach to earning a college degree or other credential, which is consistent with previous terminology (Council of Regional Accrediting Commissions, 2015). Soares (2012) defined CBE as an outcome-based approach to education in which students advance only after demonstrating mastery of competency and in which the emphasis is placed on both what graduates know and what they are able to do. Kelchen (2015) emphasized the critical role of mastery by describing CBE programs as those that explicitly define the competencies students are expected to master, and where students earn credit once they demonstrate that they have met the threshold associated with mastering those competencies. A similar emphasis was placed on mastery of competencies rather than the accumulation of credit hours in Porter's (2016) definition, which was published in 2014.

The following are the six essential tenets of CBE programs, according to Malan (2000): (1) development of explicit learning outcomes with respect to the required skills and proficiencies; (2) flexibility in time for skill mastery; (3) a variety of instructional methods to facilitate learning; (4) criterion-referenced testing to validate the intended outcomes; (5) certification based on the demonstrated learning outcomes; and (6) adaptable content to "ensure the best possible learner guidance." Levine and Patrick (2019) update CBE's definition as follows: (1) Students are given the authority to make important decisions every day about their learning experiences, including how they will create and apply knowledge, as well as how they will demonstrate their learning. (2) For students, assessment is a meaningful, positive, and empowering learning experience that results in evidence that is timely, relevant, and useful in the classroom. (3) Students receive timely, differentiated support that is tailored to meet their specific learning requirements. (4) Students progress based on evidence of mastery rather than on the number of hours they spend in class. (5) Students actively participate in their learning by utilizing a variety of pathways and varying pacing. (6) The culture, structure, and pedagogy of schools and educational systems include strategies to ensure equitable outcomes for all students. (7) Learning outcomes (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable when they are rigorous and common expectations.

Modern CBE programs make use of personalized or adaptive learning strategies, which are a distinguishing feature (Klein-Collins, 2013). Because of advancements in adaptive learning technologies, personalized learning is now possible to a much greater extent than it was previously possible to implement. Before moving on to other content, the learning system recognizes this issue and directs students to modules that will assist them in improving their skills before moving on to other content (Klein-Collins, 2013). Aside from the personalization of

learning that has been made possible by technological advancements, valid and reliable assessments are critical components of cognitive-behavioral education models (Nodine & Johnstone, 2015). Assessing students' progress is integrated into every aspect of the learning process in order to guide them toward mastery (Soares, 2012). However, valid assessments in a CBE framework go beyond simply measuring students' knowledge; valid assessments in CBE must also determine whether students can apply their knowledge in a variety of situations.

According to the specific competency, CBE assessments are constructed at a variety of different levels. Multiple-choice and true/false assessments are the most basic types of assessments. Inherently more complex in nature, higher-order competencies are assessed through demonstrations, simulations, portfolios, and project assignments, among other methods. It is possible that a conventional true/false question test will fall short in demonstrating proficiency in more advanced competencies. Because "they allow for situations that students will encounter in life and in the workplace," case studies, simulations, and portfolios are more common among CBE programs (Klein-Collins, 2013). Using an online CBE course as an example, Krause et al. (2015) developed a rubric to assess course quality. Measures were taken in seven areas: competence and learning activities, assessment and evaluation, learning resources, technology and navigation, learner support, accessibility, and compliance with policies and procedures. Several modifications were required after the rubric was implemented in an online CBE program, with the majority of them occurring in the area of assessments.

The reorganization of an entire educational program can be extremely difficult for the administration of any educational institution to manage. The provision of CBE degrees, as opposed to traditional higher educational degrees, has a number of strategic advantages. These benefits include cost savings as a result of the reduction in the need for full-time faculty or instructional staff. Apart from that, because of work, family, and personal obligations, the flexible CBE model has the potential to attract students who would otherwise be unable to attend the institution due to those obligations (Kelchen, 2015). The administration of CBE faces a number of challenges, including the implementation and maintenance of the technology required for this learning environment. Several institutions, according to Gibson (2013b) have been compelled to implement custom learning platforms tailored to their specific programs, which can be expensive in terms of both technology purchases and the hiring of additional personnel.

Furthermore, because many CBE programs are delivered entirely online, faculty development is essential for successful implementation. The revamping of an entire educational program can be quite challenging for the administration of any institution. However, CBE offers several strategical advantages over offering traditional higher educational degrees. These advantages include cost savings because of the lowered need for full-time faculty or instructors. In addition, the flexible CBE model has the potential to attract students that would otherwise be inaccessible to that institution because of work, family, or personal restrictions (Kelchen, 2015).

