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The Effect of Work-Based Learning on Employability Skills: The Role of Self-Efficacy and Vocational Identity

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Abstract: Work-based learning (WBL) is an important tool for enhancing students' employability skills in vocational education and training. Many studies have underlined the importance of a variable of WBL, self-efficacy, and vocational identity in developing vocational students' employability skills. Nonetheless, the research is limited and examined separately. Therefore, this study investigates how WBL, self-efficacy, and vocational identity influence employability skills and how self-efficacy moderates between WBL and employability skills. Four hundred and three state university students in Yogyakarta were involved in the data collection. This study used structural equation modeling (SEM) analysis to test its hypothesis. The results of the study revealed that the implementation of WBL did not have a direct effect on employability skills; however, self-efficacy was able to moderate the relationship between WBL and employability skills. However, WBL directly influences vocational identity, which in turn directly influences employability skills, while self-efficacy also directly influences employability skills. This research has important implications for improving learning that can improve students' self-efficacy skills in an effort to build students' employability skills in vocational education and training.

Keywords: *Employability, self-efficacy, vocational identity, work-based learning.*

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Introduction

Academics and practitioners increasingly recognize the importance of employability skills, including both practical and soft skills, for job success across all sectors (Autsadee & Phanphichit, 2024). Soft skills such as communication, collaboration, problem-solving, and emotional intelligence are highly influential in job performance and satisfaction, while employers also value technical skills that enhance interpersonal interactions and decision-making (El Messaoudi, 2021; Shillie & Nchang, 2023). Globalization and rapid technological developments require continuous updating of work skills, with a focus on critical thinking, creativity, and collaboration, which are essential to the needs of the modern workplace (Deming, 2017; Suarta et al., 2017). Although awareness of the importance of employability skills is increasing, there are still graduates who are often underprepared to face the world of work because their education has not sufficiently prioritized employability skills (Griffin & Annulis, 2013; Rhew et al., 2019). Therefore, there is a pressing necessity to incorporate WBL into the higher education curriculum (Suarta et al., 2017).

WBL refers to an educational approach that integrates theoretical learning with practical experience in a real work environment. Therefore, WBL plays a vital role in enhancing employability skills among graduates, bridging the gap between academic knowledge and practical application in the workplace (Amish, 2024; Autsadee & Phanphichit, 2024; Lim et al., 2024; Mokhtar et al., 2024). By combining formal education with real-world experiences, WBL facilitates the development of technical and non-technical skills that are essential for career success (Yong et al., 2024). Collaboration

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between higher education institutions and companies in the creation of WBL programs guarantees that the skills imparted fit with industry requirements, hence augmenting the relevance and efficacy of the educational experience (Amish, 2024; Mokhtar et al., 2024). Consequently, WBL has developed into a transformative educational methodology that not only prepares students for immediate work but also endows them with the lifelong learning competencies essential for future career progression (Autsadee & Phanphichit, 2024).

Vocational identity refers to the sense of self and the role one perceives in one's professional life, including the skills, interests, and values associated with a chosen career. Vocational identity plays a critical role in the interaction between WBL and employability skills, serving as a foundational element that influences how individuals engage with their career development and learning experiences (Karlsson, 2024; Thapa, 2024). Developing a strong vocational identity is particularly important for young people as they navigate the complexities of the modern labor market, as it shapes their career aspirations and decision-making processes (Kogler et al., 2024; Struck, 2024). Research suggests that vocational identity mediates the relationship between personal growth initiatives and work engagement, suggesting that individuals who actively seek personal development are more likely to cultivate a strong vocational identity, which in turn increases their engagement in WBL environments (Li et al., 2024; Liao et al., 2024).

Moreover, vocational identity not only aids the transition from education to employment but also bolsters self-efficacy and work role identification, which are essential for favorable job outcomes (Liao et al., 2024; Stephens, 2024). The amalgamation of school-based and workplace learning experiences is crucial in vocational education, as it enables apprentices to correlate theoretical knowledge with practical applications, fortifying their professional identity and augmenting their employability abilities (Fantinelli et al., 2024; Zhao, 2024). Moreover, the fluidity of professional identity enables individuals to adjust to evolving labor markets and expectations, rendering it a crucial element in lifelong learning and career adaptation (Whelan et al., 2021). Therefore, fostering a robust occupational identity through efficient WBL programs is essential for providing students with the skills required to excel in their selected careers (Huggins-Dickey, 2023; Thapa, 2024).

