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Research Article

Evaluation of Learning in Competency-Based Curriculum (CBC) on Architecture Education in Indonesia

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Abstract

The evaluation of architectural learning in Indonesia as part of the Competency-Based Curriculum (CBC) is an activity that is integrated and inseparable in a learning process. The purpose of this article is to find out the principles and competencies of an architectural learning process and then try to study and analyze the format of a competency-based learning evaluation starting from the concepts, aspects and evaluation tools used. By using qualitative methods with a literature document triangulation approach, observation and in-depth interviews with key informants, it turns out that evaluation is not only product-oriented but also process-oriented, as an effort to monitor student development, both ability development and development. Mentally and psychologically. Both sides of evaluation are equally important so that the achievement of competency standards is carried out as a whole, which measures knowledge (cognitive) and effective attitudes and psychomotor skills. Furthermore, evaluation in competency-based learning is closely related to teaching staff's ability to evaluate both formative and summative functions. Formative evaluation is an evaluation designed and carried out to assess itself in carrying out the learning process as feedback to improve its performance. In comparison, summative evaluation is designed and carried out to gather information about students' success in achieving the expected competencies according to the learning objectives.

Keywords

Evaluation, Learning, Competency-Based Curriculum, Architecture Education.

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Introduction

Issues of a paradigm shift in architectural education development have prompted a review of the curriculum and the learning process. Changing the curriculum to a content-based curriculum has consequences for various learning aspects in a course (Maulida, 2018). The consequences are not only in the implementation of a learning process but also in determining success. It seems that architectural educational institutions must be sure that the curriculum used to achieve goals is truly reliable and effective in achieving goals and competencies relevant to current issues. The curriculum paradigm shift has implications for the assessment paradigm using standard references in all lectures, including architectural studio learning. Therefore, the teaching staff (lecturers) must have adequate understanding and abilities both conceptually and practically in the learning evaluation field to determine whether the mastery of competence as a learning objective has been mastered or not by students.

A phenomenon that often occurs is that there are still many teaching staff who think that changing the curriculum to a competency-based curriculum is only a change in terms and names, while the course material and learning evaluation are still the same as in the past or in other words, only changes in the skin of the book. It is very ironic, what does it mean for any curriculum changes that cost a lot of money without being balanced by the understanding of every actor of academic activities ranging from competencies, methods to learning evaluation.

Two important things must understand about evaluation in competency-based architectural studio learning. First, evaluation is an integral activity in the learning process. This means that evaluation activities are placed as an inseparable activity in the learning process, because evaluation in the context of CBC is not only result-oriented (product-oriented) but also process-oriented, as an effort to monitor student development both ability development and mental development and psychiatric.

Second, in CBC, evaluation is the responsibility of the teaching team (lecturers) and students' responsibility. This means that the lecturer must be aware of the importance of evaluating their own success in the learning process (self-evaluation). Thus, students no longer think that evaluation is a burden that sometimes disturbs their mental attitude. Through self-evaluation, students will assume that evaluation is something that must be carried out naturally.

Research Methods

The research was conducted using qualitative methods, namely document triangulation, observation and in-depth interviews with the snow ball method to the lecturers, students and experts. A qualitative approach is research that does not use statistical data and procedures or other quantitative methods (Sarfo & Ofori, 2017). Qualitative research is an option on the basis that this research will explore as much and as deep as possible the data in the field, both in the form of data from questionnaires, interviews and other data (Mulyawan Safwandy & Ai, 2016).

This research is a qualitative descriptive study based on the phenomena that occur in the field. This phenomenon-based approach emphasizes the subjectivity of human life experiences, which means that researchers directly explore conscious experiences and describe existing phenomena without being influenced by previous theories and assumptions (Streubert & Carpenter, 2011).

In this study, a purposive sampling technique was used, where everyone who is a resource person has experience about the phenomenon being studied has the right to become a participant (Suri, 2011). The interview process was recorded (verbatim) to complete or validate the required data (Palinkas et al., 2015). The results of this study will provide answers to how the learning system and architectural education in Indonesia.

Literature Review

Learning in Competency-Based Curriculum

Understanding learning in a Competency-Based Curriculum (CBC), must know what a curriculum is and a competency-based curriculum. According to Taba (1962) that the curriculum is a learning plan or program, it is stated as follows: "A curriculum is a learning plan: therefore, what is known about the learning process and the development of the individual has a bearing on the shaping

of a curriculum."
As a curriculum plan, it contains program activities and contains objectives that must be pursued along with evaluation tools to determine the success of achieving goals; besides, of course, contains the tools or media that are expected to support the achievement of goals. Meanwhile, according to the 2004 Curriculum Documents (Nasional, 2003), it is formulated that CBC is a plan and knowledge of competencies and learning outcomes that must be achieved by students, assessments, teaching and learning activities and empowerment of educational resources.
From some of the opinions above, evaluation and assessment tools are an important part of a competency-based curriculum to determine the goals' success. Furthermore, to see how evaluation is in competency-based learning, it is necessary to understand what learning is in CBC and how learning principles are.

