Analysis of Vocational Lecturer's Pedagogical Competence Needs for TVET: A Case Study on Vocational Lecturers in West Java, Indonesia

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Abstract: This study aims to analyze the pedagogical competence needs of vocational lecturers. Learning development problems and needs related to the preparation of vocational lecturers can produce skilled vocational lecturers. The research method used is a quantitative method through surveys by distributing questionnaires given to vocational lecturers at Polytechnics in West Java, Indonesia. The findings obtained are the level of understanding of lecturers about students' background is 76%. 82% of lecturers have compiled a complete Lesson Plan, both for activities in the classroom and outside the classroom. Mastery of the application of learning materials, media, methods, and laboratory equipment for vocational lecturers is very high, above 83%. This is in line with the characteristics of vocational education which must prepare students or graduates to quickly adapt to the workplace environment. However, in the activity of quiz making through online media, it is classified as a moderate at 68%, whereas the online learning and evaluation methods are beneficial since these methods are quite effective. The ability of vocational lecturers in conducting pretests before learning activities has a low score at 76%. This finding indicates that there are many difficulties, one of the factors is not knowing the urgency of the assessment. The pedagogical competence of vocational lecturers has an important role in the success of learning, both in the classroom and during practice. The benefit of this research is that the data obtained can be used as the basis for determining curriculum policies and vocational lecturer training programs to increase human resources following vocational lecturer programs in the industry 4.0 era.

Keywords: Needs analysis, vocational lecturer, pedagogical competence, vocational education

1.   Introduction

The challenge for vocational lecturers is that they must have industry insight and confidence in making lecture curriculums that are following industry needs (Achlison, 2015). This condition requires management to add insight and skills for lecturers to be more confident by having lecture materials that are suitable for industry needs. On the other hand, the Industry provides opportunities for Lecturers to learn and follow the latest scientific developments. The industry supports the efforts of lecturers in ensuring the quality of education and getting research ideas (Achlison, 2015). For this reason, vocational lecturers must have pedagogical competence (Destiana & Utami, 2017). Pedagogical competence needs to be understood as a learning process that is carried out interactively, inspiring and motivating students to participate actively and with high interest, physical and psychological development, as well as providing examples so

that students can change according to learning objectives. Pedagogical competence in vocational lecturers is the ability of lecturers to manage student learning in vocational education.

Vocational education plays an important role in human development and the development of Indonesian society. Human development and the development of Indonesian society must be balanced over time. Development of intelligence, morals, physical, and mastery of science for the development of Indonesian society. In essence, the purpose of vocational education includes four main dimensions, which include (1) developing basic human qualities, (2) developing functional qualities, (3) strengthening identity as the Indonesian nation, and (4) maintaining life and the world. Vocational education in Indonesia must be extended to provide all Indonesian people with access to skills through vocational education (Destiana & Utami, 2017). Based on Law No. 12 of 2012, the position of vocational education is as vital as the academic/professional education pathway and has the same rights and processes, therefore the competence of educators in Indonesia has been regulated in Law No. 14 of 2005.

Law No. 14 concerning Vocational Lecturers and Lecturers states that the competencies of Vocational Lecturers and Lecturers include pedagogic, personality, social, and professional competencies. If it is associated with significant changes in the 21st century related to technological developments and changing needs of the world of work, mastery of technology is an absolute competency that must be mastered by vocational lecturers. On the other hand, although technology is important, the quality of vocational lecturers as Human Resources (HR) is responsible for the "front line" of learning (Sugiyanto et al., 2016).

The pedagogical competencies include understanding insights or educational foundations, and understanding student characteristics from physical, moral, spiritual, cultural, social, emotional, and intellectual aspects. Curriculum and syllabus development related to the subjects taught, the use of technology and information for the benefit of education, the implementation of educational and dialogical teaching and learning activities, the development of students to actualize their various potentials, communicate effectively, empathically, and politely with students, utilization of the results of assessment and evaluation of learning outcomes, and reflective actions to improve the quality of learning (Destiana & Utami, 2017). This is necessary because vocational education is assessed from the aspect of social effectiveness and efficiency in developing a country's human resources and supporting national development.