The self-efficacy element has a substantial impact on students' ideas about their own abilities to carry out activities connected to their future careers, which in turn affects their employability skills in the classroom. Students with high self-efficacy are more likely to demonstrate confidence in articulating their skills, which is an important component of employability (Tentama & Nur, 2021). This confidence enhances their ability to navigate job searches and interviews and fosters a proactive approach to skills development, thereby enhancing their overall employability (Susanti & Ardi, 2022). As students gain experience and feedback from these interactions, their self-efficacy grows, leading to improved job performance and adaptability across a variety of work contexts (Oanh et al., 2024).

Previous research on WBL has demonstrated several important shortcomings that hinder the development of a robust understanding of its efficacy and implementation. The absence of a comprehensive theoretical framework linking WBL with employability skills to self-efficacy and vocational identity is a significant limitation. This gap in the theoretical foundation not only limits the generalizability of findings but also the ability of educational institutions to design effective WBL programs that meet the demands of an evolving labor market. For example, previous research only highlights the importance of career adaptability and vocational identity clarity during career transitions but does not explicitly address how self-efficacy influences these constructs in the context of WBL (Kirchknopf, 2020; Negru-Subtirica et al., 2015; N. Wang et al., 2023; Zhang et al., 2021).

Accordingly, research should aim to incorporate all of these factors to learn how they influence employment prospects as a whole. In addition, there is a dearth of empirical study on the ways in which students' self-efficacy interacts with their professional identity to improve their employability skills, despite the fact that research has shown that self-efficacy is a major motivator for students to participate in learning activities like WBL. Koumoundourou et al. (2012) highlighted the importance of tailoring vocational education to employers' demands and the relevance of self-efficacy in developing a professional identity, but they did not investigate how these factors interact with one another to improve employability. We offer a research model, as shown in Figure 1, based on background and previous research findings.

Therefore, the purpose of this research is to investigate how WBL, self-efficacy, and vocational identity affect one's capacity to find gainful employment. Research on employability skills frequently uses WBL, self-efficacy, and vocational identity because all three have a close relationship with the readiness and development of skills needed for success in the workplace. We expect this research to have implications for students' WBL development, self-efficacy, and vocational identity in producing employability skills in higher education.

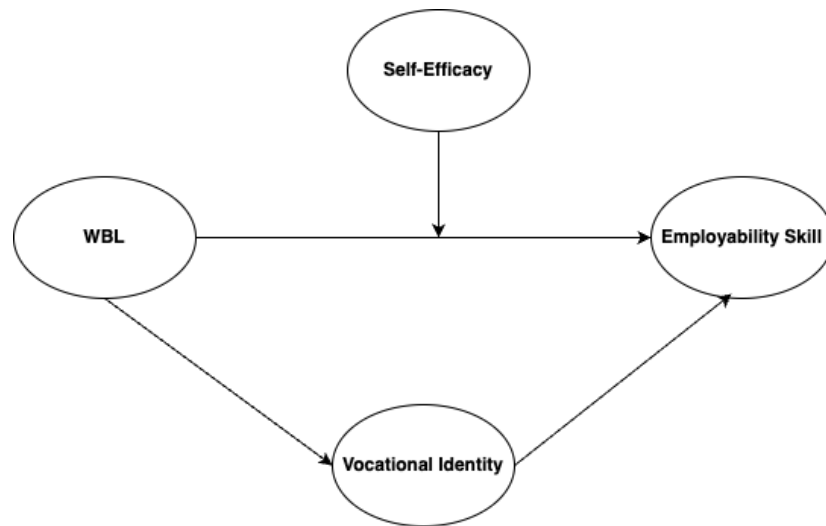


Figure 1. Research Conceptual Model

Literature Review

Work-Based Learning, Vocational Identity and Employability Skill

WBL provides students with authentic experiences in real-world settings, allowing them to apply theoretical knowledge in practical contexts (Feldmann, 2016). This experiential learning is crucial for vocational identity formation, as it allows students to engage with their chosen profession and understand the expectations of the vocational community. Karlsson et al.'s opportunity to build a sense of purpose in their chosen (2022), and Karlsson's (2023) studies show that students' choices regarding their vocational pathways are influenced by their aspirations and their perceived fit within the vocational community, underlining the interaction between identity formation and vocational education.