A challenge of CBE for administration is the implementation and maintenance of technology needed for this learning environment. Gibson (2013b) stated that many institutions are forced to implement custom learning platforms based on their particular programs, which may be costly as far as purchasing technology and the hiring of personnel. In addition, faculty development is key to implementing a CBE program because many programs are entirely online. Many working adults have started college but have not completed their degree, resulting in lower earning potential and possibly a lower quality of life for these former students (Mendenhall, 2012). Students have stated that CBE is rigorous and that it provides a model of education that encourages students to learn more effectively (Gibson, 2013a). Among nontraditional students, CBE has gained widespread acceptance as a practical model of education that will assist them in achieving their goal of earning a college degree, which may have previously been out of reach for the student (Kelchen, 2015). Furthermore, Porter (2016) asserts that additional research on this educational model is required in order to determine whether or not students are achieving their learning competencies. Kelchen (2015) cautioned students against assuming that CBE is a low-cost alternative to traditional education because many students progress at a slower rate, resulting in higher long-term educational costs. A few studies conducted in Vietnam reveal that CBE was implemented and used in the teaching process more

than ten years ago. Several vocational training institutions have demonstrated that the quality of their teaching staff meets or exceeds the requirements for ensuring the high quality of vocational training. Most vocational teachers have access to new teaching methods and cutting-edge teaching technology as a result of their active participation in regular training activities, advanced training, and self-improvement. Every year, thousands of teachers are trained in new teaching methods, with approximately 60% of those teachers being trained in new teaching methods (Vu, 2007). However, the teaching process continues to use outdated content and methods, resulting in shortcomings in both objectives and content, as well as in the organizational process and evaluation method (Vu, 2010). According to search data, the number of CBE-related studies in Vietnam has decreased significantly since 2010. As a result, this study was conducted to investigate and reevaluate the current status of CBE in technical education institutions. A more comprehensive view of the CBE situation is presented at the same time through the use of teaching objectives, items used in the teaching process, and other means in order to provide more detailed and concrete information.

2. METHODS

We conducted a survey from 4 universities of technology and education (Ho Chi Minh City University of Technology and Education; Vinh University of Technology and Education; Nam Dinh University of Technology and Education; and Hung Yen University of Technology and Education) to assess the current state of teaching in these institutions. Informed consent was obtained from all participants after they were informed of the purpose of the study and were given the opportunity to ask questions. Five hundred thirteen (513) participants agreed and participated in our survey, responded to the survey instrument and provided their contact information, resulting in a 100% response rate, which is higher than the 30% response rate required by most researchers for analysis (Dillman, 2000). These 513 respondents constituted the sample of this study. There were 97 (18.9%) school administrators, 257 (50.1%) lecturers, and 159 (31.0%) students among these 513 participants. After the survey, all data were screened, coded, and descriptive statistics was calculated using SPSS 20 software.

To measure the current state of the lecturer organization in the classroom, a questionnaire was developed that included five factors: Teaching goals (7 items); Teaching methods and techniques of lectures (20 items); Forms of teaching (11 items); Teaching process (19 items); Using materials and teaching aids (21 items). The questionnaire used the 4-point Likert scale as follows: 1 - Not used; 2 - Rarely used; 3 - Sometimes used; 4 - Always used.

3. RESULTS

Table 1. Lecturer's view of teaching goals.

Teaching goals	N=513	%
Forming professional knowledge	151	29.4
Forming and developing professional skills	122	23.8
Educating students on moral and professional qualities	97	18.9
Training thinking methods, teaching learning methods for learners	46	9.0
Forming creative capacity	41	8.0
Forming the capacity of jobs/tasks of the profession	37	7.2
Other goals	19	3.7

Note: n: number of selection; %: percentage.

Table 1 shows that 29.4% of lecturers want to form professional knowledge, 23.8% of lecturers want to form and develop professional skills or educate students on moral and professional qualities (18.9%). However, only 9% of lecturers focus on Training thinking methods, teaching learning methods for learners; 8.0% of them focus on forming creative capacity, and/or forming the capacity of jobs/tasks of the profession (7.2%).