Three skills need to be developed in the learning process, including (1) learning and innovation skills; (2) information, media and technology skills; and (3) life and career skills. Vocational lecturers in the 21st century must have these skills while still a student. Thus when they become lecturers, they can able to develop the same skills (teaching) for their students.

The requirement as a vocational lecturer is the need to understand the essence of the purpose of vocational education, namely education that prepares graduates to be ready to work. Qualified vocational lecturers need to equip themselves with the concept of vocational education so that their students have work readiness according to the needs of the industry in the related fields they have mastered.

Pedagogical competence can be developed previously through the Bachelor of Education (S1) learning program at the Teacher Education Institution/ Lembaga Pendidikan Tenaga Kependidikan (LPTK), but not all lecturers take the education path at the LPTK. Based on this background, the study looks at the urgency of developing pedagogical competence for a vocational lecturer, especially the impact of vocational lecturers who direct students to the world of vocational education (lecturers) and work in the industry, as well as the need for research to develop a Center of Excellence (CoE) model for Vocational Lecturers' Pedagogical Competencies.

The purpose of the study was to analyse the pedagogic competence needs of vocational lecturers. It is hoped that learning development problems and needs related to the preparation of vocational lecturers can produce skilled vocational lecturers. The method used was a quantitative method through surveys by distributing questionnaires given to vocational lecturers at Polytechnics, both Public and Private Polytechnics in West Java, Indonesia. The novelty of this research is that this study focuses on aspects of the competence of vocational lecturers for the development of the Center of Excellence (CoE) model of Vocational Lecturer's Pedagogical Competencies.

1.1   Lecturer's Pedagogical Competence

The Law of the National Education System Number 20 the Year 2003 states that citizens have the right to quality education. A lecturer is an educator who is tasked with planning and implementing the learning process, assessing learning outcomes, conducting guidance and training, as well as conducting research and community service. The main task of a lecturer as an educator is to educate, teach, guide, direct, train, assess and evaluate students in higher education (Destiana & Utami, 2017).

Competence can be defined as a unanimous mastery of knowledge, skills, and attitudes that are displayed through performance, which is expected to be achieved after completing an educational program. Based on the Decree of the Minister of National Education No. 045/U/2002, competence is defined as a set of intelligent and responsible actions, that a person has as a condition to be considered capable by the community in carrying out tasks following certain jobs.

Pedagogical competence refers to performance, knowledge and skill in teaching and learning, thus it includes teachers' capability to manage the teaching and learning process from the planning to the evaluation stages. Accordingly, Indonesian government policy and regulation defined teachers' pedagogical competence as the understanding of basic education, students, curriculum development, lesson plans, dialogical teaching and learning process, learning evaluation,

and students' potential developments (Syahruddin et al., 2013). Teachers' pedagogical competence is the ability to manage learning, which includes planning, implementation, and evaluation of learning outcomes. These competencies should be owned by every teacher to achieve success in learning and teaching (Hidayat & Azisah, 2016).

Pedagogical competence requires teachers to have a deep educator spirit. Meaning that educational values are not only memorized theoretically but have become part of their behavior. Pedagogical competence includes understanding the insight/ foundation of education, students, curriculum, dialogical and educational learning design, implementation of learning, to the development of students to actualize their potential.

1.2 The Importance of Pedagogical Competence for Vocational Lecturers

According to Kamus Besar Bahasa Indonesia (KBBI), "Competence is the ability, knowing, having authority, and power to decide or determine something". Meanwhile, the definition of competence according to Law No. 14 Article 1 Paragraph 10 the Year 2005, "Competence is a set of knowledge, skills, and behaviors that must be possessed, internalized, and mastered by a teacher or lecturer in carrying out professional duties". In addition, based on the same Law, "Lecturers are professional educators and scientists with the main task for transforming, developing and disseminating science, technology and arts through education, research and community service".

Referring to several opinions described in the previous paragraph, it can be concluded that lecturer competence is the ability to work in carrying out his work as a professional educator, as well as disseminating knowledge following the knowledge he has. The competence of lecturers as referred to in Article No. 10 of the Law of the Republic of Indonesia Number 14 the Year 2005 includes pedagogic competence, social competence, and professional competence, personality competence, which is obtained through professional education (Destiana & Utami, 2017).