Furthermore, the role of WBL in enhancing employability skills is significant (Falconer & Pettigrew, 2003; Musa et al., 2011). A systematic review by Tripney and Hombrados (2013) showed that TVET programs, especially in low-and middle-income countries, are critical in equipping young people with the skills needed to navigate the labor market and contribute to economic stability.

Different teaching perspectives in vocational education can shape students' learning experiences, ultimately affecting their vocational identity and employability (Schneider, 2017). This suggests the effectiveness of WBL in improving employability. The implementation of WBL in vocational education plays an important role in fostering vocational identity and improving employability skills but is rarely associated with WBL (Thapa, 2024). Very few previous studies related to vocational identity have linked WBL. However, WBL not only equips individuals for the workforce but also fosters their personal and professional growth (Alfeld et al., 2013; Bae & Darche, 2019).

H1: WBL has a significantly positive effect on employability skills.

H2: WBL has a significantly positive effect on vocational identity.

Self-Efficacy

Many factors, including self-efficacy, greatly influence the relationship between WBL and employability skills. Self-efficacy plays an important role in shaping students' confidence in their ability to perform tasks relevant to their future careers. Self-efficacy, as defined by Bandura, refers to an individual's belief in their capacity to perform the behaviors required to produce a given performance achievement (Lathabhavan & Griffiths, 2024; Lawrent, 2024). This construct is particularly relevant in vocational education, where students are often asked to move from theoretical knowledge to practical application in the workplace.

WBL practices enhance students' self-efficacy by providing them with opportunities to engage in real-world tasks, thereby strengthening their beliefs in their abilities. For example, Ali and Menke (Ali & Menke, 2014) highlighted the importance of career development programs that incorporate work experiences, noting that such programs can significantly increase self-efficacy among rural Latino youth, which in turn influences their career aspirations and outcomes. Thus, the interaction between self-efficacy and vocational goals suggests that higher self-efficacy is correlated with students' educational and career goals. This suggests that WBL not only equips students with the necessary skills but also fosters confidence in their ability to succeed in their chosen field.

Self-efficacy serves as an important mediator between WBL and employability skills development. By engaging in WBL, students not only gain practical skills but also build confidence in their abilities, which is critical for their future career

success. Evidence suggests that educational programs that integrate WBL can significantly improve students' self-efficacy and, consequently, their employability prospects (Xu et al., 2022).

H3: Self-Efficacy moderate relationship between WBL and employability skills.

H4: Self-Efficacy has a significantly positive effect on employability skills.

Vocational Identity and Employability Skill

Research into the efficacy of WBL programs has focused on the relationship between students' vocational identities and their employability abilities. WBL provides students with an opportunity to build a sense of purpose in their chosen field of study and acquire marketable skills (Carter, 2021; Pegg et al., 2012) This link is supported by several elements, such as the development of self-efficacy, cooperation, and soft skills.

WBL programs play a significant role in fostering employability skills, which include not only technical competencies but also important soft skills such as communication, teamwork, and problem-solving. Employers increasingly value these soft skills, as they significantly enhance effectiveness and adaptability in the workplace (Otu & Sefotho, 2024; Stephen & Festus, 2022). WBL provides students with the opportunity to develop these skills in a real-world context, thereby enhancing their employability prospects. Similarly, Subekti (2019) emphasizes that teamwork skills developed through collaborative activities in WBL settings are essential to creating a conducive work environment and increasing overall productivity. This highlights the importance of experiential learning in shaping the personal qualities that prospective workers should possess.

The integration of WBL in vocational education is essential for developing vocational identity and employability skills. By providing students with practical experiences that enhance their soft skills and self-efficacy, WBL fosters a strong sense of vocational identity, which is critical for their future career success. Evidence suggests that educational frameworks that prioritize WBL can significantly improve students' readiness for the labor market (N. C. Jackson & Olinger, 2021).

H5: Vocational identity has a significantly positive effect on employability skills.