Four Pillars of Learning in Competency-Based Curriculum

Competency-based curriculum (CBC) is oriented towards learning experiences by the principles of lifelong learning which refers to the four pillars of universal education as formulated by (Sanjaya, 2006; Suprijanto, 2007), namely: (1) learning to know or learning to learn; (2) learning to do; (3) learning to be; and (4) learning to live together.Learning to know or learning to learn, implies that learning is basically not only product-oriented or learning outcomes, but also has to be oriented to the learning process. With the learning process, students are aware of what to learn and have the awareness and ability to learn what to learn. With this ability, the learning process will not stop being limited to campus alone but will allow students to learn continuously. This is the essence of long-life learning. If students own this, the learning society as one of the demands of the information society will be formed. Therefore, in the context of learning to know, it also means "learning to think" or learning to think, because each individual will continue to learn whenever his ability and will to think grows in him (Aan & Cepi, 2005; Amir, 2006; Hasibuan, 2007).
Learning to do, implies that learning is not just listening and seeing to accumulate knowledge, but learning to act with the ultimate goal of mastering competencies that are indispensable in the era of global competition. Competence will be owned when children are allowed to do something. Thus, learning to do also means learning by experiences.Learning to be, implies that learning shapes a human being who "becomes himself", in other words, learning to actualize himself as an individual with a personality responsible as a human being. In this sense, there is also the meaning of self-awareness as a being who has the responsibility of being caliph and is aware of all its shortcomings and weaknesses.
Learning to live together is learning to work together. This is very necessary according to the demands of a global society where humans, both individually and as a group, cannot live alone or isolate themselves with their groups. This context includes forming a democratic society that understands and is aware of differences in views between individuals.Of the four pillars formulated by the UNESCO Education Commission, the CBC appears to shift the educational process's meaning from simply knowing information to seeking and utilizing information.

Learning Principles in Competency-Based Curriculum Context

According to Sanjaya (2006) in CBC, several principles must consider managing learning activities, namely student-centred Learning (student centre). Students occupy a central position as learning subjects in the learning process. Success is not measured by the extent to which the subject matter has been delivered but the extent to which students have been active in searching for and finding their own subject matter. Learning by doing, learning is not just listening, taking notes while sitting on a bench, but learning is a process of doing activities, learning is doing (learning by doing). Through activities, the knowledge obtained will be more meaningful because it is obtained through learning experiences, not others' notification.
Then, Developing Social Abilities, the learning process is not only developing intellectual abilities but social skills. The learning process must develop these two sides in a balanced manner. Develops Curiosity and Imagination. The learning process must train the sensitivity and curiosity of each individual to everything that happens. The learning process, which is initiated and driven by curiosity, will be more meaningful and powerful than the learning process that departs from compulsion. Developing Problem Solving Skills, learning is a thought process to solve problems. The knowledge gained can be used as a tool to develop problem-solving skills. Learning in CBC,

expects students to become critical human beings who can solve the problems they face, not as students who just accept information without understanding the benefits of the information they get.
Furthermore, Developing Student Creativity, Competency-Based Curriculum, hopes that master knowledge should be used as a tool to encourage student creativity. Therefore, mastery of teaching materials is not the ultimate goal of the learning process, but only as an intermediate goal. Developing the Ability to Use Science and Technology in the life of globalization technology has become an inseparable part of human life. Education is required to equip each individual to take advantage of technology results, so the introduction and use of technology must be part of CBC's learning process.Besides, Raising Awareness as Good Citizens, one of the weaknesses of education, is creating graduates who know societal rules and norms. In CBC, moral formation is the responsibility of learning, and each lecturer has the responsibility of developing human beings who are aware and full of responsibility as citizens. Lifelong Learning, human life always changes according to the development of science and technology. What is learned today is not necessarily relevant to future circumstances. Learning in CBC is not learning for a moment, which continues to be forgotten after completing an education level. Learning in CBC must provide opportunities so that students do not get bored with studying and studying.
Following the principles above, several factors must consider in the learning process to take place effectively; namely, the learning process must provide students with opportunities to participate in the learning process directly. Thus the lecturer must act as a manager of the learning process, not as a learning resource. Lecturers need to provide opportunities for students to reflect on what they have done. Thus, learning encourages students to take action and lives up to the various actions they have taken. This is very important for forming attitudes and examining the various weaknesses and shortcomings of all his actions.
Furthermore, the learning process must consider individual differences. This is based on the assumption that no human being is the same in interests, talents and abilities. Learning must provide opportunities so that students can develop according to their talents and abilities. Thus, slow students do not feel displaced by fast students; On the other hand, fast students do not feel hampered by slow learning. The learning process must be able to foster independence as well as cooperation. This means that lecturers are required to provide learning experiences that allow students to be independent and cooperate with others.The learning process must occur in a climate conducive to both a social climate and a psychological climate. Students will learn well when they are free from various pressures, both social and psychological pressures. Through this learning climate, it is hoped that students will develop optimally according to their abilities. The learning process, which the lecturer manages, must be able to develop creativity and curiosity. This is only possible when the teacher does not place the student's position as an object of learning but as a learning subject. For this reason, lecturers must encourage students to learn through the process of searching and observing actively.

Results and Discussion

The Importance of Learning Competencies in Architecture Education

Architectural Studio Competencies are what competencies or abilities each student must have after carrying out an architectural studio course's learning process. Actually, what is meant by competence? According to Marsh (1988), that competence is "..... A knowledge, skills and abilities or capabilities that a person achieves, which became part of his or her being to the extent he or she can satisfactorily particular cognitive, affective and psychomotor behaviours".
Marsh said that competence is knowledge, skill, and ability or capability possessed by someone who has become a part of him, thus colouring his cognitive, affective, and psychomotor behaviour.
According to Arief and Santoso (2020) and Dwijendra (2020) describes several aspects: (1) Knowledge, namely individual knowledge, to do something. (2) Understanding, namely the depth of cognitive and affective possessed by individuals. (3) Skills (skills), is something that is owned by an individual to carry out the assigned task. (4) Value is a standard of behaviour that has been believed and psychologically has become part of him to colour in all his actions. (5) Attitude, which is a feeling or reaction to a stimulus that comes from outside. (6) Interest, namely someone's tendency to take action or deed.
Furthermore, Dwijendra (2020), Nurjani and Dwijendra (2020), Sanjaya (2006) and Primadewi et al.

