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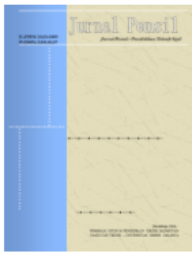

ANALYZING TRANSFERABLE SKILLS OF VOCATIONAL STUDENTS TO ALIGN WITH INDUSTRY DEMANDS

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Abstract

The rapid development of the world in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) era has led to changes in various sectors, including the education sector. According to the Indonesian Central Statistics Agency (BPS) in August 2022, Vocational High Schools contribute the highest unemployment rate of 9.42% compared to other educational levels. Therefore, this research aims to analyze the level of Transferable Skills, which refers to skills that can be transferred and consistent in continuous learning, among Vocational High School students and their fulfillment of the needs of the working industry. The method used in this research is descriptive quantitative with a survey technique through a cross-sectional approach to gather information. The instruments used in this study consist of questionnaires distributed to vocational high school students in Indonesia who have undergone job training and supervisors in the industry where the students conducted their job training in various regions in Indonesia. The findings of this research indicate that, overall, the vocational high school students have a satisfactory level of Transferable Skills. However, there are still several aspects that need improvement. This research contributes significantly to understanding the level of transferable skills among vocational high school students and the needs of working industry in the VUCA era. The results of this study can serve as a basis for the development of more effective and relevant vocational education programs to prepare students to meet the demands of an increasingly complex and dynamic job market.

Keywords: Industry, Hard Skill, Soft Skill, VUCA

Introduction

Vocational education is a form of formal education that aims to improve an individual's expertise and skills in a specific field (Fauzan et al., 2023). According to (Suharno et al., 2020a), vocational education aims to prepare individuals to be ready for work and have skills appropriate to the field of expertise taken. Research conducted by Schröder (2019), the significance of vocational education in the country's progress is highly notable. Vocational education has the potential to enhance the workforce's preparedness for employment and bolster the overall productivity of the nation's economy.

In addition, vocational education can also improve employment opportunities for vocational school graduates. The characteristic of vocational education is its curriculum that combines the functions of education with training, so it is expected that graduates of the vocational school can become the human resources that able to compete and going directly into the industry and the world of work (Wijanarka et al., 2023; Ana et al., 2020; Utami et al., 2022). Additional studies also indicate that vocational education can lead to enhanced human resource quality and foster economic development (Z. Arifin et al., 2020; Azman et al., 2020; Rosina et al., 2021; Patmanthara & Hidayat, 2018). Therefore, vocational education is one of the very important types of education to be developed in our country. The aims of vocational education are to reduce unemployment by increasing employment opportunities (Azman et al., 2020). However, there remains a disparity between the abilities of vocational school graduates and the demands of the job market, which cannot be adequately fulfilled (Patmanthara & Hidayat, 2018).

On the other hand, now the world is already in the era of VUCA, which is an abbreviation of Volatile, Uncertain, Complex, and Ambiguous (Deepti & Sachin, 2020). Development and progress of a nation lies in human resources quality (Rembang & Purwastuti, 2020; Rahayu & Iswardhany, 2020). In the age of volatility, uncertainty, complexity, and ambiguity (VUCA), achieving success relies heavily on one's capacity to learn independently. Individuals must possess the capability to swiftly and effectively acquire new knowledge and skills. In this regard, education and training institutions should provide easy access to relevant educational and training resources, as well as encourage individuals to continue their lifelong learning. With these abilities, individuals can take advantage of the VUCA environment as an opportunity to grow and thrive in their careers.