Methodology

Research Design

This study employed a quantitative methodology that incorporates structural equation modeling (SEM) design research (Hair et al., 2021). Structural Equation Modeling is a quantitative method that is highly effective in the analysis of intricate relationships among multiple variables. It does this by modeling both direct and indirect interactions within a single framework. SEM uses many different types of statistics, like multiple regression and factor analysis, to help researchers test their ideas about how latent constructs and observed variables (indicators) are related (Zheng & Bentler, 2025).

Sample and Data Collection

This study involved a sample of students enrolled in a state university in Yogyakarta, Indonesia. The study program enrolled 402 students, with 19.45% specializing in automotive education, 15.81% in makeup and beauty, 18.24% in electrical engineering, 24.01% in culinary engineering, and 22.49% in civil engineering. A total of 402 students registered in this study program not only participate in academic activities on campus but are also directly involved in work-based learning and practical experiences relevant to their fields of study (Rahdiyanta et al., 2019). The gender distribution of the students is 54.41% male and 45.59% female. Table 1 displays the distribution of respondent characteristics.

Table 1. Respondents' Descriptive Data

Attribute	Categories	N	%
Gender	Male	156	35.5
	Female	247	64.5
Age	18-20 years old	346	85,9
	21-23 years old	56	13,6

We collected data using an independent online questionnaire. We disseminated the questionnaire online using the Google Form platform. To make the questionnaire easier for respondents to understand, the class coordinator distributed it in Indonesian. The online questionnaire links were sent to their respective students through a WhatsApp group. Completing a complete questionnaire took about 10 minutes.

We used the WBL questionnaire (Brand et al., 2003) to ascertain the students' perceptions of Work Base Learning. This study used 9 items out of 16 items with 4 original questionnaire indicators and 1 development indicator consisting of: Learning through reflection (2 items, for example, In my work I am given the opportunity to contemplate different work

methods), Learning through experimentation (2 items, example, In my job I can try different work methods even if that does not deliver any useful results), Learning from colleagues (2 items, example, My colleagues tell me if I make mistakes in my work), Learning from supervisor (2 items, example, My supervisor helps me see my mistakes as a learning experience), Learning context (1 item, for example, The work experience I gained provided valuable insights related to practical aspects in the world of work). This questionnaire uses a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1).

Vocational identity support data were collected using the Vocational Identity Status Assessment Questionnaire by Porfeli et al. (2011). This questionnaire measures students' opinions about career exploration, career commitment, and career reconsideration. There are a total of 9 questions from 30 original questionnaires, with three questions for each indicator. Three items for career exploration (3 items, example) Casually learning about careers that are unfamiliar to me in order to find a few to explore further), Career Commitment (3 items, example, my career will help me satisfy deeply personal goals), Career Reconsideration (3 items, example, thinking about choosing a career makes me feel uneasy). This questionnaire uses a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1).

We used the General Efficacy Questionnaire developed by Schwarzer and Jerusalem (1995). This questionnaire reveals students' perceptions about how to cope with daily hassles and adaptation after experiencing all kinds of life events and stressors in life. The original questionnaire consisted of 10 items (e.g., I can always manage to solve difficult problems if I try hard enough). This questionnaire used a Likert scale with five alternative answers consisting of very good (5), quite good (4), neutral (3), not very good (2), and not at all (1).

Finally, we used the Employability Skills Questionnaire (Sharma & Bhattarai, 2022) to measure students' perceptions of employability skills, researchers and translation experts have translated it into Indonesian. This questionnaire measures students' perceptions of employability skills through communication skills, thinking skills, interpersonal skills/teamwork, technology and information technology skills, planning and resource management skills, personal qualities, and overall employability skills. There are a total of 12 questions in this questionnaire. This questionnaire uses a Likert scale with five possible answers, namely never (5), rarely (4), sometimes (3), often (2), and very often (1).

Analyzing of Data

In the first step of data analysis, we used SPSS version 20 to test the validity and reliability of the items for each variable. In addition, we also used SEM analysis with SmartPLS 4.0 software to test the model and hypothesis. We conducted the study in the first stage to test the model fit, using the appropriate model criteria (Hair et al., 2009; Phedazur, 1997). Furthermore, we examined the research hypothesis by testing the *p*-value acquisition on the regression path, using a significance level of .05. If the *p*-value is more than .05, this hypothesis is rejected; accepted if the *p*-value is less than .05. We employ the estimated bootstrapping confidence interval technique to assess the significance of social self-efficacy's mediator role in this research model. This study used 200 bootstrap samples with a 90% confidence level.