Pedagogical competence is the ability to manage the learning, including (a) Understanding of educational insights or foundations, (b) Understanding of students (c) Development of curriculum and syllabus, (d) Learning design (e) Implementation of educative and dialogical learning, (f) Learning technology utilization, (g) Evaluation of learning processes and outcomes and, (h) Students development to actualize their potentials.

In education, the competence of lecturers is very important in achieving educational goals, and the competency of vocational lecturers in aspects of personal character, general knowledge, field knowledge, and pedagogical knowledge. The attitude of vocational lecturers greatly influences the development of students. Ideally, all vocational lecturers become learning models for their students (Vansteelandt et al., 2017). Research on the competence of vocational lecturers has been widely carried out, one of the studies revealed that the competence of lecturers plays an important role in shaping the character of students. The observed variables consist of gender, education background of vocational lecturers, place of residence, place of work, experience in attending seminars, book literacy, etc. (Ülger et al., 2014).

Competence is more than just knowledge or skills. Competence involves the ability to meet the complexity of demands (Ontario Ministry of Education, 2016). Vocational lecturers currently face much bigger challenges than in the previous era. Vocational lecturers face students who are far more diverse, lecture materials are more complex and difficult, the standard of the learning process, and also the demands for the achievement of higher student thinking abilities (Darling-Hammond, 2006). The experience of a vocational lecturer in the past and present is very decisive in the practice of a vocational lecturer in the classroom (Vidović & Velkovski, 2013).

Vocational education has special characteristics that are different from general education, therefore the competence of vocational lecturers, in particular, is also different from general education. The level of mastery of the pedagogical competence of vocational lecturers can be broken down into four levels. First, understanding the specific subject and specific knowledge program that will be taught, to encourage the creation of meaningful relationships by students. Second, demonstrate a critical understanding of their cultural development and realize their potential and limitations. Third, showing a critical understanding of the knowledge to be taught, so that a meaningful relationship can be created by students. Fourth, establish a relationship with culture in the proposed learning activities (Dharma et al., 2013).

Vocational lecturers are an integral part of the overall educational organization subsystem. The development of the campus as a learning organization is very much needed to face the changes and uncertainties that characterize modern life.

The competence of vocational lecturers involves four important aspects; including (1) Knowledge of learning materials, pedagogy, and curriculum, (2) Dealing with student potential and development, (3) Self-evaluation and professional development, and (4) Understanding the educational system and give contribution for its development (Vidović & Velkovski, 2013). The starting point of the lecturer's vocational competence is based on a description of competence, it does not have to be static but must involve a continuous process and development to see competence holistically. There are eight vocational competencies that have been designed:

(i)   Cooperation/ interaction/ teamwork: Vocational lecturers must have a competency to build and lead good relationships with social partners to communicate and interact at different levels They also must maintain the learning process with all peers. A vocational lecturer should be able to connect with colleagues to discuss struggles and challenges in the teaching and learning process and share instructional strategies.

(ii) Project and development: Vocational Lecturers have to participate daily in different projects and development work, including cooperation with several different social partners, both national and international partners. Projects

and development work should be designed based on the needs of their Campus, Region, Vocational pedagogy and Working environment.

(iii) Sustainable education: Vocational lecturers must have the ability and motivation for self-evaluation and reflection. Reflection must occur at the individual level as well as at the community performance level. Communication is an important tool for the reflection of people's performance. Community organizations must provide security for the interaction, creativity, experimentation and innovation of organizations and between learning organizations that are needed.

(iv) Creation of learning environment: Vocational lecturers should create and develop supportive, flexible, and innovative learning environments for individuals and groups. Vocational lecturers are expected to be able to find new ways of learning that can facilitate and build participative, challenging, and inclusive learning experiences that connected with the world outside the campus.

(v) Information and communication technology: Vocational lecturers must be able to integrate information and communication technology to improve learning activity. They are expected to use basic computer programs, such as Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Internet, and E-mail service. They are also expected to be able to use basic equipment such as a Computer, LED Projector, etc.

(vi) Campus Administration: A vocational lecturer should always update campus administration, National Education Regulations, as well as the national and international documents, for the benefit of vocational education and implement them into his work.