Table 2. View of school administrator, lecturer, and student about teaching methods and techniques.

Item		Level (%)			
	Participant	Not used	Rarely used	Sometimes used	Always used
Presentation	School administrator	0.9	6.4	10.4	82.3
	Lecturer	0.0	2.3	11.2	86.5
	Student	0.0	2.7	11.9	85.4
Q&A	School administrator	1.3	21.7	25.1	51.9
	Lecturer	0.7	20.1	21.3	57.9
	Student	0.6	21.1	18.7	59.6
Visual presentation	School administrator	17.5	23.3	21.7	37.5
	Lecturer	18.2	21.8	23.2	36.8
	Student	17.9	23.5	20.5	38.1
Team-work	School administrator	11.3	28.2	20.6	39.9
	Lecturer	12.6	27.1	18.9	41.4
	Student	13.5	26.8	16.6	43.1
Heuristic method	School administrator	11.9	22.3	45.3	20.5
	Lecturer	12.5	21.3	47.5	18.7
	Student	11.5	22.3	48.6	17.6
Sample manipulation	School administrator	0.6	4.1	16.0	79.3
	Lecturer	0.3	4.1	14.5	81.1
	Student	0.4	4.3	13.1	82.2
Experiment	School administrator	60.7	13.9	15.2	10.2
	Lecturer	62.2	17.7	13.4	9.7
	Student	63.1	17.7	10.3	8.9
Using course syllabus/modules, documents	School administrator	13.6	27.2	29.1	30.1
	Lecturer	12.6	24.9	32.8	29.7
	Student	12.6	24.7	32.0	30.7
Observation	School administrator	9.7	25.6	48.2	16.5
	Lecturer	10.9	24.7	47.1	17.3
	Student	11.0	24.8	46.0	18.2
Assignment	School administrator	10.1	0.4	21.3	68.2
	Lecturer	9.3	2.2	21.3	67.2
	Student	9.5	2.2	21.1	67.2
Games	School administrator	47.4	28.3	17.6	6.7
	Lecturer	50.2	28.3	14.4	7.1
	Student	51.2	25.9	15.5	7.4
Examination and evaluation	School administrator	4.6	4.1	13.2	78.1
	Lecturer	5.2	5.6	12.7	76.5
	Student	5.6	6.1	13.5	74.8
Illustration	School administrator	15.6	25.3	30.4	28.7
	Lecturer	1.4	34.8	31.3	32.5
	Student	1.7	33.9	31.0	33.4
Brainstorming	School administrator	41.7	10.1	30.9	17.3
	Lecturer	40.6	7.4	31.7	20.3
	Student	41.5	7.3	30.4	20.8
Roleplay	School administrator	30.0	37.7	26.9	5.4
	Lecturer	33.2	32.7	28.2	5.9
	Student	33.1	36.0	24.7	6.2
Case study	School administrator	35.9	44.0	6.0	14.1
	Lecturer	36.7	41.0	10.2	12.1
	Student	35.7	41.3	9.5	13.5
Project	School administrator	70.2	15.0	13.2	1.6
	Lecturer	71.7	13.0	14.4	0.9
	Student	76.1	13.8	9.4	0.7
Discover	School administrator	21.6	56.7	20.1	1.6
	Lecturer	22.9	57.1	18.6	1.4
	Student	23.4	56.6	18.3	1.7
Scientific research	School administrator	29.3	36.2	21.5	13.0
	Lecturer	28.8	38.7	21.3	11.2
	Student	28.8	40.1	15.8	15.3
Other methods and techniques	School administrator	90.9	3.2	2.1	3.8
	Lecturer	93.4	2.5	1.9	2.2
	Student	89.7	3.5	6.3	0.5

Table 2 shows that school administrators, lecturers, and students "always used" Presentation techniques at the highest rate (82.3%, 86.5%, 85.4%); followed by Sample manipulation (79.3%, 81.1%, 82.2%); Examination and evaluation (78.1%, 76.5%, 74.8); Assignment (68.2%, 67.2%, 67.2%); and Q&A (51.9%, 57.9%, 59.6%). Among the items used, "Sometimes" included Observation (48.2%, 47.1%, 46.0%) and Heuristic method (45.3%, 47.5%, 48.6%) techniques; and "rarely used" included Discover technique (56.7%, 57.1%, 56.6%). On the other hand, school administrators, lecturers, and students opted "Not used" for Other methods and techniques (90.9%, 93.7%, 89.7%); followed by Project (70.2%, 74.7%, 76.1%); and Experiment (60.7%, 62.2%, 63.1%) as teaching methods and techniques.

