The Effect of Practice-Based Learning on Learning Outcomes in Vocational Education

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--**ABSTRACT**--
Practice-based learning is learning for education that is oriented towards the working world. It is because practice-based learning can produce work-ready graduates. Although graduates are focused on the work environment, practical education cannot be separated from how the conceptual understanding system is precisely the cognitive taxonomy as a basis or foundation in carrying out learning activities. The objective of this study was to determine the effect of practice-based learning on conceptual understanding. The design of this research was experimental research using data analysis techniques, namely the Mann-Whitney test. The research subjects in this activity were 90 students, who were divided into experimental class and control class. The data analysis results showed differences between the two groups, and the class that received practice-based learning treatment obtained better learning outcomes than the control class.
KEYWORDS;- *Practice-based learning, conceptual understanding*

I.   INTRODUCTION

There are various definitions of practice-based learning. Charles Sturt University (2016) defined practice-based learning as an approach that educates people to practice in a profession, job, or discipline. It is a social application and realization involving curriculum teams and stakeholders (including students, professions, industry partners, external educators, accreditation bodies, regulatory authorities, and consumer societies). According to the University of South Australia (2016), practice-based learning makes the learning environment as realistic as possible. It requires cadets to show what they know and connect theory and practice. Meanwhile, according to QAA Scotland (2011), practice-based learning is explicitly designed to relate to professional practice standards. It includes work-based and placement learning that aims to increase student employability. Practice-based learning is intended for work-oriented education. It is because practice-based learning can produce work-ready graduates. Antioch University (2016) has implemented this practice-based learning in the areas of Clinical Mental Health Counseling, Clinical Psychology, Teacher Certification, and Environmental Studies. The Open University (2016), based in the UK, has implemented practice-based learning in Health and Social Care, Language Education and Studies, Business Schools, and the Educational Technology Institute.

University of South Australia (2016) revealed that the reason why practice-based learning is often used in the working world is due to its advantages, including experience with hands-on learning at work, actively embedding industrial input into educational programs, supporting the development of career management skills, supporting the development of various the ability to work professionally following disciplinary knowledge as part of the curriculum, supporting the experience of staff in the workplace, and providing laboratory experience. These advantages are very suitable for learning in the working world education. Even though it is intended for the world of work, practical education cannot be separated from how the conceptual understanding system is precisely the cognitive taxonomy to carry out learning activities. Bloom (1956) classified the cognitive domain into six levels. These levels are knowledge, understanding, application, analysis, synthesis, assessment. The levels are in order from the simplest to the complex. In addition to bloom, there are other taxonomic concepts put forward by Merrill (1983) called component display theory (CDT). The cognitive domain is classified into two dimensions: performance level dimensions and content types. The performance dimension consists of remembering, using, and finding. The content-type dimension consists of facts, concepts, procedures, principles. This matrix helps measure learning effectiveness (Degeng, 2013) because it can show the students' performance level.

Another two-dimensional cognitive taxonomy was proposed by Anderson & Krathwohl (2001) to revise Bloom's taxonomy (1956). According to Anderson & Krathwohl (2001), after dividing, one of the weaknesses expressed by Bloom is that there is a fundamental difference between knowledge (knowledge) and the other five levels, where the five levels are intellectual abilities and skills to be able to interact with various

types of knowledge (knowledge). The cognitive taxonomies proposed by Merrill (1983) and Anderson & Krathwohl (2001) are both two-dimensional, so they are very helpful in measuring the effectiveness of learning, as expressed by Degeng (2013). In the 1960s, Edgar Dale theorized that students retained more information about what they did than what they heard, read, or observed. His research then led to the development of the cone of experience. According to Dale, the least effective method is at the top, involving learning from the information presented through verbal symbols, namely listening to the words spoken. The most effective methods are at the bottom, involving direct and purposeful learning experiences, such as hands-on or field experiences. Immediate goal experiences represent realities or things that are hidden from real everyday life. Dale's (1969) experience cone mapped mean retention rates for various teaching methods. The further down the cone, the greater the learning and the more information that may be stored. It also suggests that it is essential to remember that engaging students strengthens knowledge retention when choosing a learning method. It shows that learning techniques by doing generate retention of up to 90%. According to Dale, instructors must design instructional activities that build on real-life experiences.

Ausubel (1963) believed that the learning of new knowledge depends on what is already known. The construction of knowledge begins with our observation and recognition of events and objects through the concepts we already have. Humans learn by building a network of concepts and adding to them. Ausubel also emphasized the importance of meaningful learning rather than memorization. According to the theory, individuals must relate new knowledge to the relevant concepts they already know to learn meaningfully. New knowledge must interact with the learner's knowledge structure. Meaningful learning involves recognizing the relationships between concepts; thus, it is easier to transfer them to long-term memory. The most crucial element in meaningful learning is how new information is integrated into the old knowledge structure. Contextual learning starts from the premise that learning cannot occur in a vacuum but must be connected with real-world attributes to make sense for students. Learning must be contextualized (perhaps he was the first to use the term contextual learning) and adapted to real-life situations (Westera, 2011). that learning occurs only when students can relate information to their reference frame, reflecting memories, experiences, and responses. Naturally, such personal frames of reference are primarily nurtured by individual experiences and interactions with the real world (Kolb, 1984). It shows that practice-based learning is an implementation of contextual learning by placing the context in the world of work. Practice-based learning characteristics make learning meaningful because learning is not just memorizing information but also connecting with context. Concerning the experience cone theory, the retention rate in practice-based learning is also higher because students are genuinely involved in the real world of work. Thus, practice-based learning is a logical solution to improve students' understanding of concepts.