To thrive in this volatile, uncertain, complex, and ambiguous era, individuals require a combination of both soft skills and hard skills. Soft skills can be beneficial for individuals when it comes to fostering positive relationships with co-workers and superiors within the professional environment. Some examples of soft skills required in the workplace include effective communication skills, teamwork skills, leadership skills, adaptability to change, and problem-solving abilities (Iriani, 2017). In addition to soft skills, hard skills are also important considerations in choosing candidates for strategic decision making. Hard skills are specific and measurable technical skills acquired through education, training, and work experience (Rao, 2018). Hard skills are technical skills that are measurable and can be learned through formal training and education. These skills are needed to develop intellectual intelligence and can be assessed through practical tests. For examples, the ability to operate software, master programming languages, or expertise in engineering and science. According to Putra et al. (2020), hard skills are fundamental skills necessary to produce tangible products, such as skills in designing, building, and repairing machines or hardware. Research by Barrera-Osorio et al. (2021) shows that developing hard skills can improve outcomes and products in an organization, while soft skills can help employees maintain their jobs and establish good relationships with colleagues and customers.

Hence, possessing both of these skill sets is crucial for individuals in the field of human resources who aim to thrive in both the industrial and professional realms (IDUKA). According to Collins-Nelsen et al. (2022), many industries are seeking candidates with these skills because they can be applied to various fields of work. Furthermore, competencies like effective teamwork capabilities, effective communication, the capacity to learn independently, and adaptability are

needed to cope with changes and challenges in an increasingly complex world of work (Malik, 2018). The ability to learn independently and adaptability are also crucial in the face of rapid technological developments and the ever-changing demands of the labor market.

Moreover, transferable skills play a significant role in establishing a sustainable learning program (Smith & Paton, 2014). Therefore, the development of transferable skills becomes essential in education to help students face competition and changes in the world of work. In preparing students to tackle challenges in a highly competitive job market, vocational education institutions can utilize student transferable skills level analysis. This examination can aid educational institutions in evaluating the efficacy of their vocational programs in equipping students for success in the workforce. By understanding students' skill levels, vocational education institutions can identify areas that need improvement in their programs, such as emphasizing the development of teamwork skills, effective communication, and critical thinking.

Vocational education refers to a structured form of learning that centers on enhancing practical skills in line with the specific professional area selected by individuals (Suharno et al., 2020b). Vocational education is structured to equip students for entry into the job market (Jabarullah & Iqbal Hussain, 2019; Pusriawan & Soenarto, 2019). Its purpose is to prepare students to become proficient professionals in their chosen domains (Caspersen et al., 2017). The primary goal of vocational education is to orient students towards enhancing their quality of life, fostering personal growth, and cultivating the competencies and confidence needed to initiate their own entrepreneurial ventures. Furthermore, vocational education aims to ready students to attain mastery in science and technology (Apriana et al., 2019). The hallmark of vocational education lies in its curriculum, which integrates the roles of both education and practical training (Ana, 2020). The aspiration is that graduates from vocational institutions will evolve into skilled human resources capable of competing effectively and transitioning directly into the realms of industry and employment (S. Arifin & Muslim, 2020). Vocational schools hold the potential to expand employment prospects by offering instruction and hands-on experience that align with workforce demands, thereby enabling vocational school alumni to be better poised for employment (Lamza-Maronić et al., 2014). Vocational education is customized to furnish students with a blend of interpersonal and technical proficiencies, with the ultimate aim of generating a workforce well-prepared for the professional arena. To facilitate adaptability, vocational education should facilitate the aptitude for switching between various roles (Gekara & Thanh Nguyen, 2018).

IDUKA considers a range of factors when selecting potential employees, with a primary focus on their capabilities encompassing both soft and hard skills. Soft skills denote an individual's capacity to engage effectively with others and manage their own conduct (Setiawan Wibowo et al., 2020). These proficiencies play a crucial role in enabling individuals to adapt and effectively tackle the challenges that arise (Hegewisch & Liepmann, 2013). The application of soft skills typically comes into play when individuals engage in interactions with others (Vogler et al., 2018). On the other hand, hard skills constitute the fundamental competencies required to directly produce observable outcomes. In his 2021 study titled "Hard and Soft Skills in Vocational Training: Experimental Evidence from Colombia," Felipe Barrera-Osorio discovered that hard skills can enhance outcomes and outputs at IDUKA, whereas soft skills contribute to the long-term job retention of employees. Both soft and hard skills hold significant value for IDUKA, underscoring the importance of cultivating exceptional soft skills in alignment with the company's criteria to effectively address industry demands (Bakos, 1997).

