Future-Ready Graduates: Synergizing Digital Competence and Applied Learning

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Abstract. Educational institutions play a crucial role in addressing this issue by equipping graduates with the skills necessary for successful labor market entry. However, data from university Tracer Studies reveal that many graduates remain unemployed, highlighting a disconnect between the skills taught in educational settings and those demanded by the industry. This study examines the influence of digital competencies and applied learning methods on workforce competencies, highlighting self-efficacy as a crucial mediating factor. Digital competencies play a pivotal role in enhancing employability and adaptability. Total of 239 respondents were conducted , the findings underscore the necessity of integrating digital skill development and applied learning methods into academic curricula. This integration not only prepares students for future workforce demands but also empowers them with practical skills and confidence to navigate real-world challenges successfully. These results provide valuable insights for educational institutions aiming to bridge the gap between education and employment outcomes.

Keywords: Digital competencies, Applied learning, Self-efficacy, Workforce competencies.

1 Introduction

Unemployment in Indonesia remains a pressing issue, with persistently high rates despite various governmental efforts to create job opportunities. According to data from the Central Statistics Agency[1] in February 2020, the open unemployment rate (TPT) in Indonesia reached 5.45%, indicating that millions of individuals are still without employment. This highlights the need for more effective interventions and innovative strategies to address employment challenges across sectors. According to data from the university Tracer Study, the percentage of graduates who have completed their studies but remain unemployed is still significantly high, approximately 15-20 percent. This data indicates that despite completing their education, many graduates struggle to successfully enter the labor market, suggesting a gap between the skills taught and those required by industry.

Educational institutions in Indonesia must take an active role in addressing unemployment, given their critical function in preparing work-ready graduates. Developing

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industry-relevant curricula and providing practical skill training are vital. Consequently, educational institutions bear the responsibility of equipping graduates with the competencies needed to navigate the dynamics of the labor market, beyond merely conferring degrees.

Challenges in fostering job readiness often stem from gaps between the skills taught in formal education and those demanded by industries. According to (McKinsey & Company, 2020), this gap is a leading cause of unemployment among recent graduates. They advocate for educational approaches that prioritize practical skill development and hands-on experience to improve graduate employability, note that formal education often emphasizes theory over practical skills, leading to skill gaps in the labor market. [2] highlight that graduates frequently lack essential soft skills such as communication and teamwork, which are critical in modern workplaces. Collaborative initiatives between universities and industries, as suggested by [3][4] can facilitate internships and real-world work experiences to enhance students' readiness for employment [5] stress the importance of project-based learning and experiential approaches to help students acquire practical, job-relevant skills. Education and training play a pivotal role in improving job readiness. [6] argue that integrating theory and practice in educational curricula can enhance workplace-relevant skills. Higher education institutions in Indonesia and other countries are increasingly adopting this approach to improve graduate skills and reduce unemployment rates. [7] underscores the value of training programs focused on practical skill development and simulated workplace scenarios to prepare new employees effectively [8] found that work-based learning, such as internships and collaborative projects, fosters participants' independence and adaptability. These insights underscore the urgent need for education systems and industries to collaborate in preparing the workforce of the future, equipping individuals with both the technical and soft skills required in an evolving labor market.

In the context of education, Digital competencies are crucial for ensuring that students are well-prepared to meet the challenges of an increasingly digital workforce. [9] assert that the integration of Digital competencies into educational curricula enhances students' employability and adaptability. In the workplace, Digital competencies empower employees to work more efficiently, innovate, and adapt to technological advancements. [10] emphasize that digital literacy enhances students' ability to learn independently while fostering critical thinking skills essential for future careers. Similarly, [11] underscores the significance of Digital competencies in distance education, particularly during the COVID-19 pandemic, when many institutions transitioned to online learning environments. Applied learning has demonstrated its efficacy in fostering higher levels of student engagement and motivation. Found [12] that students involved in Applied learning exhibited greater engagement and motivation compared to those taught using traditional methods. This can be attributed to the real-world applications of knowledge provided by Applied Learning, making the learning process more meaningful and engaging. Applied learning also effectively nurtures practical skills required in the job market. According to [13], students participating in Applied learning programs demonstrated significant improvements in critical competencies such as problem-solving, decision-making, and teamwork, also enabling them to bridge the gap

between theoretical concepts and real-world applications. This approach not only deepens students' understanding but also equips them to handle professional challenges.

