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Students' readiness on practical learning in clothing engineering education: case on haute couture learning

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ABSTRACT

Haute couture-making techniques are critical competencies to be mastered by fashion engineering education (CEE) graduates. However, until now, many graduates have been unable to master these techniques optimally. Various studies and field phenomena confirm that they are unprepared for supporting knowledge (SK), socio-cultural, and psychological aspects. This phenomenon prompted us to measure practical learning readiness (PLR) in these three dimensions. In addition, we also examine the differences between dimensions and indicators and test the determination in constructing the PLR to determine the order of solving the problem. The survey was conducted on 386 CEE students with criteria who were currently studying haute couture (HC). The results of the descriptive analysis confirmed that psychological conditions (PC) and SK had a low level, while socio-cultural support had a high level. The results of the comparison test show that the three are generally similar, although there are notes in several indicators. Although all dimensions contribute significantly to constructing PLR, PC contribute the highest. This indicates that low PC are the first step to be addressed by CEE. Furthermore, several notes related to the decrease in knowledge-supporting practice are also the second effort that CEE must make to boost PLR in its students.

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1. INTRODUCTION

Haute couture (HC) is the highest level of clothing with the best quality stitches and is made exclusively based on customer requests [1]. HC is also known as a high-level manufacturing technique that has a high level of difficulty and takes quite a long time [2]. In addition, the manufacture also involves premium materials of the highest quality to add to the results of an increasingly exclusive product [3]. Of course, this makes the price very high for the quality of materials and complex manufacturing techniques. Thus, it is unsurprising that learning the manufacturing technique requires high skills and is difficult, especially for people needing more experience [4], [5]. The difficulty in making HC is felt by many people who are in the learning stage, including students of practical readiness (CEE) in tertiary institutions [6]. Research conducted by Lee [7] explains that the competency in making HC is the most difficult competency for CEE students to master. This is also confirmed by other relevant studies, which reveal low learning

outcomes in these competencies [8]. This marks a gap in the learning process, bearing in mind that the increasing demand for HC production differs from qualified competence in students as prospective workers in the clothing sector [1].

Practical learning readiness (PLR) is an important key that significantly impacts competency and student learning achievement [9]. So far, PLR is defined as the readiness of the institution as a whole to implement practice, which includes aspects of strategy, infrastructure, lecturers, and students [10]. Of these four aspects, student readiness in practical learning (PL) is identified as one of the most crucial aspects impacting low student achievement [11]. Moreover, readiness for PL on competency outcomes that have a high level of complexity, such as HC manufacturing techniques, so that these achievements require high readiness to achieve them. Readiness to learn is a self-condition that has been prepared or planned by individuals to carry out learning activities [12]. Similar studies suggest that readiness greatly impacts the results obtained from an important activity [13]. In addition, research from [14] ensures that low learning outcomes for students are due to readiness that the students have yet to build.

In general, PLR in vocational education (VE) includes three dimensions: the readiness of knowledge to support practice, sociocultural support (SCS), and psychological conditions (PC) [10], [15]. These three dimensions were also identified based on reports from various studies that emphasized the important aspects studied to solve the problem of student readiness in learning [16]–[18]. First, the readiness of knowledge to support practice is very important, considering that learning theory says that the cognitive aspects of individuals play a role in delivering them to the systematic procedures needed in practice [10], [19]. In addition, understanding the system and how it works obtained through cognitive activity is very important to stimulate the psychomotor processes needed in practice [9]. Then, several studies identified a decrease in socio-cultural support in individuals after the pandemic, which impacted their learning readiness [20]. Low SCS, such as decreased interaction between students and the intensity of applying important cultural values in practice, greatly affects their readiness for PL [21], [22]. Finally, PC that are disrupted by restrictions during COVID-19 are said to be the most dominant factor in influencing student learning readiness [23]. This is allegedly still experienced by most students with low outcomes, considering that PC are very closely related to motivation, intentions, and emotions in learning [24].

Ome research on PLR in the three dimensions mentioned has been carried out, but more needs to be done in CEE, especially on HC learning outcomes. Research from Budiastuti *et al*. [2] only shows student readiness in general regarding learning at CEE. Some others are only related to learning innovations in overcoming low academic achievement in CEE without being based on supporting facts about more specific issues, such as PLR in students [6], [25], [26]. Therefore, this study was conducted to measure the level of PLR in CEE students in HC learning in terms of the three dimensions of PLR: readiness for PC (SK), socio-cultural support, and PC. We also make comparisons to test the significance of differences between dimensions and between indicators in each dimension. Lastly, path analysis is performed to examine the contribution of all dimensions in constructing the PLR.