Results

Validities and Reliabilities Questionnaire

The results of the validity and reliability tests on employability skills, self-efficacy, vocational identity, and WBL are in Table 2. The validity measurement results for all questionnaires demonstrated a range of values from .659** to .886**. These results indicate that this questionnaire has good validity. Furthermore, the reliability of all questionnaires is very good. All of the questionnaires have Cronbach's alpha values exceeding .90. These findings indicate that the questionnaire accurately measures employability skills, self-efficacy, vocational identity, and WBL.

Table 2. Validity and Reliability Questionnaire

Variable	Validity	Cronbach's Alpha
Employability Skills	0.784~0.870	0.962
Self-Efficacy	0.794~0.876	0.954
Vocational Identity	0.807~0.886	0.949
Work Base Learning	0.659~0.882	0.937

Correlation Between the Study Variables

Table 3 presents the bivariate correlations between the various study variables. We found the expected positive correlation direction between the study variables. We divided the correlation strength into strong, medium, and low correlations (Blakstad et al., 2008). Table 3 shows a strong correlation ($> .500$) between WBL and the other three factors: vocational identity, self-efficacy, and employability skills. Furthermore, there is no negative correlation between these study variables.

Table 3 shows a strong relationship between the four research variables: WBL, vocational identity (VI), self-efficacy (SE), and employability skills (ES). WBL has a very high correlation with vocational identity (.942), self-efficacy (.936), and employability skills (.931), which indicates that WBL experiences play an important role in shaping vocational identity, increasing individual self-confidence, and supporting the development of work skills. Vocational identity also shows an almost perfect correlation with self-efficacy (.997) and employability skills (.985), which confirms that a strong professional identity contributes greatly to an individual's belief in their abilities and their readiness in the world of work. In addition, self-efficacy has a very close relationship with employability skills (.986), which indicates that an individual's confidence in their abilities plays an important role in work readiness.

Table 3. Bivariate Pearson Correlation Coefficients

Variable	WBL	VI	SE	ES
WBL	1			
VI	.942**	1		
SE	.936**	.997**	1	
ES	.931**	.985**	.986**	1

** Correlation is significant at the 0.01 level (2-tailed), WBL= Work Base Learning, VI= Vocational Identity, SE= Self-Efficacy, ES= Employability Skills

Structural Equation Modeling Analysis

Determine whether the model meets the fit criteria before conducting a path coefficient test to test the hypothesis. Apply the NFI and SRMR fit criteria tests. The model is considered suitable if the NFI is greater than .8 and the SRMR is less than .08 (Hair et al., 2009). Based on the results of the Smart-PLS SEM model fit test, the NFI and SRMR values have met the requirements outlined with the NFI (.890) and SRMR (.753) values.

The next step Smart-PLS 4.0 employs the bootstrapping approach to scrutinize each path's hypothesis testing. The bootstrapping method is a new sampling technique that uses original data repeatedly (Efron & Tibshirani, 1994). Additionally, Cheung and Lau (2008) use the bootstrapping approach to examine the importance of the role of moderation in the research model. This study used 403 bootstrap samples with a 95% confidence level. Table 4 displays the results of this research's hypothesis testing.