A transferable skill is indeed a component of soft skills. Transferable skills, which are also referred to as portable skills or generic skills, are competencies and attributes that have broad applicability, allowing individuals to utilize them effectively in diverse settings, industries, and positions. These skills are not tied to a specific job or field but can be adapted and utilized in different situations (Succi & Canovi, 2020). Soft skills encompass a broader range of interpersonal, communication, and personal attributes that enable effective interaction, collaboration, and personal development. Transferable skills, being a subset of soft skills, emphasize the adaptable

and versatile qualities that individuals can carry with them as they transition between different tasks, roles, or career paths (Hodges & Martin, 2020).

Research Methodology

This research uses descriptive quantitative methods. The research techniques employed in this study are survey techniques through cross-sectional approaches, these sentences are used to gather data on people's attitudes, beliefs, opinions, and actions, offering the benefit of providing information quickly and concisely (Creswell & Guetterman, 2018). The research subjects consist of 48 guiding industries in the industry where students doing a job training and 516 vocational high school students scattered across Indonesia. These students are individuals who have participated in job training. The instruments utilized in this research are questionnaires and documentation. The questionnaire comprises 33 statements of transferable skills, which are divided into 5 aspects: Continuous Learning (7 items), Working Together in a Team (5 items), Effective Communication (4 items), Critical Thinking in Problem Solving (5 items), and Finding Solutions and Creativity (12 items). The questionnaires are distributed via Google Forms, which are sent via email and WhatsApp. Each question has four options that determine the level of ability: "highly capable," "capable," "incapable," and "very incapable." Data from the subsequent questionnaires were analyzed using SPSS version 26. The instrument was validated through a pilot survey involving 50 students who met the sample criteria.

Research Results and Discussion

Table 1 shows that the research involved a total of 564 respondents, consisting of 516 students and 48 individuals from IDUKA. Out of the 516 students, 455 students (88.17%) came from the West Java province, while the remaining 39 students (7.55%) came from Aceh and 22 students (4.26%) came from West Nusa Tenggara. Furthermore, out of the surveyed students, 275 students (53.29%) were male, and 241 students (46.71%) were female. The majority of respondents, 455 students (88.18%), came from the Building Modeling and Information Design expertise program, while 60 respondents (11.63%) came from the Construction and Property Business expertise program. Only 1 respondent (0.19%) came from the Sanitation and Care Building Construction expertise program. As for the working industry, 15 companies (31.25%) were national companies, while the majority, 33 companies (68.75%), were local companies.

Table 1. Respondents Characteristics

Aspect	Category	Frequency	%
Vocation High School			
Province	West Java	455	88.17
	Aceh	39	7.55
	West Nusa Tenggara	22	4.26
Gender	Male	275	53.3
	Female	241	46.7
Expertise Program	Modeling Design and Building Information	455	88.18
	Sanitation and Treatment Building Construction	1	0.19
	Construction and Property Business	60	11.63
Working Industry			
Level	National	15	31.25
	Local	33	68.75

Aspects and Indicators in The Assessment of Transferable Skills

The transferable skills that are currently required from research results are the most needed skills in the working industry, namely the ability to continue learning, teamwork, effective communication, critical thinking in solving problems and finding solutions, creative (high motivation, always curious, have broad insights). Table 2 describes the indicators of each aspect of transferable skills.