(vii) Personality characteristics of Vocational lecturer: A vocational lecturer should be more independent and confident and play a proactive role in the campus environment. Vocational lecturers should also be communicative, reasonable, and motivated to observe and lead a constructive dialogue with their students to find the best options to support their personal development.

(viii) Community competence or campus management: The campus community that is led by campus management must work on implementing the concept of organizational learning so that they will be able to create and stimulate a professional environment.

2.   Method

This research method used a quantitative approach. The respondents in this study were vocational lecturers in West Java totalling 50 people as a participant by using a purposive sampling technique from around 2650 vocational lecturers in the province of West Java (Indonesia Ministry of Education and Culture, 2020). Purposive sampling is a sampling technique with certain considerations (Sugiyono, 2016). The reason for using this purposive sampling technique is because it is suitable for use for quantitative research, or research that does need a generalization (Sugiyono, 2016). Because purposive sampling has certain considerations or limitations in data collection, in the case of this study, the sampling criteria for participants are 1) a vocational lecturer, 2) teaching at vocational institutions/ departments, and 3) the location of the institution is in the province of West Java.

The participants in this study came from vocational institutions, both universities and polytechnics, as shown in table 1.

Table 1 - Vocational lecturer's institution

Institutions	Participant
Politeknik TEDC Bandung	8
Politeknik Negeri Bandung	11
FPTK - Universitas Pendidikan Indonesia	9
Politeknik Negeri Subang	3
STMIK IKMI Cirebon	2
Universitas Bhakti Kencana	2
Politeknik Pos Indonesia	2
Politeknik Manufaktur Bandung	13
Total	50

The purpose of this study was to investigate vocational lecturers' perceptions of pedagogical competence, especially in the learning activities they have been taught so far, by answering questions about attitudes, opinions, behaviours, or characteristics. This research was conducted from March 2021 to July 2021.

The research instrument used in this research is a questionnaire. The stages carried out in this study consisted of compiling a questionnaire instrument that would be used for data collection. The information contained in the questionnaire includes demographic factors, student characteristics, learning theories and principles, development of lesson plan, ICT utilization, student potential development, communications, and learning assessment and evaluation with a total of 45 question items. These aspects are evaluated as the basis for the pedagogical competence of vocational

lecturers. The verification stage of the validity and reliability of this instrument was carried out by expert judgment. The experts are the lecturer in the field of the vocational and learning curriculum from Universitas Pendidikan Indonesia.

The questionnaire was developed using a survey method with a Likert scale with four-point scale responses. Survey with the four-point Likert scale with the following choices; Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) (Brown, 2010). The scoring method for the answers is as follows: SA = 4; A = 3; D = P = 2, and SD = TP = 1. The questionnaires were distributed using Google Forms.

Data analysis in this study used a quantitative approach. The analysis of the data regarding needs analysis on aspects of pedagogic competence of vocational lecturers is as follows:

(i) Make a table based on the questionnaire item number and the respondent number, then enter the score for each questionnaire item from each respondent.

(ii) Calculate the total score for each research variable.

(iii) Change the total score for each research variable into the form of value (percentage) with the formula:

(iv)

$$a. \quad Score = \frac{variable\ total\ score}{4\ x\ response\ number\ x\ questions\ number} \ x\ 100\ \%$$

(v) Calculating statistical quantities for each research variable, namely the mean, median, mode and standard deviation.

(vi) Interpret data in the form of discussions, findings and conclusions.

After obtaining the value in the form of a percentage, the next step is to change the value scale into a rank scale to determine the category of ability level related to the pedagogic competence aspect of vocational lecturers. The rank scale is presented in table 2.

Table 2 - Rank scale for ability level category

Percentage	Level Category
<25%	Very Incapable
26% - 50%	Not capable
51% - 75%	Capable Enough
>76%	Very Capable

3.   Results and Discussion

The survey results collected from the participants based on demographic factors can be seen in table 3.