2. RESEARCH METHOD

This study focuses on uncovering and describing the level of PLR in college students by conducting a survey that adopts the design of Rea and Parker [27]. Research begins by observing phenomena related to symptoms or shadows related to problems in PL in the Department of CEE. The existing phenomena are then studied in depth to analyze the interrelationships between aspects as a cause of HC learning problems. The observed phenomena are identified as the scope that forms the concept of PLR. Given the limitations of the researcher to explore further, it was decided to measure the readiness of students to practice learning to analyze the level of each dimension (SK, physical and psychological). All three are interpreted in terms of levels, and comparisons between dimensions are carried out to clarify the weaknesses or strengths between dimensions that contribute to PLR. The influence of the three dimensions is also measured to test their contribution to the PLR, thus clarifying the possibility of determining the priority scale of sequential improvement of dimensions based on the resulting correlation coefficient.

2.1. Research participants

The research was conducted at four universities in Indonesia. The CEE study program is a study program involved in data collection. A purposive sampling technique was used to determine respondents, using several relevant criteria. This technique is used to maintain the accuracy of the data produced because it is adjusted to the characteristics of respondents who are related in the context studied [28]. Our first consideration in selecting participants was to ensure their willingness to follow the process of filling out the questionnaire. This is important as an anticipatory step to avoid the irrationality of the resulting data. Furthermore, the second consideration, we adjusted the research context by not involving new students or students over five years old so that participants focused on their learning experiences in tertiary institutions in

the range of two to five years. This was done, considering that the context of this research refers to PLR students who have normal study time and are studying a series of HC competencies. We reached the end by acquiring 386 students to be involved in filling out the PLR questionnaire. 216 (55.96%) participants were female students, and the rest were male. Then, 181 (46.89%) participants had a learning experience of 2-3 years, 173 (44.82%) participants had a learning experience range of 3-4 years, and the rest had a learning experience of 4-5 years.

2.2. Survey questionaire instruments

The questionnaire to measure the level of PLR is prepared based on the development of instruments formulated by previous relevant studies. We screened various research instruments to obtain instrument criteria that matched the research characteristics we were conducting. Measurements in the questionnaire adopted a four-point Likert scale, with the options very low (VL), low (L), high (H), and very high (VH). The PLR instrument includes the dimensions of SK, socio-cultural support and PC. The SK dimension refers to the aspects of capital needed as a basis for practicing in VE. e arranged nine items by adopting the instruments formulated by Johnston [29] and Sirisha *et al.* [30] which are specified into five indicators related to SK. The five indicators include philosophical knowledge, working principal knowledge, procedural knowledge, work safety knowledge, and problem-solving knowledge. Then, a questionnaire to measure SCS totaling six items was adopted from Billet [10] and Thompson [22] who revealed the theory of social and cultural foundations for learning in VE with a range of three important indicators. The three indicators include self-absorption of regional cultural values and family and community support. Finally, the dimensions of the students' psychological condition are measured by a total of nine items adopted from Ahmad *et al.* [31], Ke *et al.* [32] and Qazi *et al.* [24] by covering five main indicators, namely emotional resilience, mental health, learning motivation, self-efficacy and learning intention.

The questionnaire was completed with a statement from the respondents stating they had no conflict of interest with the researcher. Before data collection, the questionnaire was reconfirmed regarding its validity and reliability. We adopted two methods to strengthen the validity index: content validity based on expert opinion interpreted with Aiken scores and construct validity based on field trials analyzed using confirmatory factor analysis (CFA). The results of this test are shown in Table 1. In addition, we also considered the level of rationality of the data based on the PLR questionnaire filling criteria. At least it took a minimum of eight minutes to answer a total of 24 items in the questionnaire, so data from participants who completed them in less than eight minutes were not included in the analysis. In this case, 47 data did not meet these criteria and were eliminated, so the final participant data analyzed totaled 339.