Table 2. Aspect and Indicators in Transferable Skills

Aspect in Transferable Skills	**Indicator/statements**
Continuous Learning	1. Able to carry out all work in accordance with the applicable SOP 2. Able to learn new things to support work skills 3. Have flexibility in carrying out work 4. Able to read information in the work environment 5. Practical students a to-do-list and time schedule to complete work 6. Able to read the situation in the workplace 7. Able to learn to hear instructions and directions
Working Together In A Team	1. Able to carry out goals, plan activities and the roles of the team in accordance with applicable procedures 2. Able to identify the strengths and weaknesses that occur when working together as a team 3. Able to follow up and provide feedback and input to team members 4. Able to evaluate the ability to work together in teams on a regular basis in accordance with applicable procedures 5. Able to make documentation of evaluation reports on the results of teamwork in accordance with applicable procedures
Effective Communication	1. Able to use the ethics and etiquette that apply when communicating 2. Able to build communication relationships between colleagues 3. Able to speak using gestures when needed with applicable ethics and etiquette 4. Able to carry out consistent and sustainable evaluation and examination of work results
Think Critically in Solving Problem	1. Able to gather relevant information in analyzing problems 2. Able to identify various information that has been obtained in the work environment 3. Able to find the data needed in analyzing a problem 4. Able to identify various problems that occur while in the work environment
Find Solution and Creative	1. Being confidence in completing work 2. Able to persistence when carrying out work 3. Practical students' high motivation in doing work 4. Able to realize the creative ideas they make 5. I do not hesitate to ask questions when there are things they do not understand 6. Able to make a breakthrough in completing a job 7. Able to think and express creative ideas to solve problems at work 8. Practical students a desire to learn new things 9. Able to see problems and find solutions with different views 10. Practical students' creativity to complete the work 11. Able to get out of their comfort zone and face the challenges that exist in carrying out the work given 12. Practical students' dedication and courage in trying new things

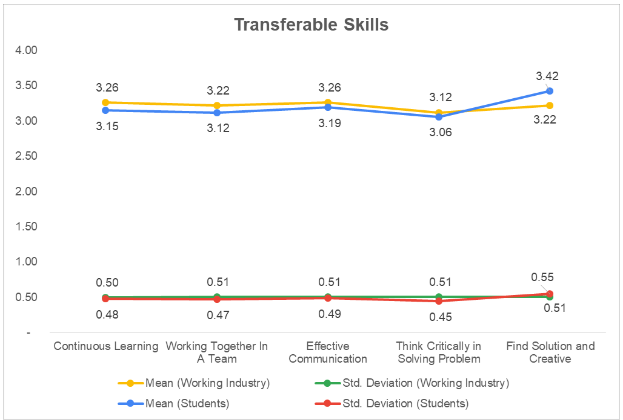

Figure 1. The Ability Level of Respondents in Transferable Skills

Figure 1, it can observe that, according to the students, the aspect of 'critical thinking in solving problems' is categorized as 'very capable' for themselves (M = 3.12; SD = 0.45) and also for working industry (M = 3.10; SD = 0.51). Interestingly, this is in contrast to the aspect of 'finding solutions and creativity', where the score from working industry (M = 3.22; SD = 0.51) is lower than that of the students themselves (M = 3.42; SD = 0.55). Furthermore, in the aspects of 'continuous learning', 'working together in a team', and 'effective communication', the assessments from both parties are not significantly different, but the assessments from working industry are consistently higher than those from the students.

Transferable skills are skills that can be applied in various industries and job roles. In today's rapidly changing world, these skills have become increasingly important for individuals to remain adaptable and competitive. Individuals should prioritize the development of these skills to enhance their employability and career success (Campion, 2018). One way to improve transferable skills is by demonstrating the ability to adapt and learn quickly, which can be acquired through internships, volunteering, and other extracurricular activities. Several instances of such skills encompass communication, collaboration, critical thinking, and efficient time management (Azmi et al., 2018).