Self-efficacy plays a pivotal role in shaping how students perceive and respond to academic challenges. [14] found that high self-efficacy correlates with effective learning strategies, greater perseverance, and improved academic outcomes. [15] further suggest that students with strong self-efficacy are more likely to adopt deep learning approaches, resulting in better understanding and greater engagement with the learning process. Universities, as part of Indonesia's higher education ecosystem, must play an active role in addressing unemployment among graduates. By emphasizing skill development aligned with market demands and fostering partnerships with industry, these institutions can prepare students to meet workforce challenges effectively. Initiatives such as internships, practical projects, and Applied learning are integral components of this strategy.

Several key factors contributing to graduates' lack of job readiness include inadequate Workforce competencies, insufficient practical experience, low self-efficacy, and suboptimal social support. This study seeks to explore how Digital competencies and Applied learning influence the job readiness of Generation Z, with self-efficacy acting as a mediator and social support as a moderator. The findings of this research are expected to provide insights into enhancing youth employability through a more comprehensive and integrated approach.

The study aims to investigate the impact of Digital competencies and Applied learning on workforce competencies with self-efficacy as a mediator. The primary objective is to offer deeper insights into how these factors influence employability and to provide practical recommendations for universities, particularly private universities in Jakarta, in preparation for young generations for a competitive labor market.

1.1 Definition of Workforce competencies

Workforce competencies refers to an individual's ability to enter and function effectively in a workplace setting. It encompasses a range of skills, competencies, and attitudes that prepare individuals to meet the demands and expectations of the labor market. With the ever-evolving dynamics of the job market, Workforce competencies have become a focal point in education and training to ensure that graduates are prepared to contribute effectively to their workplaces.

According to [16], Workforce competencies include technical skills, interpersonal abilities, and an understanding of workplace dynamics. In Indonesia, the issue of Workforce competencies among university graduates is often attributed to a skills gap between what is taught in formal education and what is required by the industry. Many graduates possess theoretical knowledge but lack practical skills such as communication, collaboration, and project management, which are critical in the professional world. Therefore, enhancing Workforce competencies by developing industry-relevant skills is crucial for reducing unemployment rates and ensuring graduates can contribute effectively to their workplaces.

[17] elaborates that Workforce competencies involve the ability to understand and navigate diverse job requirements, as well as apply knowledge and skills in real-world

contexts. [18] add that it includes core competencies such as independent working, time management, and problem-solving abilities

1.2 Definition and Importance of Workforce competencies

Digital competencies refer to a set of abilities enabling individuals to effectively and efficiently use information and communication technologies (ICT). According to [19], Digital competencies involve technical capabilities, such as operating software and applications, alongside cognitive skills, including information literacy and digital problem-solving. [20] describe Digital competencies as competencies to operate digital devices, analyze information, communicate, and collaborate in digital environments. [21] defines Digital competencies as "competencies that include the ability to effectively use, access, manage, and integrate digital technologies." [22] stress that Digital competencies encompass "technical abilities and knowledge of how technology can be applied to solve problems and achieve goals." [23] adds that Digital competencies include critical thinking, communication, and collaboration in digital contexts.

In conclusion, Digital competencies are essential competencies that influence employability, workplace effectiveness, and adaptability to technological changes. These skills range from using technological devices to problem-solving and ensuring digital security. Integrating Digital competencies development into education and professional training is crucial to equipping individuals to compete and succeed in technology-driven environments.

1.3 Definition of Applied Learning

Applied learning is a process in which learners actively engage in concrete experiences, followed by reflection, conceptualization, and application in new contexts. [24] is describes the Applied learning cycle consisting of four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. This cycle allows learners to apply theory to practical situations and develop critical skills through direct experience [25] described it as an educational approach that leverages real-life experiences and deep reflection to shape new understanding and skills within real-world contexts.

1.4 Definition of Self-Efficacy

Self-efficacy plays a crucial role in motivation, learning, and academic achievement. It has been found that students with high self-efficacy tend to be more committed to their goals, work harder, and persevere when facing difficulties. Therefore, it is important for educational institutions to focus not only on teaching technical skills but also on supporting the development of students' self-efficacy through guidance and training aimed at strengthening their self-confidence.

These factors include mastery experiences, vicarious experiences (observing others), social persuasion, and physiological states. Mastery experiences refer to achievements or successes individuals gain from completing prior tasks, which in turn strengthens

their belief in their ability to perform similar tasks in the future. Additionally, vicarious experiences, which involve observing others successfully completing a task, also play a significant role in building self-efficacy. Through observation, individuals can feel more confident that they can achieve the same outcomes, especially if they perceive similarities between themselves and the person being observed.