(2021) argues that 4 basic competencies must be achieved in CBC learning, namely: (1) Academic Competence, meaning that students must have the knowledge and skills in overcoming life challenges and problems independently. (2) Occupational Competence, meaning that students must be prepared and able to adapt to the world of work. (3) Cultural Competence, meaning that students must be able to put themselves in the best possible place in a pluralistic cultural system and community values. (4) Temporal Competence, meaning that students continue to exist in living their lives, and can take advantage of the three basic abilities that have been owned according to the times From this opinion, it is clear that competency must be supported by knowledge, attitude, and appreciation, meaning that it is impossible to emerge a certain competency without knowledge and attitude. Competence is at the level of knowledge, but a competency must reflect in behaviour patterns. A person is said to have certain competencies if he does not just know something about it. Still, the implications and implementation of that knowledge are in the patterns of behaviour or actions he takes. Thus, competence is basically a combination of knowledge, skills, values , and attitudes reflected in habits of thought and action.

Competence of Architectural Education in Indonesia

What about competence in architectural education in Indonesia? According to Widodo (2020), IAI or the Indonesian Architectural Association is recognized by the Indonesian government as an architect, and IAI is a member of the International Architects Union (UIA). At the regional level, IAI becomes the Asian Regional Council (ARCASIA). IAI is bound by agreements and decisions issued by the world and regional organizations.Tanyadji (2020) argues that the UIA (Union Internationale des Architects), an international association of architects, demands an architect's professional abilities with high-performance criteria of professionalism. These criteria consist of three mastery levels with thirty-seven items (see Table 1) and thirteen basic professional knowledge and skills of UIA/international standards (see Table 1 and Table 2). This was enforced considering that the work of an architect is more than just designing a building. Architects are often involved in all stages of building a project from planning to completion. It is also important to remember that there is a close relationship between architectural works and the environment and human comfort and safety.
An architect is not just a builder but rather a professional who lives development comprehensively. Architecture is the art and engineering of buildings, as emphasized by Vitruvius with his terms: venustas (beauty), firmitas (engineering) and utility (function). It is not strange if there are many learning competencies and skills demands that must be met in architecture.Some of the competencies expected from an integrated architectural studio lecture with a student-focused learning strategy are Design skills, structural systems, accessibility systems, utility systems, building security systems, building envelope systems, building codes, materials building, program preparation, site conditions, graphic skills, design methods, apprenticeship (practical fieldwork) and others (Arief & Santoso, 2020; Katoppo & Tony, 2020; Ketut, Dwijendra, & Dwijendra, 2020a; Klochko et al., 2020; Nurjani & Dwijendra, 2020; Palinkas et al., 2015).

Apart from the above competencies, the architectural profession in the future will be greatly influenced by technological developments and changes in conventional ways of working towards global ways of working and networking with architectural groups in other countries. Of course, this will require an architect in the future to have global communication skills, computer design (CAD) skills and skills, and others based on information technology (IT). From some of the architectural studio's competencies above, it is obvious that competence in CBC is not just students understanding learning material to develop intellectual abilities, but how the knowledge they understand can colour their behaviour in life.

Table 1
UIA Architectural Professionalism Performance Criteria

Material Mastery Level	UIA Performance Criteria
Awareness	1. Human Behavior
	2. Human Diversity
	3. Architecture and Urban Design
	4. Building Economic and Cost Control
	5. Legal Context Professional Architectural Practice
	6. Office Organization and Management
	7. Contracts and Documentation
	8. Team Work and Architect's Role
	9. Ethics and Professional Judgment
Understanding	10. Heritage
	11. Other Cultural Factors (Western)
	12. Conservation and Resources
	13. 3D Design, Composition, Urban
	14. Structural System
	15. Building Life Safety System
	16. Building Envelope System
	17. Building Environment System
	18. Building Utilities
	19. Legal Responsibilities
	20. Building and Planning Code
	21. Building Materials and Assemblies
	22. Professional Internship
	23. Past and Present Conditions
Ability/Skills	24. Speak and Write
	25. Graphic Skills
	26. Rand D Design
	27. Critical Thinking
	28. Fundamental Design Skills
	29. Collaborative Skills
	30. History and Precedent
	31. Accessibility
	32. Site Conditions
	33. Building System Integration
	34. Detailed Design Development
	35. Graphic Documentation
	36. Comprehensive Design
	37. Programme Preparation

Source: UIA (2007b)

Table 2
Thirteen Basic Knowledge and Professional Skills of UIA (International Standard)

Material Mastery Level
1. Ability to create architectural designs
2. Knowledge of history, art, technology and humanities sciences
3. Fine art knowledge
4. Knowledge of urban design and planning
5. Understanding of the relationship between humans, buildings and the environment
6. Sufficient understanding of environmentally friendly sustainable design
7. Understanding of the architectural profession and its social role
8. Understanding of the method of preparing a design brief
9. Understanding of structural design, construction systems and engineering problems
10. Knowledge of building physics and climate protection
11. Design skills to meet user requirements with limiting factors such as cost and building code
12. Knowledge of various industries, organizations, regulations and planning integrated with the overall planning
13. knowledge of financing, project management and cost control (cost control)

Source: UIA (2007a)

Evaluation of Learning Architecture Education

The Concept of Evaluation, Measurement and Testing in Competency-Based Curriculum

Is the evaluation the same as measurement and testing? What does an evaluation process want to achieve? According to Arikunto and Jabar (2009) and Dwijendra et al. (2020), evaluation defines it as "..... refer to the activation process to determine the value of something". Evaluation refers to a process to determine the value of something being evaluated. Meanwhile, according to (Dwijendra, 2020; Dwijendra et al., 2020; Rochaety, 2009) defining evaluation is considering the value and meaning of something being considered (evaluand).
From the two concepts above, there are two characteristics of evaluation. First, evaluation is a process. This means that an implementation evaluation should consist of various kinds of actions that must be taken. Thus, evaluation is not a result or product but a series of activities. What is the action taken for? Actions are taken to provide meaning or value to something being evaluated. Second, evaluation is related to giving value or meaning. That is, based on the results of evaluation considerations, whether something has value or not. In other words, evaluation can show the quality is assessed.
The evaluation has a different meaning than measurement. Measurement is generally related to quantitative problems to obtain measured information (Sanjaya, 2006; Tilaar, 2006). Therefore, in the measurement process, certain tools are needed. For example, to measure a person's ability or achievement in understanding subject matter, a learning achievement test is required; To measure English language skills (TOEFL), the TOEFL test is used; to measure body weight used scales, and so on.
The above explanation, evaluation and measurement cannot be equated even though the two are closely related. The evaluation will be more precise when preceded by a measurement process; on the other hand, the measurement results will not have any meaning if they are not related to the evaluation process. The measurement is only part of the evaluation. The test is part of the measurement if it is illustrated how the position of evaluation, measurement, and test can see in Figure 1.