Table 3. Lecturer's view of forms of teaching.

Item	Level (%)			
	Not used	Rarely used	Sometimes used	Always used
Explain	0.0	0.0	0.0	100.0
Discuss, debate	0.0	0.0	68.5	31.5
Seminar	10.7	5.2	53.8	30.3
Self-study	2.0	17.4	38.6	42.0
Private help	0.0	2.7	50.3	47.0
Practice	2.0	1.0	47.2	49.8
Study, production	18.0	0.0	68.4	13.6
Scientific research (assignment, thesis)	40.3	12.8	16.7	30.2
Examination, test, thesis defense, project	0.0	2.2	47.0	50.8
Extracurricular activities (visits, tours, academic conferences), science clubs	61.7	20.3	12.1	5.9
Organize independent work for students	0.0	11.6	51.4	47.0

Table 4. Lecturer's view of the teaching process.

Item	Level (%)			
	Not used	Rarely used	Sometimes used	Always used
Research job analysis profile, competency profile	100.0	0.0	0.0	0.0
Research the curriculum	0.0	0.0	2.4	97.6
Research teaching objects	18.2	0.0	24.1	41.7
Write lesson plan	0.0	0.0	0.0	100.0
Prepare documents and supplies	0.0	0.0	13.6	86.4
Introduction	0.0	11.3	75.5	13.2
Learning goals	15.6	50.6	29.1	4.7
Stimulate learning motivation	17.2	22.5	27.9	32.4
Outline the overall structure of the learning content	6.6	32.1	46.0	15.3
Discuss with learners about learning methods	0.0	37.2	41.0	21.8
Study guide for theoretical knowledge related to skills	0.0	0.0	0.0	100.0
Instructions on the skill training process	0.0	0.0	0.0	100.0
Organize training for learners	12.0	25.2	49.1	13.7
Consolidate knowledge and skills	0.0	4.0	9.4	86.6
Evaluation criteria	78.3	0.0	21.7	0.0
Guide to using the tool to self-assess capacity	61.1	8.1	23.0	7.8
Evaluation of performance	3.1	25.0	24.8	47.1
Self-study guide	7.6	7.7	5.0	79.7
New article study guide	2.3	9.2	31.6	56.9

The results in Table 3 show that the lecturers "Always used" Explain (100%) as a main form of teaching, and half of them "always used" Examination, test, thesis defense, project (50.8%) as forms when teaching. In addition,

other forms like Discuss, debate (68.5%); Study, production (68.4%); Seminar (53.8%); Organize independent work for students (51.4%); and Private help (50.3%) were "sometimes used" by lectures. However, they also opted for "not used" for Extracurricular activities (visits, tours, academic conferences), science clubs (61.7%), and Scientific research (assignment, thesis) (40.3%).

In Table 4, results show that in the teaching process, lecturers "always used" items like Write lesson plans (100%), Study guide for theoretical knowledge related to skills (100%), Instructions on the skill training process (100%), Research the curriculum (97.6%), Consolidate knowledge and skills (86.6%), Prepare documents and supplies (86.4%), Self-study guide (79.7%), and New article study guide (56.9%). They "sometimes used" items like Introduction (75.5%) and "rarely used" Learning goals (50.6%). However, they marked "not used" for items like Research job analysis profile, competency profile (100%), Evaluation criteria (78.3%), and Guide to using the tool to self-assess capacity (61.1%).

Table 5. Students' view of documentation and teaching facilities.

Item	Level (%)			
	Not used	Rarely used	Sometimes used	Always used
Chalkboard	0.0	0.0	0.0	100
Drawings, diagrams, pictures	24.4	20.3	26.6	28.7
Computers, projectors	39.1	27.5	19.7	13.7
Overhead projector	61.3	32.1	5.7	0.9
Object scanner	71.3	19.6	8.7	0.4
Paradigm	20.0	24.7	24.6	30.7
Real thing/sample	87.1	4.1	3.5	5.3
Digital camera	59.2	28.5	8.3	0.4
TV, video	47.9	13.6	10.7	27.8
Electronic board	95.3	4.7	0.0	0.0
Skill card	89.3	2.6	5.4	2.7
Sample products, waste products	17.2	29.3	32.0	21.5
CD, DVD	55.4	27.4	6.8	10.4
Experimental equipment	33.9	29.4	25.3	11.4
Technical documents	14.7	28.8	25.6	30.9
Process instruction sheet	12.9	24.6	21.4	41.1
Process and product evaluation sheet	55.7	24.9	11.5	7.9
Programs and course syllabus/modules	11.7	13.7	24.0	50.6
Vocational skill training equipment	20.3	15.2	22.4	42.1
Testing equipment	27.1	26.1	31.7	15.1
Other devices	13.6	15.3	53.5	17.6