Moreover, the study found that positive feedback from others, or social persuasion, can enhance self-efficacy. When individuals receive encouragement and recognition from others regarding their abilities, their confidence tends to increase. In addition to social persuasion, physiological states such as stress levels and overall health conditions also impact self-efficacy. [26] found that among these factors, previous mastery experiences have the most significant impact on enhancing self-efficacy. Therefore, focusing on past successes and reinforcement from the social environment is crucial in building and maintaining strong self-efficacy.

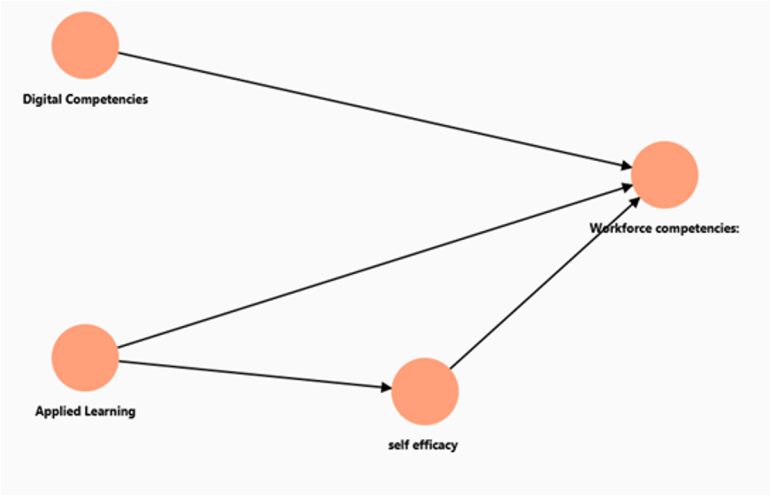

Fig. 1. Research Conceptual Framework

H1: Digital competencies have an impact on Workforce competencies

H2: Applied learning has an impact on Workforce competencies.

H3: Applied learning has an impact on self-efficacy

H4: Self-efficacy has an impact on Workforce competencies

H5: Self-efficacy mediates the relationship between Applied learning and Workforce competencies

These hypotheses are designed to examine how Workforce competencies, Applied Learning, and self-efficacy influence Workplace competencies, and how self-efficacy may act as a mediator in these relationships.

2 Methodology

The population of this study is final-year students actively engaged in the learning process at academic institutions. Final-year students are chosen because they are at a critical transition stage from education to the workforce, making them ideal subjects for studying Workplace competencies. The learning experiences they undergo at university, including participation in both academic and non-academic activities, play an important role in the development of skills and preparedness for entering the job market. The sampling technique employed in this study is stratified sampling, which is based on academic programs. Furthermore, the data were analyzed by SMARTPLS software to elucidate the findings Research instrument to develop the questionnaire consist of:

Table 1. Operationalization of Variables

Variable	Indicator	Statement
Workforce competencies Indicators (Rosenberg, 2020):	Work Ethics and Professionalism	"I always maintain work ethics and act professionally in every situation."
	Self-awareness and Career Development	"I am aware of my strengths and weaknesses in my work."
		"I have a plan to continuously develop my skills and career."
	Practical Experience	"I have practical experience relevant to the job I am applying for."
		"I have undergone an internship or project that gave me insight into the work world."
Applied learning Indicators and Statements (Kolb & Kolb, 2017):	Concrete Experience	"I am directly involved in practical activities during the learning process."
	Reflective Observation	"I reflect on the experiences I have had during the learning process."
		"I take time to think about what worked and what didn't."
	Abstract Conceptualization	"I am able to link my experiences to concepts or theories that have been taught."
		"I understand the principles underlying the experiences I have had."
Self-Efficacy Indicators and Statements (Zimmerman & Kitsantas, 2007):	Self-confidence	"I am confident that I can complete difficult tasks."
	Persistence in Tasks	"I continue working to complete tasks even when facing obstacles."
	Ability to Overcome Obstacles	"I am able to find ways to solve problems that arise."
		"I can stay calm when facing difficult issues."

Variable	Indicator	Statement
Digital competencies Research Instruments (Siddiq et al., 2021):	Basic Technology Understanding	Understanding technology includes knowledge of hardware and software, including the operation of computers, mobile devices, as well as applications and systems used in daily work.
	Information Literacy	Emphasizes that Digital competencies involve the ability to search, evaluate, and use digital information effectively and ethically.
	Digital Communication	Digital competencies involve the ability to communicate through various digital platforms, such as email, social media, and other communication devices, as well as the ability to collaborate online.
	Technology Problem-Solving	Ability to solve technical problems related to digital technologies, including troubleshooting devices or applications.