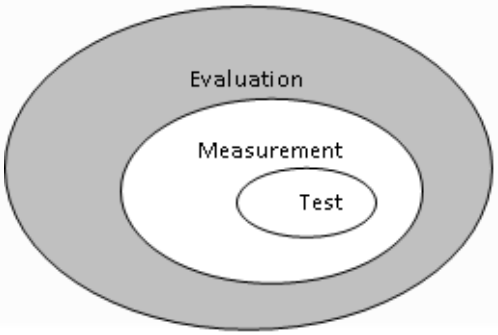

Figure 1. Differences in Evaluation, Measurement and Testing

There are three terms used, and it is necessary to agree on their use, before giving a further description of program evaluation, namely "evaluation", "measurement", and "assessment" (assessment). Evaluation comes from the word evaluation (English). The word is absorbed into the vocabulary of Indonesian terms to preserve the original word with a slight adjustment of the Indonesian pronunciation to become "evaluation". The term "assessment" is a noun of "value". The definition of "measurement" refers to the activity of comparing something with a certain unit of measure so that it becomes quantitative. In this book, the three terms used interchangeably without changing the meaning of the discussion.
How do we define "evaluation"? Several dictionaries can be used as a reference. The definition written in the Oxford Advanced Learner's Dictionary of Current English (AS Hornby, 186) evaluation is to find out, decide the amount or value, which means an attempt to determine the value or amount. In addition to the meaning based on the translation, the words contained in the definition also indicate that evaluation activities must be carried out carefully, responsibly, using strategy, and justified.

According to Arikunto and Jabar (2009) and Marsh (1988), evaluation as a process of determining the results that have been achieved by several activities planned to support the achievement of goals. Another definition put forward by (Arikunto & Jabar, 2009; Marsh, 1988). The two experts said that evaluation is an activity to find something valuable about something; searching for something also includes finding useful information in assessing the existence of a program, production, procedure, and proposed alternative strategies to achieve predetermined goals. A very well-known expert in program evaluation named (Arikunto & Jabar, 2009; Pranajaya & Dwijendra, 2021), said that evaluation is a process of describing, searching, and providing information that is very useful for decision-makers in determining alternative decisions. From some of the opinions above, it can conclude that evaluation is an activity to collect information about something, which is then used to determine the right alternative in making a decision.

Evaluation in the CBC context serves two purposes. First, to assess students' success in achieving competencies and second, as feedback for improving the learning process. The two functions in the CBC are of equal importance. This means that in the implementation of CBC, lecturers need to continuously follow the development of students' abilities in mastering competencies following the demands of the curriculum and lecturers also need to improve the learning process they do continuously. According to Arikunto and Jabar (2009) that a learning process includes three components, namely input, process, and output, as shown in Figure 2.

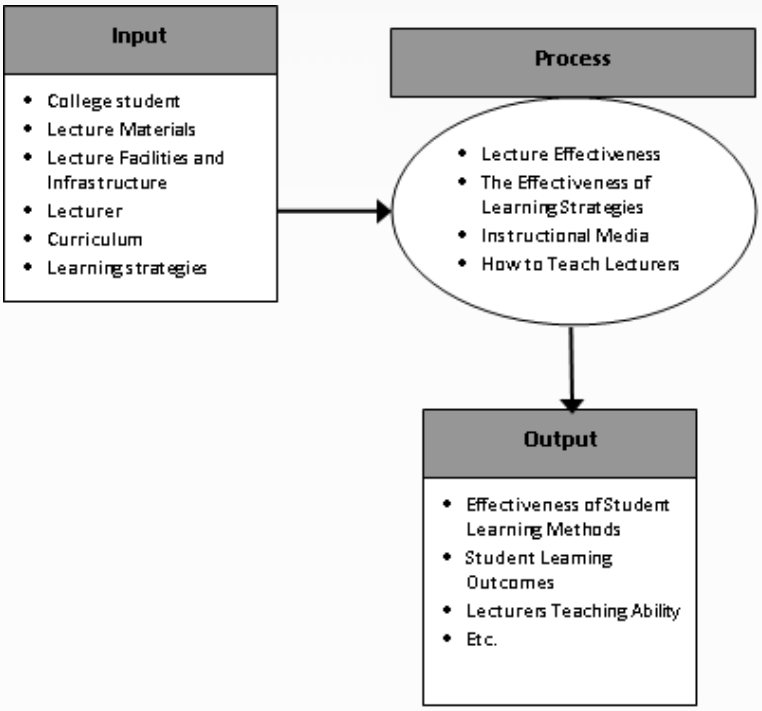

Figure 2. Evaluation Component

Examples of things (objects) that need to be evaluated that include input are: Input components, such as (1) Students (What is the student's entry behaviour?), (2) Lecture materials (What lecture materials used in this course sufficiently relevant and up to date or up to date?), (3) Lecture facilities (Are the lecture rooms and studios adequate? Are the materials and studio practice tools available? (4) Lecturers (Are all members of the lecturer team already understand their duties and obligations in this course?) (5) Curriculum (Does the content of the Teaching Program Outlines need not revised?) (6) Lecture strategy (What strategy is most suitable for this course?) Process Component, Examples of objects that need to be evaluated that are included in the process component are (1) Lecture strategy (Has the strategy used in this course been proven effective?) (2) Instructional media (Has the existing media been used opulently? time?) (3) How to teach lecturers (Has the way of teaching lecturers in this course succeeded in helping students learn well?) Component of Output, Student learning methods (Is the way students learn effectively?). The object of evaluation includes: in the output component is student learning outcomes (How are student achievements in this course?). In this case, the evaluation of this last component is usually treated separately from other evaluation objects. Evaluation of the learning process's output is the evaluation of student learning outcomes and is commonly referred to as "tests and

measurement of learning outcomes".