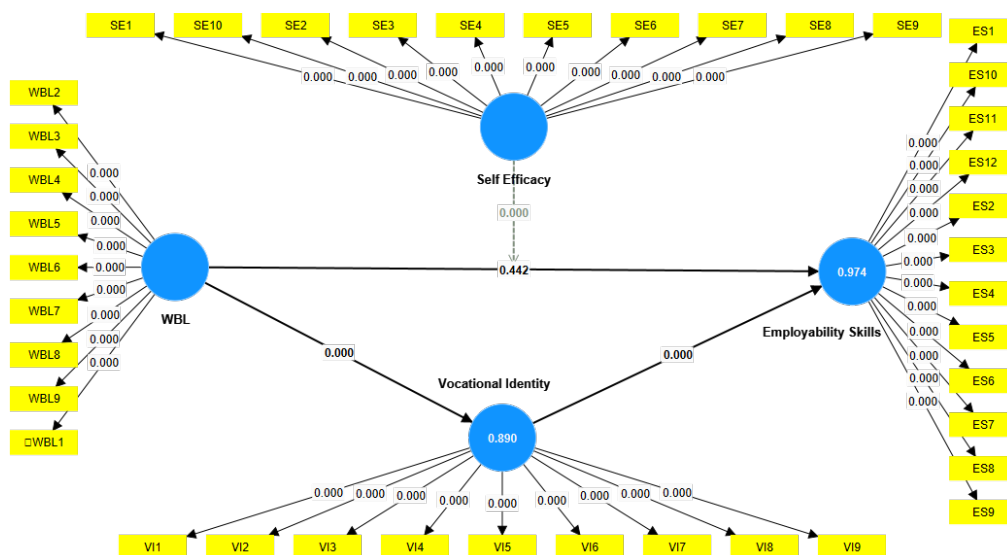


Figure 2. Structural Equation Modeling Analysis Result

This study's hypothesis testing assumes acceptance of the null hypothesis if the p -value criterion is less than .05 Table 3 displays the findings from the application of the structural equation model (SEM) analysis to path analysis, with a specific focus on analyzing direct effects. Empirically, WBL has an insignificant effect on employability skills (estimate = .272; $p < .001^{***}$; rejecting the first hypothesis), vocational identity (estimate = .943; $p < .001^{***}$; accepting the second hypothesis), and self-efficacy (estimate = .659; $p < .001^{***}$; accepting the third hypothesis). The fourth hypothesis also shows that self-efficacy is able to moderate between WBL and employability skills (estimate = .055; $p < .001^{***}$). This shows that although WBL does not directly have a positive impact on employability skills, self-efficacy is able to strengthen the impact of WBL on employability skills. In addition, testing the fifth hypothesis shows an estimated value of .272 ($p < .001^{***}$). This finding validates the fifth hypothesis, indicating a significant positive impact of vocational identity on students' employability skills.

Table 4. Hypothesis Testing Result

Variable	O	p	Result
WBL -> Employability Skills	0.025	.442	Not Significant
WBL -> Vocational Identity	0.943	.000	Significant
Self -Efficacy -> Employability Skills	0.659	.000	Significant
Self -Efficacy x WBL -> Employability Skills	0.055	.000	Significant
Vocational Identity -> Employability Skills	0.272	.000	Significant

*** O= Original Sample, WBL= Work Base Learning,

Discussion

This study aims to explore how WBL can impact both direct and indirect employability skills. Evidence suggests that WBL's impact on employability skills is not as straightforward as commonly perceived, despite its positioning as a beneficial educational approach. However, in the study, the results of the first hypothesis test showed that WBL did not directly influence employability skills. Examining various studies that highlight the complexity and limitations of WBL in improving employability, as shown in Table 4, can confirm the results of this test. It is important to recognize that the effectiveness of WBL in developing employability skills can vary significantly based on the context and structure of the learning experience (Andrews & Higson, 2014; Sudjimat et al., 2021).

While vocational WBL can enhance understanding of discipline-focused knowledge and soft skills, Andrews and Higson (Andrews & Higson, 2014) contend that it does not guarantee the actual transfer of these skills to the workplace. This suggests that the presence of WBL does not automatically translate into improved employability skills, as the quality and relevance of the learning experience play an important role. WBL frequently stems from learning experiences that are either less relevant or poorly designed, resulting in WBL not functioning as it should (D. Jackson, 2015). Other factors, such as the specific job role and industry involved, often mediate the relationship between WBL and employability (Adegbite & Govender, 2022; Rahmat et al., 2018). Rahmat's previous research (Rahmat et al., 2018) confirms that employability skills are not universally applicable across all jobs, but rather, they are contingent on the unique demands of various job roles. This suggests that WBL may not uniformly enhance employability skills for all graduates, especially in areas where practical experience does not align with job expectations. This aligns with the findings of this study, which indicate that while WBL does not directly influence employability skills, self-efficacy can enhance the relationship between these variables.