3 Result

The table illustrates the gender distribution of participants in the study. Of the total 239 individuals, 125 are men, accounting for 52% of the sample, while 114 are women, representing the remaining 48%. This near-balanced composition indicates a fairly equitable representation of men and women in the study, ensuring diverse perspectives and reducing gender bias in the results.

Table 2. Respondent

	Amount	Percentage
Man	125	52%
Woman	114	48%
Total	239	100%

The Average Variance Extracted (AVE) values, which assess convergent validity, range from 0.644 to 0.686. These figures approach the recommended minimum threshold of 0.5, suggesting that a sufficient proportion of variance in the constructs is explained by their respective indicators.

Table 3. The Average Variance Extracted (AVE)

Construct	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Applied Learning	0.613	0.625	0.674	0.686

Construct	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Digital Competencies	0.621	0.641	0.654	0.678
Workforce Competencies	0.642	0.674	0.638	0.654
Self Efficacy	0.647	0.651	0.632	0.644

3.1 Validity test

Based on the table The Composite Reliability surpasses the minimum value of 0.6, indicate a reasonable level of reliability in the constructs.

Table 4. Cross Loading

	Applied Learning	Digital Competencies	Workforce Competencies	Self-Efficacy
AL1	0.323	0.251	0.107	0.044
AL2	0.475	0.211	0.124	0.178
AL3	0.518	0.210	0.174	0.113
AL4	0.536	0.279	0.241	0.261
AL5	0.470	0.324	0.320	0.240
DC1	0.232	0.314	0.244	0.237
DC2	0.211	0.388	0.258	0.025
DC3	0.323	0.424	0.124	0.261
DC4	0.321	0.510	0.214	0.150
SE1	0.201	0.342	0.232	0.812
SE2	0.366	0.196	0.025	0.592
SE3	0.154	0.173	0.006	0.635
WC1	0.048	0.137	0.506	0.119
WC2	0.173	0.013	0.404	0.203
WC3	0.105	0.177	0.643	0.015
WC4	0.234	0.221	0.553	0.120
WC5	0.313	0.297	0.429	0.108

The cross-loading table presents the relationships between indicators and constructs, helping to assess the discriminant validity of the measurement model. Discriminant validity ensures that indicators are strongly associated with their intended constructs compared to other constructs. The table demonstrates that all indicators load more strongly on their respective constructs than on other constructs, which supports the discriminant validity of the measurement model

Table 5. R Square

Construct	R-square	R-square adjusted
Workforce Competencies	0.958	0.956
Self-Efficacy	0.429	0.423

Table 6. Bootstrap

	Standard Deviation (STDEV)	t-statistic (STDEV)	p-value
Applied Learning → Workforce Competencies	0.392	2.642	0.003
Applied Learning → Self-Efficacy	0.321	2.811	0.002
Digital Competencies → Workforce Competencies	0.471	3.267	0.001
Self-Efficacy → Workforce Competencies	0.323	2.472	0.000
Applied Learning → Self-Efficacy → Workforce Competencies	0.433	2.754	0.001

The table presents a statistical analysis of the relationships between Applied Learning, Workforce Competencies, Digital Competencies, and Self-Efficacy. The results show that Applied Learning has a significant positive impact on both Workforce Competencies (t-statistic = 2.642, p = 0.003) and Self-Efficacy (t-statistic = 2.811, p = 0.002), indicating that utilizing applied learning methods improves employee competencies and enhances their confidence in their abilities. Similarly, Digital Competencies strongly and positively influence Workforce Competencies (t-statistic = 3.267, p = 0.001), demonstrating the importance of equipping employees with digital skills to enhance workforce performance. Furthermore, Self-Efficacy significantly contributes to Workforce Competencies (t-statistic = 2.472, p = 0.000), suggesting that employees who believe in their abilities tend to perform better and develop stronger competencies.

Additionally, the analysis highlights that Self-Efficacy mediates the relationship between Applied Learning and Workforce Competencies (t-statistic = 2.754, p = 0.001). This indicates that enhancing Self-Efficacy through applied learning serves as an essential pathway for improving workforce competencies. Overall, the findings underscore the critical role of applied learning and digital skill development in fostering workforce competency and self-efficacy, suggesting that these elements should be integral to organizational training and development strategies.

4 Discussion

In the context of university students, these findings highlight the importance of integrating applied learning methods and digital skills development into academic curricula to prepare students for future workforce demands. Applied learning, such as project-based assignments, internships, or hands-on laboratory experiences, significantly enhances students' competencies (Workforce Competencies) and boosts their confidence (Self-Efficacy) in handling real-world challenges. This approach not only equips students with practical skills but also fosters a belief in their ability to succeed in professional settings.