Benefits and Competency-Based Curriculum Evaluation Items

Evaluation occupies a very strategic position in the learning process. This evaluation is so important that no effort to improve learning quality done without an evaluation step. However, evaluation benefits are not limited to "improving the quality of learning", although these benefits are the most important. In this case, there are at least three benefits of evaluation in learning, namely: (1) understanding something; (2) make decisions; and (3) improving the quality of the learning process.Understanding Something. In this case, a lecturer needs various information about something. The lecture process that will be carried out later will run evaluations of students, lecture infrastructure, and lecturers' evaluation optimally. For example, a lecturer needs sufficient information about the prospective student to accurately determine the student's entry behaviour or other matters.

Make a decision. More often than not, a lecturer evaluates the lesson only after the lecture itself has finished (at the end of the semester). There is nothing wrong with this, and it is highly recommended to do it to improve the quality of learning in the next lecture. Some examples of questions commonly asked by lecturers are: (1) How do students think about the learning process this semester? (2) Is the learning process for one semester following the lesson plan that I made at the beginning of the semester? If there is a change, what is the form of change, and why is it forced to change? (3) Has the lecturer team in this course worked well and cohesive? All answers to the questions above can be used as input to make decisions such as, for example, does the current team of lecturers need to improve their formation, whether the PBM strategy that has been used needs to be replaced with another, or whether the teaching method of lecturers needs to be changed.

Improve the Quality of the Learning Process. Part or all of the final evaluation results of this semester are usually used as material for evaluation reflections to improve the learning process in the next lecture. Important questions to ask include: (1) Twenty per cent of students fail to pass this course. What caused it? (2) Most of the students (through the answers to the questionnaire) said that I was very good at the lecture material. However, most of them also said that my teaching method was less systematic. Is it true that this student's conclusion? If so, which parts of the course were not systematic? (3) Students say that I do not use instructional media well. What do I need to do to fix this situation?

Principles of Evaluation Assessment in Competency-Based Curriculum

As a process, the evaluation must be planned and directed according to the objectives of competency attainment. The essence of assessment is to improve the quality of learning, not merely as a tool to determine mastery of subject matter (Nuryanto et al., 2021; Tanyadji, 2020). Therefore, in the implementation process, team teaching (lecturers) need to pay attention to the following principles:

Motivation. Assessment is directed at increasing student motivation to understand the strengths and weaknesses of both lecturers and students. Thus the assessment is not solely to provide numbers as a result of the measurement process, but the numbers that have been achieved mean. Students need to understand the meaning of the assessment results. With this understanding, it is hoped that they can be more motivated in carrying out the learning process.

Validity. Assessment is directed not solely to complete administrative requirements but is directed at obtaining information about the achievement of competencies formulated in the curriculum. Therefore, the assessment does not deviate from the competency to be achieved. In other words, the assessment must guarantee validity.Fair. Every student has the same opportunity in the learning process regardless of socio-economic differences, cultural backgrounds and abilities. Therefore they also have the same opportunity to be evaluated. The assessment must put the student's position in alignment to get the same treatment.

Open. A good assessment tool is an assessment tool that is understood by both the assessor and the assessor. Students need to understand the types and assessment procedures to be carried out along with the assessment criteria. This openness will encourage students to get good results so that their learning motivation will increase as well. Still, at the same time, they will understand their

own position in achieving competence.
Continuous. In essence, assessment is an integral part of the learning process. So that the assessment must be carried out continuously and continuously (sustainability). Assessment is carried out to obtain information about the development and progress of students in achieving competence. Thus, if it is found that based on the evaluation of a student, it is known that they have not reached the competence according to the set criteria, the lecturer must repeat it, until the competence has been achieved materially.Meaningful. The assessment must be structured and directed, so that the results really give meaning to all parties, especially to the students themselves. Through the assessment, students will know their position in the acquisition of competencies. Besides, they will also understand the difficulties they feel in achieving competence. Thus, the assessment results are also meaningful for lecturers in guiding students to acquire competencies according to the curriculum targets.
Thorough. The competency-based curriculum is directed at developing students as a whole, both cognitive, affective, and psychomotor development. Therefore, lecturers in carrying out the assessment need to use various assessments, such as tests, product assessments, design works, portfolios, attitude scales, performance, etc. This is very important because the assessment results must provide complete information about the development of every aspect.Educative. The assessment results are not solely directed at obtaining a description of the student's ability to achieve competence through the numbers obtained. Still, the assessment results must provide feedback to improve the learning process carried out by lecturers and students, so that learning outcomes will be more optimal. Thus, the assessment process is not solely the lecturer's responsibility, but also the student's responsibility. This means that students must be involved in the assessment process to realize that assessment is part of the learning process.