Continuous Learning

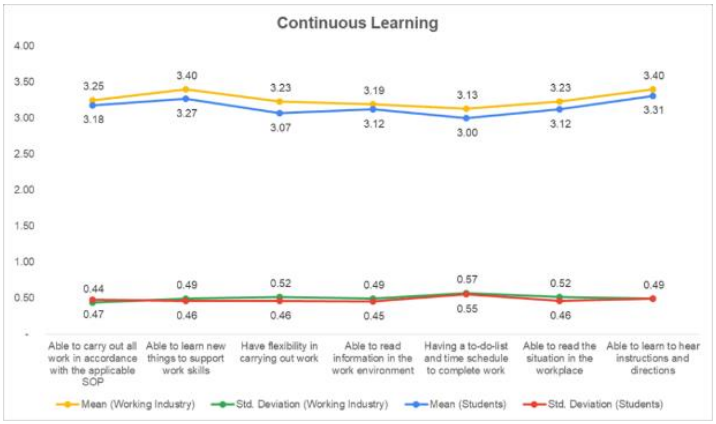

Figure 2. The Ability Level of Respondents in Continuous Learning

Figure 2 presents the results of continuous learning, which was measured using seven items. Most working industries rated 'learn new things to support work skills' (M = 3.40; SD = 0.49) and 'learn to listen to instructions and directions' (M = 3.40; SD = 0.49) as important aspects. Similarly, the majority of students also rated 'learn new things to support work skills' (M = 3.27; SD = 0.46)

and 'learning to listen to instructions and directions' (M = 3.31; SD = 0.49) as highly important for their learning.

These findings indicate that both students and working industries share a similar assessment regarding the importance of sustainable learning. Continuous learning is not only about acquiring new knowledge and skills but also about applying what has been learned to improve performance and achieve goals (Rafiq et al., 2017). Consequently, it is essential for individuals to adjust to a swiftly evolving environment and uphold their competitiveness in the market (Khan & Lew, 2018). The industry plays a crucial role in fostering sustainable learning by actively engaging in activities like job training. Through this approach, students have the opportunity to acquire practical experience in real-world settings, effectively connecting theoretical knowledge with practical application (Sengupta et al., 2020).

Working Together in a Team

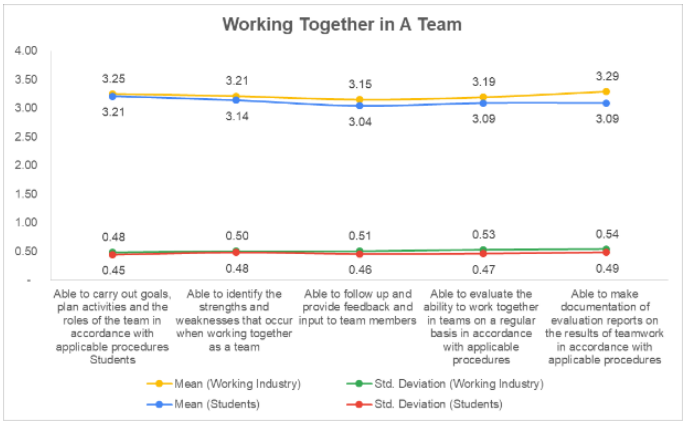

Figure 3. The Ability Level of Respondents in Working Together in a Team

Figure 3 illustrates the results of working together in a team, measured using five items. Most working industries rated 'making documentation of evaluation reports in the results of teamwork in accordance with applicable procedures' (M = 3.29; SD = 0.54) as highly capable. However, students need to focus more on 'follow up and provide feedback input to team members' in order to collaborate effectively with others (M = 3.15; SD = 0.46). It is crucial for students to emphasize maximizing their contributions and commitment to teamwork, as the success of teamwork depends on the team members themselves (Lukusa et al., 2020). The study's results also revealed that the majority of students rated 'carry out goals, plan activities and the roles of the team in accordance with applicable procedure' as highly capable (M = 3.21; SD = 0.45).

Being capable of collaborating effectively within a team is regarded as a fundamental skill demanded by industries in the professional realm. These skills encompass clear communication, collaboration with individuals from diverse backgrounds, appreciation of differences, and active participation within a team context (Patacsil & Tablatin, 2017). Various industries also emphasize the significance of collaborative abilities in their potential employees. Therefore, educational institutions should prioritize the development of collaborative skills in their students, preparing them to meet industry demands upon entering the workforce (Hines et al., 2020). Through collaborative projects and group tasks, students can learn to effectively work together, enhance their communication and leadership skills, and develop problem-solving capabilities. This holistic approach can assist students in acquiring the essential skills needed for success in the workplace, including interpersonal skills, creativity, and innovation (Mitsea et al., 2021).