WBL plays a significant role in shaping vocational identity among students in VET programs (Hoeve et al., 2019; Karlsson, 2024). Various studies support this relationship by highlighting how WBL facilitates the integration of theoretical knowledge with practical skills, thereby enhancing students' understanding of their chosen vocation (Ambiyar et al., 2020; Ferrández-Berruero et al., 2016). According to relevant research (Suyitno et al., 2024), vocational identity significantly influences career choices, suggesting that a well-formed vocational identity can enhance students' self-efficacy and career decision-making. Similar studies have shown that workplace-based learning is crucial for vocational students' identity formation, especially in male-dominated fields, where students navigate their identities in challenging environments (Ferm & Gustavsson, 2021). Various factors, including social support and the learning environment, influence the complex process of identity formation (Ouyang et al., 2016). This reinforces the findings of Bükki and Fehérvári (2024), who stated that continuous professional development among vocational educators is crucial to fostering a strong vocational identity in students, as educators themselves model the professional identity that students may aspire to.

Although WBL did not have a direct impact on employability skills in this study, self-efficacy acted as a moderating factor in the relationship. Fogel and Lamash (2021) Researchers have emphasized the WBL environment as a key factor in enhancing self-efficacy, as it often provides students with opportunities for successful experiences and social modeling. This suggests that through engaging in WBL, students can boost their self-efficacy, which in turn increases their confidence in their employability skills. As a result, the hands-on nature of WBL allows students to build competence in real-world tasks, leading to a stronger belief in their ability to succeed in the workplace and ultimately, improving their employability skills (D. Wang et al., 2022). This relationship underscores the importance of self-efficacy as a moderator that can enhance the effectiveness of WBL in developing employability skills (Yang & Zhang, 2022). This suggests that as students develop employability skills through WBL, their confidence in making career-related decisions also increases, thereby enhancing their overall employability. Experience in WBL, with proper guidance, not only improves work skills but also strengthens students' self-confidence in facing challenges in the professional world (Okolie et al., 2022).

Self-efficacy has a direct effect on employability skills, serving as an important factor in how individuals view and develop their abilities in the labor market. This study strengthens previous research showing the important influence of self-efficacy on employability skills (de la Concha Solís et al., 2024). Particularly, studies have shown a positive correlation between academic self-efficacy and employability skills (Hou et al., 2014). Hou's research showed that students with high academic self-efficacy were more likely to engage in proactive behaviors and goal setting, which are important for career development (Honicke & Broadbent, 2016). This proactive approach not only enhances their employability skills but also

fosters a sense of agency in managing their career trajectories. Self-efficacy was a significant predictor of employability skills; it was noted that individuals with higher self-efficacy were better prepared to navigate educational and professional challenges (Fogel & Lamash, 2021). Their findings suggest that self-efficacy acts as a mediating variable, linking personal beliefs about abilities to the development of skills necessary for employment.

Additionally, the role of self-efficacy extends beyond academic settings into practical applications. This study highlights that self-efficacy improves students' attitudes toward networking and interpersonal skills, which are important components of employability. Self-efficacy plays a critical role in shaping employability skills. By fostering confidence in one's abilities, self-efficacy encourages proactive engagement in career development activities, increases decision-making confidence, and ultimately leads to better employment outcomes. As educational institutions seek to prepare students for the workforce, integrating strategies to enhance self-efficacy may be essential to improving employability skills.

Vocational identity has a direct effect on employability skills, influencing how individuals perceive their abilities and navigate the job market. Numerous studies support this relationship by highlighting the importance of vocational identity in shaping the skills necessary for successful employment (Shen et al., 2024). An individual's self-concept about their chosen career path, known as their vocational identity, significantly influences their employability skills. Students with a strong vocational identity are more likely to engage in activities that enhance their employability skills, such as internships and networking opportunities. Additionally, participation in career development activities and a positive self-concept significantly predict employability skill levels among students. Their study emphasized that exposure to real-world experiences helps students strengthen their vocational identity, thereby enhancing their employability skills.

In addition, vocational identity development is related to the acquisition of specific skills sought by employers. Kamaliah et al. (2018) highlighted that students considered workplace experiences essential for developing social and communication skills, which are important components of employability. These findings suggest that when students grow their vocational identity through practical experiences, they simultaneously enhance their employability skills. The findings suggest that as students develop their vocational identity through practical experiences, they simultaneously enhance their employability skills. This occurs because hands-on learning provides role clarity, boosts confidence, and exposes students to career-relevant skills such as communication and problem-solving. Additionally, interactions with professionals and mentors allow students to observe industry practices, further shaping their vocational identity. Aligning personal interests with career goals motivates students to acquire necessary skills, while solving real-world problems strengthens critical thinking and adaptability. Vocational skill enhancement strategies can provide low-skilled workers with the necessary competencies to enhance their employability, suggesting that a well-defined vocational identity can lead to better job security and employment opportunities.