Evaluation as a Decision Making Process in a Competency-Based Curriculum

The application of CBC is a curriculum renewal as an effort to improve the quality of education (Ketut, Dwijendra, & Dwijendra, 2020b; Made et al., 2021; Sanjaya, 2006; Sudarmanto & Meliala, 2020; Wirawibawa, Putra, & Dwijendra, 2021). Indicators of the occurrence of reform can be seen from the pattern of changes in the learning process as well as an increase in learning outcomes both in quality and quantity. Changes in the learning process will be followed by changes in evaluation patterns, because basically evaluation is part of learning. Therefore, the implementation of CBC has implications for changes in the practice of implementing learning evaluation.Evaluation is a process of giving consideration to the value and meaning of something being considered. Something that is considered can be a person, object, activity, situation or a certain entity. From this concept there are two characteristics of evaluation. First, evaluation is a process or action; both processes are carried out to give meaning or value. This means that based on the results of evaluation considerations, does something have value or not?
As a process, evaluation consists of two main steps as follows: (1) Collecting information about the achievement of student learning outcomes; (2) Making decisions about student learning outcomes based on the information obtained. In CBC, the collection of information about the achievement of student learning outcomes, can be done formally or informally; inside or outside the classroom; can use tests or non-tests or be integrated in the learning process. Any technique can be done, the important thing is that the evaluation process can collect data about the success of students in obtaining certain competencies (Chen et al., 2021; Dwijendra & Paramadhyaksa, 2021; Primadewi et al., 2021; Ugwuoke et al., 2021; Yogantari & Dwijendra, 2020). When the data collection process has been carried out, a decision is made about student success: (1) Have the students achieved the learning objectives in the form of mastering the predetermined competencies? (2) Has the student met the requirements to advance to a further level? (3) Are there parts that need repetition in order to achieve competence? Such decisions are needed to improve the program in learning.

Evaluation Aspects in Competency-Based Curriculum

In the context of CBC, learning outcomes are not limited to cognitive aspects, but also include learning outcomes in the aspects of affective attitudes and psychomotor skills. These three aspects must evaluate in a balanced manner. The learning success criteria must see from the development of the three aspects above. Student learning success criteria that only emphasize cognitive aspects can affect the learning process and quality. The assessment of each aspect is

as follows (see also Figure 3).

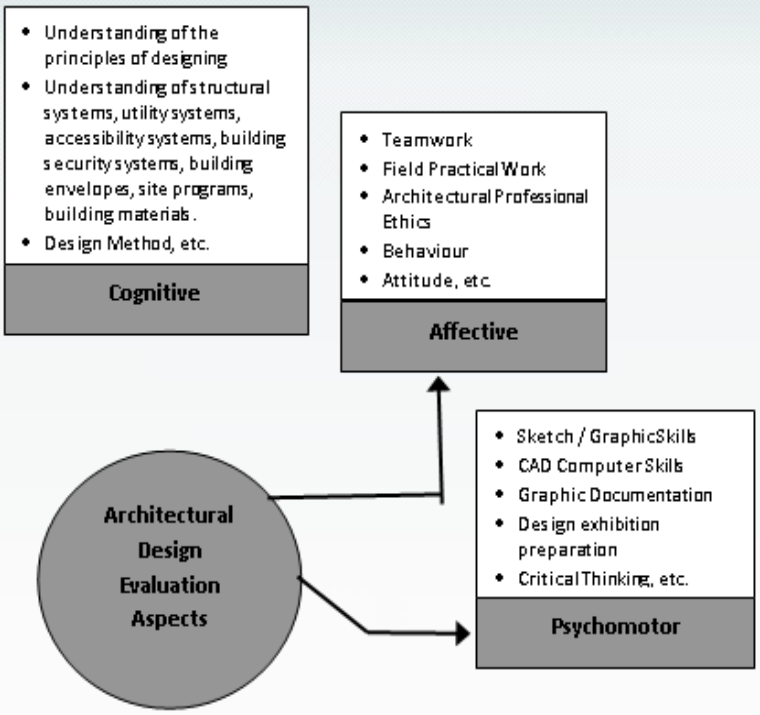

Figure 3. Architectural Design Evaluation Aspects

Cognitive Aspects. Cognitive aspects relate to students' intellectual abilities, which include: (1) The level of verbal memorization includes the ability to memorize learning materials such as facts, concepts, principles and procedures, (2) The level of understanding includes the ability to compare (show similarities and differences), identify characteristics, generalize and conclude. (3) The level of application includes the ability to apply formulas, arguments or principles to real cases that occur in the field, (4) The level of analysis includes the ability to classify, classify, detail, parse an object, (5) The level of synthesis includes the ability to combine various elements or components, to arrange, forming buildings, composing, painting, etc. and (6) The level of evaluation, which includes the ability to judge (judgment) on the object of study using certain criteria, for example assessing the suitability of a building with bestek.

Affective Aspects. The affective aspect relates to assessing students' attitudes and interests towards courses and the learning process. Evaluation in this aspect includes: (1) Providing a response or reaction to the values presented to it, (2) Enjoying or accepting values, norms, and objects that have ethical and aesthetic values, (3) Assessing in terms of bad-good, fair-unfair, beautiful-not beautiful towards the object of study, and (4) Applying or practising values, norms, ethics, and aesthetics in the behaviour of everyday life.

Psychomotor Aspects. In this aspect, the competencies that must be achieved include: (1) The level of mastery of the initial movement contains the student's ability to move as a body member. For example, skills using the AutoCad computer, (2) The level of routine movements includes the ability to perform or imitate movements that involve all limbs, and (3) The level of routine movements contains the ability to perform movements completely and to an automatic level.

Evaluation Tools and Functions in Competency-Based Curriculum

The target of evaluation is to measure students' cognitive aspects and attitudes and interests (affective aspects) and skills (psychomotor aspects). Hence, the evaluation tools used are tests and non-tests. The test is used to measure cognitive abilities and skills (psychomotor) while the non-test is used to measure student attitudes. The test can take the form of a written test or an oral test and an action test; while the non-test can be used by conducting interviews or a rating scale (see Figure 4).As a form of curriculum that requires the achievement of competencies, aspects, tools, and forms of assessment, it must be carried out in a balanced manner by referring to two evaluation functions, namely the formative function and the summative function. The formative

evaluation results are used to improve lecturer performance, meaning that the results of this test are used as feedback to improve the learning process carried out by the lecturer. The summative evaluation results are used to measure students' success after carrying out the learning process. Thus, according to its function, evaluation is used to measure the process's success and learning outcomes.