Table 3 - Vocational lecturer demographic factors

	Aspect	Number	Percentage
Gender	Male	34	68%
	Female	16	32%
Academic	Master	41	82%
	Doctoral	9	18%
Lecturer Certification	Not Certified	10	20%
	Certified	40	80%
Academic Position	Expert Assistant *(Asisten Ahli)*	20	40%
	Lector *(Lektor)*	18	36%
	Head Lector *(Lektor Kepala)*	11	22%
	Professor *(Guru Besar)*	1	2%
Years of Experience	0 - 4 years	6	12%
	5 - 9 years	11	22%
	10 - 14 years	7	14%
	15 - 19 years	5	10%
	>20 years	21	42%

Based on table 3, the gender of vocational lecturers is dominated by men 68%. This can happen because occupation in certain fields such as mechanical and electrical engineering is considered more difficult so it is more attractive to men,

although vocational work is not limited by gender (Chesters, 2021). The academic background of vocational lecturers is still dominated by Master at 82%, which shows that they still need to improve their academic background. Because the level of education has a significant effect on lecturer performance (Netty & Saragih, 2017), and high-order thinking (Sutrisno et al., 2020). For lecturer certification, 80% of lecturers already have certification, which means they are generally qualified to teach. Certification as evidence of their ability or competence has a positive effect on lecturer performance (Rahardja et al., 2020), which will also directly affect student performance motivation (Kusumajati et al., 2017).

Academic positions are still dominated by Expert Assistants (Asisten Ahli) as much as 40%, this means that the majority of lecturers still help other lecturers who are in higher positions. The position of Lector (Lektor) is 36%. This describes a functional position that requires an upgrade to the position of Head Lector (Lektor Kepala) with International Journal requirements, especially to become a Professor (Guru Besar) with an indexed International Journal requirement (Rahman, 2019; Hamdani & Husin, 2018). While the Years of service are dominated by old age, mostly 42% of the five age groups with a year of service of over 20 years. This shows that the age that is approaching retirement, which is relatively less enthusiastic about improving self-ability. Because many lecturers are approaching retirement, it is necessary to prepare prospective young lecturers who specifically master new competencies, either through vocational training (Duin & Thoben, 2019), or new innovative competencies (Dneprovskaya et al., 2018). The demographic factor of lecturers is very important because there is a significant relationship between teaching experience and teacher competencies (Mohamad, et al., 2019).

3.1 Lecturer's Understanding of Student Characteristics

The survey results related to the lecturer's understanding of student characteristics can be seen in table 4.

Table 4 - The findings of the lecturer's understanding of student characteristics

Statements	Answer				Mean	Std. Dev.
	SD	D	A	SA		
Knowing the Student's Backgrounds	0	4	25	21	3.34	0.62
Conduct a pretest at the beginning of the course	0	4	13	33	3.58	0.64
Expressing student expectations for the courses	0	4	13	33	3.58	0.64
Paying attention to aspects of student learning styles	0	2	19	29	3.54	0.57
Conduct initial introductions related to previous educational background	0	2	24	24	3.44	0.57
Knowing the number of students who contract the courses	1	13	20	16	3.02	0.81
Average					3.42	0.64

One of the pedagogical competencies that must be possessed by lecturers is to understand the characteristics of students. In general, student characteristics consist of background, initial ability and learning style. Based on the results of data analysis, it was obtained that the average lecturer's ability level on understanding student characteristics is high with an average Mean of 3.42 Standard Deviation (SD) of 0.64. The level of understanding of lecturers on student backgrounds is the lowest level with an average Mean of 3.34 (SD=0.62). Understanding the background of students is important to be used as a basis for developing theory or practice in learning (Budiningsih, 2011). The lecturer's understanding of the student's background still needs attention to be improved.

The characteristic of students that needs attention is their initial ability of students. Initial ability is the amount of knowledge that a person already has in his long-term memory (Li, 2019). A person's level of prior knowledge about a topic can affect his ability in topics related to that initial knowledge. This is in line with related research which states that prior knowledge is one of the determinants of achievement (Valstar et al., 2019). The level of the lecturer's understanding of the importance of measuring initial ability is 84%. Initial ability measurement is carried out through pretest activities.

One of the learning characteristics related to remembering, processing, and conveying information is learning style. Learning style is a very important learning basis. Learning styles can be useful for lecturers and students, lecturers can adjust the delivery of material and use learning techniques that are following each individual's style so that they will be fast, easy, and successful in receiving information (Gilakjani, 2012).