Effective Communication

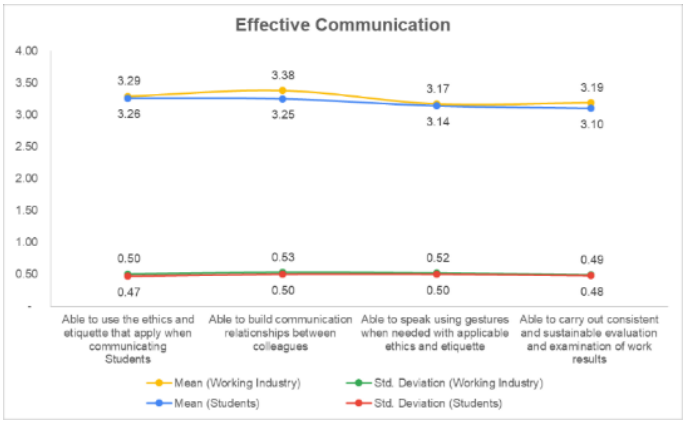

Figure 4. The Ability Level of Respondents in Effective Communication

Figure 4 presents the results of effective communication, measured using four items. The majority of working industries assessed the ability to 'build communication relationships between colleagues' (M = 3.38; SD = 0.53) as highly capable. However, the indicator 'able to speak up using gestures when necessary with proper ethics and etiquette' needs further improvement (M = 3.19; SD = 0.52). Communication, especially public speaking, is crucial in working industry. However, not all students feel confident in public speaking, so it is essential to enhance this skill to succeed in working industry before students transition from academic life to working industry life (Raja, 2017). The industry expects graduates to communicate effectively with colleagues, clients, and stakeholders in various contexts. Therefore, it is important for educational institutions to provide students with opportunities to develop and practice skills that are relevant to industry needs (Ali et al., 2020).

The study also concluded that, according to the students, the lowest ability was in terms of 'carrying out consistent and sustainable evaluation and examination of work results' (M = 3,10; SD = 0,48), while the highest rating was on the indicator 'able to use ethics and etiquette when communicating' .To enhance the ability to communicate effectively according to industry needs, educational institutions must incorporate various strategies, such as experiential learning, peer feedback, and the use of technology. Experiential learning allows students to practice communication skills in real-world settings, while peer feedback provides an opportunity for students to recognize each other's strengths and weaknesses. The use of technologies, such as video conferencing and online collaboration tools, can also facilitate communication and feedback practices across different locations and time zones (Ali et al., 2020).

Think Critically in Solving Problem

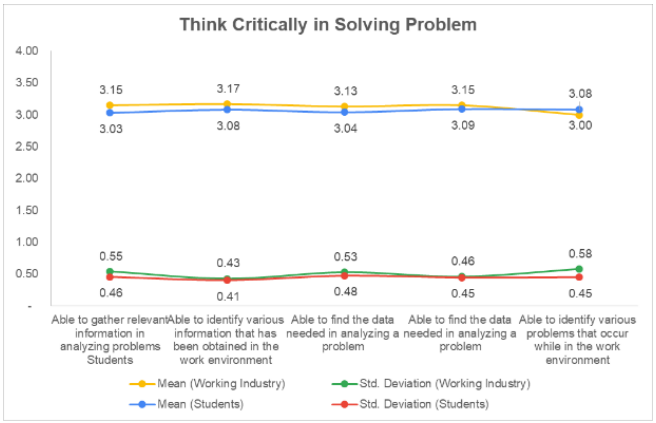

Figure 5. The Ability Level of Respondents in Think Critically in Solving Problem

Figure 5 presents the results of the 'thinking critically' aspect in problem-solving, measured using five items. According to both students and working industry, the highest ability is demonstrated in the indicator 'able to find the data needed to analyze problems' (M = 3.09; SD = 0.45). However, there is a discrepancy with working industry's view, which states that the highest indicator is 'able to find various information obtained in the work environment' (M = 3.17; SD = 0.43). On the other hand, according to IDUKA, students need to improve their ability to 'identify various problems that arise in the work environment' (M = 3.00; SD = 0.58). Similarly, according to the students, the same applies to the indicator 'able to gather relevant information to analyze problems' (M = 3.03; SD = 0.46).