Table 1. Measuring the validity of the questionnaires

Indicator	Expert (Rater)				S_1	S_2	S_3	S_4	∑s	n(c-1)	V	Construct	
	I	2	3	4								LF	P
SK 1	4	4	4	4	3	3	3	3	12	12	1.000	0.783	0.000
SK 2	3	4	4	4	2	3	3	3	11	12	0.917	0.722	0.000
SK 3	4	4	4	4	3	3	3	3	12	12	1.000	0.777	0.000
SK 4	3	4	3	4	2	3	2	3	10	12	0.833	0.782	0.000
SK 5	4	4	4	4	3	3	3	3	12	12	1.000	0.827	0.000
SCS 1	4	4	4	4	3	3	3	3	12	12	1.000	0.880	0.000
SCS 2	4	4	4	4	3	3	3	3	12	12	1.000	0.912	0.000
SCS 3	4	4	4	4	3	3	3	3	12	12	1.000	0.822	0.000
PC 1	3	4	3	4	2	3	2	3	10	12	0.833	0.884	0.000
PC 2	4	4	4	4	3	3	3	3	12	12	1.000	0.893	0.000
PC 3	4	3	4	3	3	2	3	2	10	12	0.833	0.922	0.000
PC 4	4	4	4	4	3	3	3	3	12	12	1.000	0.786	0.000
PC 5	3	4	4	4	2	3	3	3	11	12	0.917	0.885	0.000

Based on the results of the validity test, it is generally clear that the validity is strong, so it meets the questionnaire's credibility requirements. First, test the validity of the content based on the opinions of four experts; the Aiken (V) score for all indicators is greater than 0.800, so it is declared to have a high validity index [33]. The construct test further strengthens the validity stated by the loading factor (LF) value above 0.700 in testing using Smart-PLS [34]. Then the reliability test is described through the composite reliability (CR) coefficient, alpha value, and average variance extracted (AVE). As a result, it is obtained that all constructs have high reliability [35]. Table 2 details the results of the reliability test in this study.

Table 2. Measuring the reliability of the questionnaires

Construct	Mean	Standard Deviation	Alpha	CR	AVE
PR	3.442	0.791	0.852	0.900	0.692
SCS	3.524	0.828	0.842	0.905	0.761
SK	3.723	1.059	0.838	0.885	0.607
PC	3.782	0.906	0.923	0.942	0.766

Note: *=main construct

2.3. Statistical analysis

Before being analyzed, the data was first filtered based on the criteria described in the previous point to ensure its level of rationality. We used three different statistical analysis methods to measure the depth of the collected data. First, the data were analyzed descriptively related to their central tendency (mean, median, mode, standard deviation). The average score was then categorized based on five categories, namely very low, low, average, high and very high, detailed in Table 3. Next, we conducted a comparison test to visualize comparisons between dimensions and indicators. The Post Hoc test with Dunnet C Test and Tukey Test method was adopted to measure comparisons accurately. Descriptive and Post Hoc tests were conducted using SPSS V 23 software. Finally, we tested the effect of three dimensions separately in constructing PLR on students. In this case, we adopt path analysis to analyze the correlation coefficient of the independent variables (SK, PC and PhC) to the dependent variable (PR). This test was carried out using the Smart-PLS software and the constructed instrument test.

Table 3. PLR level categorization

Interval Score	Based on Mean	Category
$Mi + 1{,}5\ SDi \leq M \leq Mi + 3{,}0\ SDi$	3.25–4.00	Very high
$Mi + 0\ SDi \leq M \leq Mi + 1{,}5\ SDi$	2.50–3.25	High
$Mi - 1{,}5\ SDi \leq M \leq Mi + 0\ SDi$	1.75–2.50	Low
$Mi - 3{,}0\ SDi \leq M \leq Mi - 1{,}5\ SDi$	1.00–1.75	Very low

Source: Taro [36]

3. RESULTS AND ANALYSIS

3.1. PLR level measurement results

PLR level describes the extent to which students are ready for knowledge, socio-culture and psychology. These three are the basic constructions of inherent PLR and can become readiness capital for students to undergo practice. In this case, all PLR dimensions are determined by level category, which refers to the mean score obtained by each indicator and the total score of each dimension. The raw data were scored by adopting the minimum and maximum scores from the Likert questionnaire scale (1-4). It would be great if you could consider early to facilitate further analysis so that comparative tests can be conducted. As shown in Table 4, only the SCS dimension is the PLR dimension with the acquisition of readiness in the high category. As analyzed, that dimension for students occupies the highest level (M=2.86). In this dimension, body stamina has not changed much from the pandemic and post-pandemic eras (M=3.26). While changes in thinking power occur quite drastically by occupying the lowest level in that dimension (M=2.11). Meanwhile, the psychological condition dimension occupies the lowest level (M=2.18). In this dimension, all indicators are in the spotlight because they have a low category.