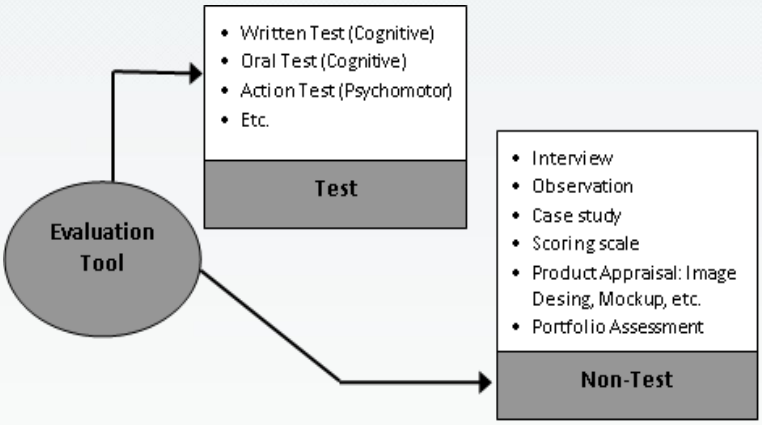

Figure 4. Evaluation Tool

These two evaluation functions are essential as implications of the application of CBC. Through formative evaluation, lecturers will always improve their performance so that the learning process's quality will forever improve. Meanwhile, through summative evaluation, lecturers can measure students' success in achieving the expected goals so that each student's position and achievement in the study group can determine.

Conclusions

Evaluation in the learning process. has three benefits: understanding something, making decisions, and improving the quality of the learning process. Evaluation can be carried out through tests (written tests, oral tests and action tests) and non-tests (interviews, observation and assessment scales). Evaluation using a test is used to measure cognitive abilities and psychomotor skills, while non-test is used to measure student attitudes or behaviour (affective).

Evaluation in competency-based Architecture Studio learning emphasizes the evaluation of results and the learning process. Both sides of the evaluation are equally important so that the achievement of competency standards is carried out comprehensively that measures knowledge (cognitive) and affective attitudes and psychomotor skills. These three aspects must evaluate in a balanced way because the success criteria for learning must see from the development of the three aspects above.

References

Aan, K., & Cepi, T. (2005). Visionary Leadership. Jakarta: PT Bumi Aksara.

Amir, T. M. (2006). Strategic Thinking Students: Jakarta: IBII.

Arief, A. Z., & Santoso, I. (2020). Building Skil Competencies in Architecture in Architecture Students.

Arikunto, S., & Jabar, C. S. A. (2009). Evaluation of Educational Programs: Practical theoretical guidelines for students and education practitioners (2nd ed.). Jakarta: PT Bumi Aksara. Retrieved from: http://library.fis.uny.ac.id/opac/index.php?p=show_detail&id=2834.

Chen, T.-C., Rajiman, R., Elveny, M., Guerrero, J. W. G., Lawal, A. I., Dwijendra, N. K. A., . . . Zhu, Y. (2021). Engineering of Novel Fe-Based Bulk Metallic Glasses Using a Machine Learning-Based Approach. Arabian Journal for Science and Engineering, 46(12), 12417-12425. doi: 10.1007/s13369-021-05966-0

Dwijendra, N. K. A. (2020). Identity Struggle Perspective in Car-Shaped Shrine in Paluang Temple, Nusa Penida Bali, Indonesia. International Journal of Psychosocial Rehabilitation, 24(4), 5579-5591. doi: 10.37200/IJPR/V24I4/PR201653

Dwijendra, N. K. A., & Paramadhyaksa, I. (2021). The Complexity of Orientation in Traditional Village Architecture in Bali, Indonesia. Humanities Diliman, 18(1), 99-117.

Dwijendra, N. K. A., Wiriantari, F., Widiyani, D. M. S., & Yulianasari, A. A. A. S. R. (2020). Transformation of Catuspatha in Bali Indonesia: Alteration Ideas from Empty Space to Aesthetic Element of City. Rupkatha Journal on Interdisciplinary Studies in Humanities, 12(6). doi: 10.21659/rupkatha.v12n6.15

Hasibuan, M. S. (2007). Management: basics, understanding and problems (6th ed.). Retrieved from: http://library.stik-ptik.ac.id/detail?id=8654&lokasi=lokal.

Katoppo, M. L., & Tony, S. (2020). Freeing and Humanizing Architecture Education

Ketut, N., Dwijendra, A., & Dwijendra, N. K. A. (2020a). Innovative Work Behaviors in Pharmacies of Indonesia: Role of Employee Voice, Generational Diversity Management and Employee Engagement. Systematic Reviews in Pharmacy, 11(2), 725-734. doi: 10.31838/srp.2020.2.105

Ketut, N., Dwijendra, A., & Dwijendra, N. K. A. (2020b). Meru as a Hindu Sacred Building Architecture with a High Roof and Resistant to Earthquakes in Bali, Indonesia. Civil Engineering and Architecture, 8(3), 350-358. doi: 10.13189/cea.2020.080319

Klochko, E. N., Patriani, Y., Dwijendra, N. K. A., Dani, A. A., & Sjuchro, D. W. (2020). Political And Social Infrastructure Towards High Quality Tourism Sites. European Journal of Molecular & Clinical Medicine, 7(11), 1764-1773. doi: https://ejmcm.com/article_5709.html

Made, N., Wiryasa, A., Ketut, N., Dwijendra, A., & Dwijendra, N. K. A. (2021). Socio-Physical Transformation towards Sustainable Urban Morphology through Land Readjustment in Indonesia. Civil Engineering and Architecture, 9(3), 874-882. doi: 10.13189/cea.2021.090329

Marsh, C. J. (1988). Curriculum : practices and issues (2nd ed.). Sydney: McGraw-Hill. Retrieved from: https://catalogue.nla.gov.au/Record/1612948.