3.2 Lecturer's Ability in Developing Lesson Plan

The survey results related to the lecturer's ability in developing Lesson Plans can be seen in table 5 as follows:

Table 5 - The findings of the lecturer's understanding of student characteristics

Statements	Answer				%	Mean	Std. Dev.
	SD	D	A	SA			
Develop Lesson Plan by following the lecture material based on the learning objectives	0	0	20	30	90%	3.60	0.49
Develop components in the Lesson Plan according to the format provided by the academic department	0	1	24	25	87%	3.48	0.54
Develop a complete Lesson Plan, both for activities in the classroom, laboratory, and outside the classroom	0	5	27	18	82%	3.26	0.63
Average					86%	3.45	0.55

Based on the results of the questionnaires that have been distributed, 82% of lecturers have prepared a complete Lesson Plan, both for activities in the classroom, laboratory and outside the classroom. 87% of the component developments in the Lesson Plan are following the format provided by the academic field, and 90% of the Lesson Plans made have followed the lecture materials based on the learning objectives. The preparation of a complete Lesson Plan is the lowest indicator of the variable ability level of lecturers to develop a Lesson Plan, which is 3.26 in average Mean score (SD=0.63). So that there are still respondents who didn't make a complete Lesson Plan. The reasons for this need to be studied in more detail. The lesson plan is the most important component in preparing for quality learning. Knowledge of pedagogical content affects their skills in designing learning (Maryani et al., 2017). Knowledge of pedagogical content can affect learning quality. A Lesson Plan is a learning process planning that is prepared for each subject and presented in learning for one semester (Agustiana et al., 2020).

A Lesson Plan is the starting point in practical planning lessons. It is not usually a discussion of planning theory but includes goals, objectives, and goals that allow you to start thinking about the next lesson (Woodward, 2001). It was also explained that the Lesson Plan contained at least the benefits of the course, course description, learning objectives/ materials/ subjects, learning strategies, references, assignments, assessment criteria, and lecture schedules with topics of discussion and reading material (Fatimah et al., 2020). Skills in creating or designing a curriculum and synthesizing teaching strategies are rated as the lowest (Lim et al., 2018). Not infrequently the lecture objectives formulated by lecturers cannot be used as learning references for students (Hussey & Smith, 2010). It could be that the goal contains competencies that are too general or too narrow. The formulation of goals like that reduces the learning process quality.

3.3 ICT Skills in Learning

The survey related to the ICT skills in learning are shown in table 6 as follows:

Table 6 - The findings of ICT ability in learning

Statements	Answer				Mean	Std. Dev.
	SD	D	A	SA		
Create quizzes through Kahoot media, Mentimeter, etc.	2	19	20	9	2.72	0.80
Completing lecture assignments with various learning media.	1	3	26	20	3.30	0.67
Creating modules, teaching materials, etc.	0	0	14	36	3.72	0.45
Using a variety of learning methods not only with lectures.	0	0	15	35	3.70	0.46
Mastering the application of lecture materials.	0	2	16	32	3.60	0.57
Able to use learning media such as the Internet, PowerPoint, picture media, props, etc.	0	0	9	41	3.82	0.38
Able to use laboratory equipment in the learning process.	0	1	15	34	3.66	0.51
Average					3.5	0.55

Referring to the findings in table 6, the average ability level of the implementation of learning materials, learning media, learning methods, and laboratory equipment for vocational lecturers is very high, with an average Mean of 3.5 (SD=0.55). This result is in line with the characteristics of vocational education which prepares students or graduates to quickly adapt to the workplace environment so that mastery of the knowledge, skills, attitudes and values required by the industry becomes an indicator of the success of vocational education learning. Therefore, the development of learning plans must be following the needs of the industry. Learning is focused on strengthening skills to make a product or service as stated in the Strategic Plan of the Director-General of Vocational Education 2020-2024, vocational education must be able to produce graduates who have the standards required by industry in terms of achieving soft skills and hard skills in addition to being able to develop an entrepreneurial skill (entrepreneurship).

However, quiz-making activities through online media such as Kahoot, Mentimeter, and others are still moderate at an average Mean of 2.72 (SD=0.80). This means that online learning and evaluation methods are still beneficial because these methods are quite effective, and provide convenience and attractiveness (Kaufman et al., 2020). Due to the global pandemic, a transition from traditional learning models to distance learning or online learning is needed (Basilaia & Kvavadze, 2020). Some vocational lecturers do not use this media due to several obstacles that are often faced such as limitations in learning services provided by lecturers, lack of understanding of lecturers in the use of learning support applications, and poor internet network or limited internet access (Fikri et al., 2021; Hidayat et al., 2020).