Table 4. PRL level measurement results

Dimension	Indicator	Mean	Percentage (%)	Category
SK	Philosophical knowledge (SK 1)	2.31	57.75	Low
Total	Procedural knowledge (SK 2)	2.68	67.00	High
	Knowledge of working principles (SK 3)	2.20	55.00	Low
	Occupational safety and health knowledge (SK 4)	3.12	78.00	High
	Problem solving knowledge (SK 5)	2.06	51.50	Low
	SK	2.47	61.85	Low
SCS	Absorption of cultural values	3.22	80.50	High
Total	Family support	3.26	81.50	High
	Community support	2.11	52.75	Low
	SCS	2.86	71.58	High
Psychological condition	Emotional resilience (PC 1)	2.38	59.50	Low
Total	Mental health (PC 2)	2.30	57.50	Low
	Learning motivation (PC 3)	2.41	60.25	Low
	Self-efficacy (PC 4)	1.87	46.75	Low
	Learning intention (PC 5)	1.93	48.25	Low
	Psychological condition	2.18	54.45	Low

It seems that HClearning is still experiencing significant problems, especially for students who must achieve competence in this lesson. One who feels this problem is a student in the CEE study program [6]. The need for intensive practice seems to be still disrupted, so this results in learning outcomes that have not been optimally increased so far [37]. A very crucial issue is related to the basic capital needed to carry out learning, especially PL, which is the hallmark of VE [19], [38]. Although recent research has yet to reveal much about it, it provides significant evidence that even though learning innovations are supported by competent teaching staff, PL has not been able to be improved optimally. Readiness for PL (PLR) in students identified by this research is a crucial basic problem. How could it not be? This refers to his findings which reveal that, as a whole, the PLR of master of engineering education in fashion (MEE) students is still on the lower threshold. This is supported by previous relevant research, which revealed that recent student learning outcomes in VE could have been more optimal [39], [40]. This certainly gives a strong signal that the low PLR identified by this study is a reality that exists and requires an immediate response to resolve it.

PC is crucial in forming PLR in CEE students in HC practical learning. This study confirms that PC are the dimension that contributes the strongest influence on PLR. However, PC were revealed in this study to be the lowest dimension for the readiness category. We highlight all the indicators with a low level, indicating a comprehensive problem in that dimension. Not without reason, various studies have revealed the extraordinary psychological impact on VE students under any circumstances, especially after the prolonged COVID-19 pandemic. Some said that online learning amid a pandemic had minimal direct interaction between students and lecturers, so this caused their mental health and emotional resilience to experience prolonged problems [31], [41], [42]. Not a few also revealed that the self-efficacy of VE students when practicing was very low, which was caused because, during the pandemic, they lacked interaction with tools and work materials and had not practiced directly for a long time [42]–[44]. This is also based on students' low motivation and learning intentions during online learning, and currently, there has yet to be any significant effort to overcome them.

In addition, VE has five knowledge characteristics that must be mastered before carrying out the practice. These five characteristics include philosophical, procedural knowledge, system work principles, occupational safety and health, and problem-solving [10], [19]. These five indicators must be possessed by students to succeed in their practical activities [45]. It's just that, in this study, knowledge of occupational safety and health was the only indicator identified as having high acceptance of CEE students in HC learning. The rest have low acceptability, so this is also the cause of the low student learning outcomes. This may indeed naturally occur, given the research from Nguyen [46], Salta [42] and Wagiran [17] revealed the impact of long-term online learning that was less interactive during the pandemic, where student cognitive achievement was not optimal. One most astonishing thing was that knowledge about problem-solving had the lowest level among the indicators of knowledge-supporting practice. Problem-solving was identified as a skill that must be mastered in VE and became the most crucial skill nomination in the 21st century to achieve [47], [48].

Furthermore, even though socio-cultural support is a dimension of PLR that is revealed to have high acceptance, we highlight one important thing. This refers to the low level of community support for the student concerned, so we perceive that this also contributes to the low HC learning outcomes caused by low PLR [49]. Low community support is a parameter of the absence of the community's role in helping the growth and development of competence in academics, considering that their role is very crucial, as stated by [50], [51]. This was also confirmed by the theory of Thompson [22] which revealed differences in the level of learning achievement in VE students who came from environments with high and low community support. As a result, high community support is very helpful in achieving the competence of individuals who need it. Most of this support is in the form of facilities and ideas to support the competencies or fields to be achieved [15], [52].