II. METHOD

The research method used was experimental research with The Matching-Only Posttest-Only Control Group Design. The research subjects consisted of 90 students, divided into 45 students in the experimental class and 45 students in the control class. This research was conducted for six weeks in the airport flight system course. The analysis technique used was to compare the experimental group's mean with the control group using Mann-Whitney Test.

III. RESULT VIEW

Based on data analysis in the experimental group and the control group using different tests, it is known that there was a significant difference in the ability to understand the concept. Based on table 1, the experimental group obtained an average of 87.27, and the control group obtained an average of 78.76. Table 2 for Mann-Whitney showed a significant 0.000 (<0.05), which can be concluded to be a difference between the two groups.

The results of these calculations reinforce previous indications that practice-based learning is effective and has an effect. The presumption of this learning model's effectiveness is not strong enough to consider the data in the control group where all variables are controlled. This result is possible because practice-based learning occurs in meaningful contexts (Brown and Duguid, 1991). Yakhlef (2010) argued that practice-based learning combines materialized learning facilities and presents worker-students opportunities to reflect on what has been experienced and imagined (Yakhlef, 2010). Huggins (2017) suggested that practice-based learning is robust in providing worker-learners opportunities to apply the knowledge and skills they acquire from various sources, including the workplace and outside. Besides, when practice reflection is facilitated, learning can become more prosperous, primarily through direct mentoring by more experienced colleagues (Billett, 1999). There are bilateral benefits from two-way learning and knowledge sharing between beginners and experts in the same practice (O'Donovan, 2018).

Higher education is claimed not to provide relevant or efficient learning in developing skills transferred to the workplace. However, practice-based learning approaches and partnerships between workplaces and higher

education institutions have offered a variety of valuable insights and perspectives that seem to point out ways to correct issues of relevance in learning (Rowe *et al.,* 2017). In practice-based learning, the workplace becomes a place of learning, and company problems become subject matter related to the curriculum but in a connected form. Practice-based learning allows individuals to develop themselves professionally and be rewarded for higher education institutions' efforts, contributing to university qualifications. For businesses and organizations, opportunities arise to benefit from the collaboration and transfer of knowledge from higher education, advance the organizational development of higher education institutions through a higher quality workforce, develop projects that are often "behind" due to a lack of workforce, and generally carry about the desired changes in the organization. Colleges benefit from engagement with business and generally with outside partners who help develop knowledge capital by providing opportunities for academics to engage with the world outside the university (Major, 2016).

Table 1. Group Statistics

	Concept	
	Group	
	Experiment	control
N	45	45
Mean	87.27	78.76
Std. Deviation	2.387	2.797
Std. Error Mean	.356	.417

Table 2. Test Statistics Mann-Whitney

	Concept
Mann-Whitney U	16.500
Wilcoxon W	1051.500
Z	-8.056
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Group

Practice-based learning provides a unique and direct link between the workplace and its needs and students' professional aspirations, increasing the relevance of conventional courses of study. Practice-based learning builds a curriculum around what knowledge and learning are valued and needed by individuals and higher education institutions' workplaces (Baker *et al.,* 2017). Many higher education institutions have developed initiatives to enable students to acquire relevant skills, knowledge, and experience in practical professional scenarios that will increase the likelihood of higher education institutions finding employment (Attwood, 2009). The development of partnerships between universities and entrepreneurs is essential in identifying learning needs (Helyer, 2011) and increasing education relevance, especially in facing the challenges presented by economic models, technological advances, and other social changes. Evidence from Australia and the United Kingdom revealed that practice-based learning could be seen as a post-secondary educational innovation that seeks to seriously engage our time's economic, social, and educational demands. Boud (2001) identified practice-based learning traits that highlight the importance of partnerships between external organizations and educational institutions to foster employee and student learning. Practice-based learning projects are negotiated and derived from the workplace and students' needs rather than traditional concepts from the disciplinary curriculum. A significant aspect of work-based programming is the relationship between individual learning and organizational change (Garnett et al., 2016).

Although practice-based learning is sometimes used to achieve organizational goals (e.g., Bravenboer, 2011; Major, 2016), this learning is still seen as a means for individual development because higher education institutions are geared towards teaching accrediting individuals rather than organizations (Garnett, 2012). Abraham (2012) observed that practice-based learning focuses on individuals' job learning or as a team for application purposes. The definition of practice-based learning has included applying the idea of practice-based learning to various concept iterations, such as work-integrated learning, industrial placement, work experience, even though it is under adherence to the institutional curriculum framework (Baker *et al.,* 2017). In this sense, practice-based learning "curricula" arise from agendas and needs in the workplace, much as from the learning objectives that educational institutions establish for students.

IV. CONCLUSION

Based on the research activities carried out, the results obtained were the experimental group's posttest score to the concept comprehension of 77.27% completed. Thus, based on all of the analysis, it could be ascertained that the learning model developed was effective and had a significant effect on students' conceptual understanding. Based on the research that has been done, the model developed could be said to be effective and had an influence that was quite significant; however, when viewed in more detail, there were several components of the model that still had the potential to be improved, namely the support system, the social system, and the principle of reaction. Thus, these components need further examination or investigation.

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