Conclusion

Overall, self-efficacy and vocational identity significantly mediated the WBL on employability skills. This relationship underscores the importance of integrating practical experiences into VET programs to enhance students' readiness for the labor market. WBL provides students with opportunities to apply theoretical knowledge in real-world settings, which is critical for developing employability skills. Research shows that WBL not only equips students with technical skills but also fosters important soft skills, such as teamwork, communication, and problem-solving abilities.

This study provides new insights into how self-efficacy and vocational identity interact to enhance students' employability skills. The new findings of this study emphasize that self-efficacy plays a critical role in this process by influencing how students assess their own abilities and engage with learning opportunities. The higher students' self-efficacy, the more likely they are to explore and pursue opportunities that enhance their career-relevant skills. Furthermore, research demonstrates that students' self-concept and career aspirations, shaped by their vocational identity, significantly influence their employability skills. A clear vocational identity encourages students to pursue experiences and training that are relevant to their career goals. This study also highlights that alignment between vocational identity and career goals not only enhances students' technical competence but also builds a sense of belonging and commitment to their chosen field. This is critical for long-term career success, as belonging to one's job and profession increases students' motivation and resilience in the face of career challenges.

In summary, integrating WBL into vocational education is critical for preparing students for the workforce. By fostering self-efficacy and vocational identity, educational institutions can improve students' employability skills, ultimately leading to better employability and career satisfaction. As the labor market continues to evolve, it is imperative that VET programs adapt to meet these challenges by prioritizing WBL and the development of self-efficacy and vocational identity among students.

Recommendations

The relationship between WBL, self-efficacy, and vocational identity plays a crucial role in enhancing students' work skills. In a direct relationship, not all WBL impacts work skills, indicating the importance of other factors like self-efficacy and vocational identity in various student situations and conditions. Although this study shows that self-efficacy is able to moderate the relationship between WBL variables and student skills.

In addition, Based on the findings that integrating WBL into vocational education not only develops essential employability skills but also strengthens students' self-efficacy and vocational identity, ultimately preparing them for successful careers in their chosen fields, we recommend several future research directions. First, future research could focus on the relationship between WBL and the development of other soft skills, such as interpersonal communication, work adaptability, and teamwork. Many vocational education programs often overlook these skills, despite their critical role in determining professional success. Examining how WBL can contribute to strengthening these skills would provide greater insight into students' employability. Second, expanding research to understand individual differences in developing self-efficacy and vocational identity through WBL could also be an intriguing focus. For example, how do factors such as personality, social background, or intrinsic motivation affect students' success in internalizing relevant vocational skills and identities? Thirdly, it's crucial to investigate the more effective integration of WBL into diverse vocational education fields, and to measure its influence on long-term career outcomes. Further research on how to best assess the success of WBL, both in terms of technical and soft skills, will provide useful data for the development of more relevant and industry-oriented curricula. By integrating soft skills and individual factors into the study of WBL, future research can provide a more comprehensive understanding of how work-based experiences can prepare students not only technically but also socially and psychologically for the challenges of the workplace.

Limitations

WBL can improve students' employability skills through the involvement of self-efficacy and vocational identity. However, one should exercise caution when interpreting the study's results due to the quantitative measurement issues, contextual factors, and the intricate nature of the relationships. Future research should overcome these limitations by using more robust measurement techniques (mixed methods), considering diverse contexts, and exploring the complexity of self-efficacy and vocational identity in relation to employability skills.

Ethics Statements

The submitted work is original and has not been previously published in any form or language (partial or full). The Ethics Committee of Universitas Muhammadiyah Purworejo assessed and authorised the experiments with human subjects. The participants provided their written informed consent to participate in this study.

Conflict of Interest

The authors declare that they have no known competing interests.

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Authorship Contribution Statement

Suyitno and Saputro: Conceptualization model, design, analysis, writing. Abdillah: Editing/reviewing, supervision. Jatmiko and Widiyono: Interpretation, drafting manuscript, critical revision of manuscript. Purwoko and Setuju: Technical or material support, supervision, final approval. Hermawan: Securing funding, admin.

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