Table 5 records students' views of teaching facilities like Chalkboard (100%), and Programs and course syllabus/modules (50.6%) as "always used"; and "sometimes used" included other devices (53.5%). The results also revealed that a lot of things were not used by lecturers such as electronic board (95.3%), Skill card (89.3%), Real thing/sample (87.1%), Object scanner (71.3%), Overhead projector (61.3%), Digital camera (59.2%), Process and product evaluation test (55.7%), and CD, DVD (55.4%).

4. DISCUSSION

Theoretical (including vocational theory and pedagogical theory) and practical (including professional practice and pedagogical practice) are taught and learned separately at universities of technology and education, both in terms of time and place. Most of the time, theory lessons are taught first, and then practical lessons. As a result, it is understandable that lecturers set objectives that are geared toward knowledge acquisition or skill development. When teaching using the CBE approach, the goal of each lesson is not only the development of individual knowledge and skills but also the development of job/career CBEs that are associated with specific professional

situations as well. However, in order to achieve the goal of forming CBEs, the curriculum must be a comprehensive program of study (integrating knowledge, skills, and attitudes based on professional work.

The above results demonstrate that lecturers only concentrated on methods and techniques to present knowledge, methods, and techniques to assist students in practicing, improving their ability to solve problems associated with professional situations. However, developing self-study and self-research capacity for students were rarely used by lecturers, according to the findings. Lectures' ability and habits, as well as objective conditions for implementing methods, such as facility and equipment availability and teaching environment, determined the methods and techniques that were used in a classroom.

The ability of teaching staff to innovate teaching methods must be improved in order to shift the status quo, and mechanisms, policies, and an environment must be created in order for them to change their habits. It is necessary to pay close attention to the conditions of the facilities and equipment used in the implementation of teaching methods. This is consistent with Vu (2007) who discovered through statistical analysis that, at the Association of Vocational Teachers at all levels in 2003, 2004, and 2005, 92% of the participating lecturers used active teaching methods and modern teaching aids in their lectures.

The findings of the current study also revealed that the form of teaching organization in universities of technology and education continues to be monotonous. To provide students with the knowledge, lecturers primarily rely on classroom instruction and workshop practice to accomplish this. The use of teaching forms such as production practice, scientific research, and extracurricular visits to promote students' independence and creativity are important components of CBE skill formation. However, lecturers rarely link classroom instruction with professional practice, which is a significant component of CBE.

The data presented in this study also demonstrate the extent to which materials and tools were used to assist students in developing career skills, which is an important component of CBE that is underutilized in the present times. Lectures primarily employ traditional methods; modern technological methods are only rarely employed. Furthermore, according to the findings of a study Vu (2007) the CBE of lecturers remains concentrated at the average-weak level, with a low ratio of lecturers at a fairly advanced level. In addition, educators who feel insufficient in their professional abilities, who are not fully aware of their own abilities, or who lack confidence, can have an impact on students' performance (Trinh & Mai, 2019).

5. CONCLUSION

CBE is widely regarded as a standard and effective teaching method. CBE is widely used in teaching methods in every country and at every level of education, including university and college. CBE allows for the optimization of information as well as the transmission of information to learners, ensuring that learners receive the best learning conditions and that their learning outcomes are optimized. This study demonstrates that, despite the fact that CBE is well-known and widely used in universities of technology and education, lectures continue to place a high value on traditional teaching methods and materials. New approaches to teaching and learning have not been implemented, nor have new products and technologies been implemented to support and enhance teaching. This study would help understand lectures' perspectives on the use of teaching methods, as well as understanding their reasons for selecting the methods they do. It may also help investigate the reasons why lectures have not yet adopted new technologies and methods to impart knowledge to their students.

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