3.4 Vocational Lecturer's Assessment and Evaluation Ability

The survey results related to the lecturer's assessment and evaluation ability are presented in table 7 as follows:

Table 7 - The findings of vocational lecturer's assessment and evaluation ability

Statements	Answer				Mean	Std. Dev.
	SD	D	A	SA		
Able to perform assessment and evaluation methods.	0	0	14	36	3.72	0.45
Assess each process in practical and non-practical activities.	0	1	17	32	3.62	0.52
Informing the results of learning developments to students.	0	1	24	25	3.48	0.54
Provide an evaluation at the end of each lesson.	0	5	19	26	3.42	0.67
Conduct a pretest before learning activities.	0	12	25	13	3.02	0.71
Average					3.61	0.50

There are several indicators that are measured in the questionnaire in the assessment of vocational lecturers, including 1) Able to perform assessment and evaluation methods, 2) Assessing each process in practical and non-practical activities, 3) Informing the results of learning developments to students, 4) Provide an evaluation at the end of each lesson, and 5) Conduct a pretest before learning activities. Vocational lecturers must have the ability to assess learning outcomes well, including designing assessments (Gerds & Zhao, 2006). The assessment ability of vocational lecturers based on the findings on the indicators above shows that the ability of vocational lecturers in conducting pretests before learning activities has a low score when compared to other indicators with an average value of Mean of 3.02 (SD=0.71). The pretest carried out by the lecturer should provide initial information on the student's abilities (Meylani & Suharsono, 2017). However, there are still many difficulties in implementing this assessment, one of the factors is not knowing the urgency of this pretest/ assessment. A good assessment can certainly improve the quality of learning and ultimately the students' abilities are getting better (Izza et al., 2020).

Another finding is that the ability of vocational lecturers to carry out assessment and evaluation methods has a high average with a Mean of 3.72 (SD=0.45). These findings indicate that vocational lecturers are very good at assessment methods. There are many methods of learning assessment, including (1) performance assessment, (2) project assessment, (3) portfolio assessment, and (4) written test assessment (Sugiri & Priatmoko, 2020; Izza et al., 2020; Gerds & Zhao, 2006). With these many assessment methods, vocational lecturers can develop a lot of learning assessments that are carried out. In addition, this assessment capability is also contained in the competency standards contained in the ASEAN TVET (Maryanti et al., 2020).

4. Conclusion

Pedagogical competence is the ability to manage student learning which includes student understanding, learning design and implementation, as well as learning outcomes evaluation. Pedagogical competence is vital for vocational lecturers in the success of learning, both in the classroom and during practice. For this reason, the objective of this study is to analyze the pedagogic competence needs of vocational lecturers. It is hoped that learning development problems and needs related to the preparation of vocational lecturers can produce skilled vocational lecturers. The results show that the level of knowledge of the lecturers about the student's background is 76% and this is the lowest level of understanding. For the Lesson Plan preparation aspect, 82% of teachers have developed a complete Lesson Plan, for the classroom, laboratory, and out-of-classroom activities. Vocational lecturers' ability in using learning materials, learning aids, learning methods and experimental equipment is very high, over 83%. This is consistent with the characteristic of vocational training that prepares students and graduates to quickly adapt to the working environment so that mastering the required knowledge, skills, attitudes and values. On the other side, the activity of quiz-making through online media such as Kahoot, Mentimeter, and others, is still classified as moderate at 68%, meaning that online learning and evaluation methods are still beneficial because these methods are quite effective, and provide convenience and attractiveness. In addition, the ability of vocational teachers to take the pre-learning test with low scores was 76%. This finding indicates that there are still many difficulties, one of the factors is not knowing the urgency of this pre-test/assessment. A good assessment can

certainly improve the quality of learning and students' abilities will get better. The results of this study can be used to determine the curriculum policies, as well as vocational lecturer training programs in increasing the human resources aspect following vocational lecturer programs in the Industry 4.0 era.

Acknowledgement

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