To further develop problem-solving skills, it is crucial to not only focus on training during industry placements but also to incorporate appropriate learning models in the educational process at vocational high school. This will enable students to acquire the problem-solving skills required at working industry (Grzybowska & Łupicka, 2017; Komariah et al., 2023).

Find Solution and Creative

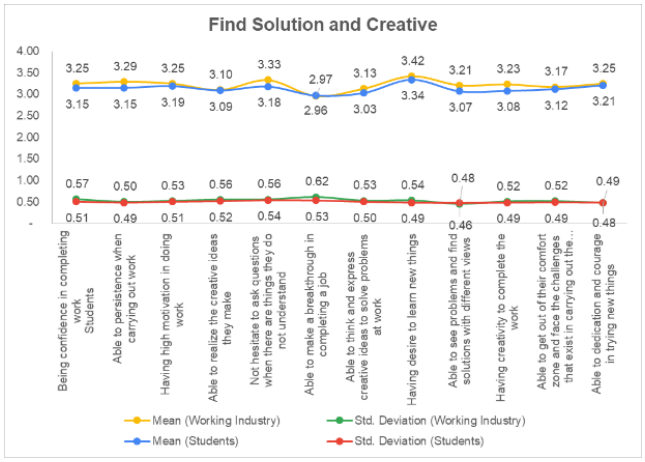

Figure 6. The Ability Level of Respondents in Find Solution and Creative

Figure 6 displays the results of 'Find Solution and Creative' measured using twelve items. Both students and IDUKA rated the highest ability in the indicator 'having a desire to learn new things,' with working industry scoring (M = 3.42; SD = 0.54) and students scoring (M = 3.34; SD = 0.49). Interestingly, the lowest assessment results were also similar for both working industry and students, with the indicator 'able to make a breakthrough in completing a job' receiving a score of (M = 2,.7; SD = 0.62) from IDUKA and (M = 2.96; SD = 0.53) from students.

From this, it can be concluded that there is no difference in creative skills between students and working industry, indicating that students already possess transferable creative skills. Therefore, the mastery of creative skills should be a learning objective for students (Sukardi et al., 2021). Additionally, the vocational students exhibit stronger problem-solving abilities compared to creativity. However, it is important to emphasize creativity in working industry to produce competitive graduates by enhancing the role of creative abilities in learning activities (Vaganova et al., 2019). To produce qualified vocational education graduates, the Government of Indonesia, specifically the Directorate-General of Vocational Education Kemendikbud, strengthened the "Link and Super-match" program in 2021. The program focused on vocational graduates through an 8+1 package, which includes: 1) curriculum, 2) soft skills, 3) visits from expert teachers in the industry, 4) internships, 5) certificates of competence, 6) training, 7) applied research, 8) commitments to absorb graduates, and 9) scholarships/job contracts/donations from the industry (Anbarini & Rogeleonick, 2021).

Conclusion

The objective of this research is to comprehend students' abilities in fulfilling the requirements of the job market in vocational education amidst the VUCA era. Transferable skills are skills that can be transferred and have greater consistency in sustainable learning. Therefore, the development of transferable skills is essential in education to navigate competition and changes in the world of work. The findings showed consistent results in the average skill levels of both vocational high school students' transferable skills and working industry's expectations. However, there are still areas with lower outcomes, indicating that vocational education students have not fully acquired the necessary abilities to effectively navigate the VUCA era and compete with others. Thus, collaboration between the Department of Education and the industry is necessary to develop measurement and standardization for the skills that should be taught and prepared by schools.

Job training or industry internship activities are examples of opportunities for vocational high school students to study and gain direct work experience in their respective fields of expertise. These activities serve as incentives for students' professional performance. In this particular research, the focus is on the skills required by working industry in the Property Construction Engineering Expertise Competence. It is important to note that different areas of expertise may require additional skills within the scope of industry requirements, which can be further developed and explored in future research. For future research, it is recommended for other researchers to adopt a more comprehensive approach in terms of context and location.

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