3.2. Differences in PLR levels between dimensions and between indicators

Changes in PLR in fashion engineering education (CEE) students in fashion learning (HC) can be seen from the previous description. The most crucial problem is the readiness of the psychological condition dimension, which is still low, marked by this being the lowest dimension. Nevertheless, comparisons need to be made to consider the tendency of priority scales to be directed to improvement. We ensure that the comparison reference scale ranges from one to four to avoid analysis errors in SPSS. We ran two tests simultaneously using the one percent and five percent significance levels. As presented in Table 5, the Post Hoc test using the Dunnet C Test method shows that significant differences are only seen in the dimensions of SCS and PC ($p=0.048$ at a 5% significance level). This means the psychological condition dimension has significantly lower readiness than socio-cultural support for students. With these results, it can be concluded that psychological condition is a dimension that should receive the leading priority scale in improvement.

Table 5. Differences in PLR levels between dimensions

PLR Level Dimension		Mean Difference	Sig.	Evaluation
SK	SCS	-0.39	0.092	No different
	Psychological condition	0.29	0.126	No different
SCS	SK	0.39	0.092	No different
	Psychological condition	0.68	0.048*	Different
Psychological condition	SK	0.29	0.126	No different
	SCS	-0.68	0.048*	Different

The level of significance; * p<0.05, ** p<0.01

Unlike the previous test, in this section, the comparative test focuses on comparing indicators in each dimension. The goal is similar, namely as an effort to consider the tendency of the priority scale to be directed to improvements in the scope of dimensions. This is done considering that each dimension certainly needs improvement, so improvements will be directed in line with the priority scale determined based on the differences. As with the previous test, Table 6, which shows the results of the Post Hoc test with the Tukey test, reveals only a few dimensions that experience significant differences. First, knowledge of working principles (SK 3) in the dimensions of SK is a significantly lower indicator than occupational safety and health knowledge (SK 4). Then, still, in the same dimension, problem-solving knowledge (SK 5) is also a significantly lower indicator than occupational safety and health knowledge (SK 4). This indicates the need for these two indicators to become priority improvements to increase SK in CEE students for HC learning. Then, shifting to the socio-cultural support dimension, the test results reveal a significant difference between the absorption of cultural values (SCS 1) and community support (SCS 3), where SCS 3 has the lowest score. Thus, it is clear that community support needs to be prioritized for improvement in this dimension.

Table 6. Differences in levels between indicators on the PLR dimension

PLR level dimension	Between indicators		Mean difference	Sig.	Evaluation
SK	SK 1	SK 2	-0.37	0.095	No different
		SK 3	0.11	0.196	No different
		SK 4	-0.81	0.092	No different
		SK 5	0.25	0.137	No different
	SK 2	SK 3	0.48	0.078	No different
		SK 4	-0.44	0.084	No different
		SK 5	0.62	0.060	No different
	SK 3	SK 4	-0.92	0.041*	Different
		SK 5	0.14	0.188	No different
	SK 4	SK 5	1.06	0.029*	Different
SCS	SCS 1	SCS 2	-0.04	0.368	No different
		SCS 3	1.11	0.024*	Different
	SCS 2	SCS 3	1.15	0.022*	Different
Psychological condition	PC 1	PC 2	0.08	0.318	No different
		PC 3	-0.03	0.373	No different
		PC 4	0.51	0.071	No different
		PC 5	0.45	0.080	No different
	PC 2	PC 3	-0.11	0.196	No different
		PC 4	0.43	0.087	No different
		PC 5	0.37	0.095	No different
	PC 3	PC 4	0.54	0.066	No different
		PC 5	0.48	0.078	No different
	PC 4	PC 5	-0.06	0.347	No different

The level of significanc; * p<0.05, ** p<0.01

3.3. PLR construction is based on the influence of SK, SCS and PC dimensions

Gg Although various theories give confidence that learning readiness in students is inseparable from the extent of knowledge, socio-cultural and psychological support possessed by them, however, we do not propose hypotheses that depart from existing theories. We only test how far these three aspects construct PLR in CEE students, especially in HC learning. Our main consideration in analyzing it is to map priority scales on dimensions to make systematic improvements. We ran two tests simultaneously using the one percent and five percent significance levels. In this case, each dimension represents data from each indicator, while the PLR represents the total data from each dimension. Smart-PLS is used as a tool for data analysis, and it has been confirmed that the number of samples meets the criteria. Table 7 and Figure 1 present the results of a detailed analysis of the relationship between the PLR dimensions and the PLR and the relationship between variables. PLR constructs that include all three dimensions are significantly tested.