Maulida, Y. N. (2018). Strategic management in improving the quality of education at MTs Negeri 1 Grobogan. UIN Walisongo Semarang Retrieved from http://eprints.walisongo.ac.id/id/eprint/8828/.

Mulyawan Safwandy, N., & Ai, R. (2016, 2016/08). The Role of Madrasah Supervisor in Sustaining Management of Quality Madrasah Aliyah. Paper presented at the Proceedings of the 6th International Conference on Educational, Management, Administration and Leadership doi: https://doi.org/10.2991/icemal-16.2016.41.

Nasional, D. P. (2003). Curiculum 2004. Jakarta: Depdiknas.

Nurjani, N. P., & Dwijendra, N. K. A. (2020). How Traditional Balinese Houses Can Adjust and Cater for International Tourist in the Canggu Area, Bali Indonesia? International Journal of Psychosocial Rehabilitation, 24(3), 2561-2573. doi: 10.37200/IJPR/V24I3/PR201901

Nuryanto, Ketut, N., Dwijendra, N. K. A., Paturusi, S., & Made, I. (2021). Technic and Mystics of Tukang Wangunan in Sundanese Traditional Houses in Indonesia (Case Study: Baduy Tribe Community-Banten). Civil Engineering and Architecture, 9(2), 533-544. doi: 10.13189/cea.2021.090226

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Administration and Policy in Mental Health and Mental Health Services Research, 42(5), 533-544. doi: 10.1007/s10488-013-0528-y

Pranajaya, I. K., & Dwijendra, N. K. A. (2021). The Domination of Cultural and Symbolic Capital in the Preservation of Temple Heritage Architecture through a Restoration Approach in Bali, Indonesia. Civil Engineering and Architecture, 9(6). doi: 10.13189/cea.2021.090608

Primadewi, S., Sueca, N., Dwijendra, N. K. A., & Siwalatri, N. (2021). Emerging Architect's Design Method in Designing Tourist Accommodation Case Study: Tourist Accommodation in Ubud, Bali. Civil Engineering and Architecture, 9(2), 271-280. doi: 10.13189/cea.2021.090201

Rochaety, E. (2009). Sistem informasi manajemen pendidikan / Eti Rochaety, Pontjorini Rahayuningsih, Prima Gusti Yanti (Cet. ke-4 ed.). Jakarta: Bumi Aksara. Retrieved from: http://kin.perpusnas.go.id/DisplayData.aspx?pId=40011&pRegionCode=JIUNMAL&pClientId=111.

Sanjaya, W. (2006). Learning in Competency-Based Curriculum Implementation Jakarta: Kencana Prenada Media Group. Retrieved from: http://lib.ui.ac.id/detail.jsp?id=20294371.

Sarfo, J. O., & Ofori, P. (2017). A Book Review: Qualitative Inquiry & Research Design: Choosing Among Five Approaches. 3(1), 30-33. doi: 10.13187/rjs.2017.1.30

Streubert, H. J., & Carpenter, D. (2011). Qualitative Research in Nursing (5th ed.): Philadelphia: Wolters Kluwer, Lippincott 7 Wilkins.

Sudarmanto, B., & Meliala, A. (2020). Harmful Discourse on Social Media: The Triggering Factors of Persecution Acts in Post-Truth Era. International Journal of Cyber Criminology, 14(1), 236-253. doi: http://dx.doi.org/10.5281/zenodo.3752537
Suprijanto. (2007). Education for Adults, from Theory to Applications. Jakarta: PT Bumi Aksara. Retrieved from: http://lontar.ui.ac.id/detail?id=20148944&lokasi=lokal.
Suri, H. (2011). Purposeful Sampling in Qualitative Research Synthesis. Qualitative Research Journal, 11(2), 63-75. doi: 10.3316/QRJ1102063
Taba, H. (1962). Curriculum Development, Theory, and Practice: Foundation Process, Design and Strategy for Planning Both Primary and Secondary. New York: Harcourt, Brace, & World, Inc. Retrieved from: http://www.sidalc.net/cgi-bin/wxis.exe/?IsisScript=FCL.xis&method=post&formato=2&cantidad=1&expresion=mfn=011190.
Tanyadji, Y. (2020). Menera Indonesian Architecture Education, Demands, Pressure and Stuttering
Tilaar, H. A. R. (2006). National Education Standards, A Critical Review. Jakarta: PT Rineka Cipta.
Ugwuoke, C. O., Eze, O. J., Ameh, S. O., Mohammed, A. B., Linus, A., & Aroh, A. (2021). Armed Robbery Attacks and Everyday Life in Nigeria. International Journal of Criminal Justice Sciences, 16(1), 186-200. doi: http://dx.doi.org/10.5281/zenodo.3824382
UIA. (2007a). Thirteen Basic Knowledge and Professional Skills of UIA (International Standard). INTERNATIONAL UNION OF ARCHITECTS. Retrieved from: https://www.uia-architectes.org/webApi/en/
UIA. (2007b). UIA Architectural Professionalism Performance Criteria. INTERNATIONAL UNION OF ARCHITECTS. Retrieved from: https://www.uia-architectes.org/webApi/en/
Widodo, J. (2020). Indonesian Architecture Education, Transitional Period. Retrieved from: http://darsitektur.tripod.com/art5.html
Wirawibawa, I. B. G., Putra, I. D. G. A. D., & Dwijendra, N. K. A. (2021). "Memada-mada": The Power Relation and Architectural Creativity of Gianyar Palace. Architecture, 9(3), 949-957. doi: 10.13189/cea.2021.090336
Yogantari, M., & Dwijendra, N. K. A. (2020). Visual Exploration Using Acrylic Paint on Used Fashion Items for Sustainable Use. International Journal of Psychosocial Rehabilitation, 24(3), 1475-7192. doi: 10.37200/IJPR/V24I3/PR201902