However, the psychological condition dimension has the highest construction contribution (r=0.722). This indicates that psychological readiness is a basic student capital influencing PLR.

Table 7. Path analysis result

Path	Estimated	T-Value	SE	p
PLR Construction				
SK → Practical Learning Readines	0.324	3.442	0.002	0.000**
SCS → PLR	0.321	2.098	0.002	0.000**
Psychological Condition → PLR	0.722	12.130	0.000	0.000**
Correlation Between Variables				
Suporting Knowledge ↔ SCS	0.268	1.963	0.008	0.000*
SK ↔ Psychological Condition	0.482	4.116	0.005	0.000**
SCS ↔ Psychological Condition	0.198	1.608	0.001	0.004*

*The level of significance; * p<0.05, ** p<0.01*

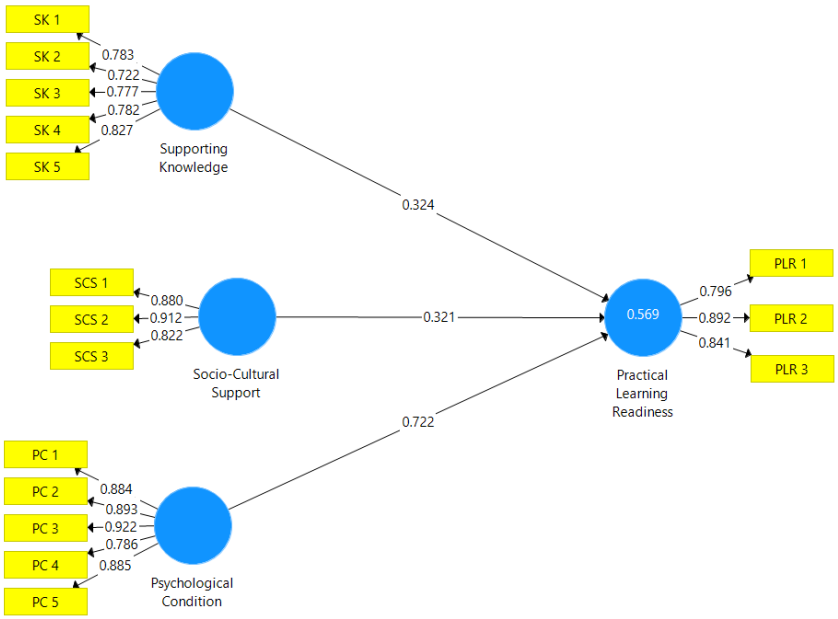

Figure 1. Path analysis

All dimensions did not significantly differ in acceptance of HC learning in CEE. It's just that several priority scales must be prioritized to improve the PLR, and the dimensions of the highlighted PLR have significant differences at the lower threshold. In addition, the three dimensions of PLR studied are also significant constructions for PLR, so it is very important to improve them systematically to prepare CEE students before practicing making HC. PC identified as the most crucial factor must be the first focus of attention for VE, especially CEE, to solve. Moreover, the psychological condition is a dimension of PLR, which has a low level of acceptance at this time. Research from Naido and Cartwright [53], Siow [54] and Skipor and Vorobieva [55] provides specific recommendations for improving the psychological aspects of students by conducting counseling guidance, practical learning simulations, and strengthening their motivation through interactive learning innovations. Moreover, the institution must also fight for the growth of SK as a foundation for practical learning. Currently, it is very easy with digital technology to obtain various sources of student learning needs, and it only requires guidance and monitoring from lecturers to facilitate and improve student digital literacy [56], [57]. Finally, efforts that can raise awareness at all levels of society to play a role in providing support for students need to be carried out [9].

4. CONCLUSION

Even though HC is a high-level technique that has developed rapidly, learning it still poses significant obstacles, especially in CEE so it still needs to be re-evaluated. Not optimal learning outcomes

resulting from students' lack of readiness for practical learning (PLR) are proven through this research. The most important thing that CEE still neglects is the psychological condition identified is still low. Especially in terms of self-efficacy and low learning intentions, of course, it contributes to strong problems affecting student readiness. Therefore, this dimension must be the first focus of attention to be resolved through reinforcements such as counseling guidance, learning simulations and motivation to learn through learning innovations. In addition, strengthening the knowledge to support practice must continue to be pursued through the guidance and monitoring of lecturers, especially in problem-solving knowledge, which is currently the leading skill students must master. Efforts that can raise awareness at all levels of society to provide support for students need to be carried out.

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