The findings indicate that digital competencies, including proficiency in technological tools, data analysis software, and digital communication platforms, play a pivotal

role in enhancing students' readiness for technology-driven workplaces. This result supports prior studies which argue that digital competence has become a core employability skill rather than a supplementary capability. For instance, [27] emphasizes that digital competencies enable individuals to effectively function in complex, technology-intensive work environments by enhancing problem-solving, collaboration, and adaptability. Similarly, [28] highlights digital literacy as a foundational competence for workforce participation in the context of rapid digital transformation.

Beyond direct skill acquisition, the results further demonstrate the mediating role of self-efficacy in the relationship between applied learning and workforce readiness. This finding suggests that applied learning contributes not only to the development of technical and cognitive competencies but also to students' confidence in applying those competencies in real-world settings. This interpretation aligns with Social Cognitive Theory proposed by [29] which posits that self-efficacy influences individuals' motivation, persistence, and performance when facing complex tasks.

Empirical support for this mechanism is also found in higher education research. For example, [30] demonstrates that experiential and applied learning activities significantly enhance students perceived employability by strengthening both competence development and self-belief. In a similar vein, [25] argues that applied learning environments, such as case competitions, internships, and project-based assignments, provide authentic contexts in which students can test their skills, receive feedback, and build confidence in professional communication and decision-making.

Despite its contributions, this study is subject to several limitations that should be acknowledged when interpreting the findings. First, the results are context-specific, as the data were collected from students within a particular institutional and disciplinary setting. Consequently, the generalizability of the findings to other universities, educational systems, or professional contexts may be limited. Similar concerns regarding contextual dependency have been noted in employability and higher education research by [31] who emphasizes that skill development outcomes are often shaped by institutional culture and curriculum design.

Second, although the constructs of Applied Learning, Workforce Competencies, Digital Competencies, and Self-Efficacy were measured using validated instruments, the study relied on self-reported data, which may be influenced by individual perceptions, social desirability bias, and situational factors. Prior methodological studies, such as those by [32] caution that common method variance can affect the robustness of findings in survey-based research, particularly when predictor and outcome variables are collected from the same respondents.

Third, this study primarily examined short-term outcomes, including perceived skill enhancement and confidence development, without assessing the long-term impact on graduates' career trajectories, adaptability, or sustained employability. Research by [33] suggests that competencies and self-efficacy evolve over time and are influenced by ongoing workplace experiences, indicating that cross-sectional designs may not fully capture dynamic employability processes.

Finally, the absence of external validation from industry stakeholders, such as employers, internship supervisors, or professional mentors, limits the ability to verify

whether the competencies developed through applied learning and digital skill initiatives align with actual labor market expectations. Previous studies on work-integrated learning, including those by [34] highlight the importance of multi-source evaluations to ensure congruence between academic outcomes and industry needs.

5 Summary

This study emphasizes the importance of integrating applied learning methods and digital skill development into university curricula to better prepare students for the workforce. Applied learning, such as project-based assignments, internships, or hands-on experiences, enhances students' competencies and boosts their self-confidence in handling real-world challenges. Digital competencies, like proficiency in technology tools, data analysis, and digital communication, are also crucial for workforce readiness. Universities should prioritize digital literacy programs to equip students for technology-driven workplaces.

The study also highlights the mediating role of self-efficacy, showing that applied learning not only builds technical skills but also fosters confidence, which is key to student growth and performance. For example, participating in a business case competition helps students develop strategic thinking and confidence in presenting solutions. Thus, universities should design programs that combine applied learning with digital skill development to create a holistic educational experience, enabling students to transition smoothly into the workforce.

However, the study has limitations. Its findings may be specific to the university or field of study, which could affect generalizability. While standardized tools measured the key constructs, individual perceptions and contextual differences might not be fully captured. The focus on immediate outcomes, rather than long-term career success or adaptability, is another limitation. Additionally, the lack of external validation from employers or internship supervisors limits the ability to confirm the alignment of gained competencies with industry expectations.

To address these limitations and enhance the effectiveness of applied learning and digital competency initiatives, several recommendations can be made. Universities should broaden the application of such programs across various disciplines, tailoring them to the specific needs of each field to maximize their relevance. Conducting longitudinal studies would provide insights into the long-term impact of these approaches on students' career trajectories. Collaborating with industry partners is essential to ensure the alignment of curricula with real-world workforce demands. Additionally, incorporating soft skills development, such as communication and teamwork, alongside technical skills, can better prepare students for the modern workplace. Universities should also customize digital learning initiatives, offering certifications in advanced tools like AI and data analytics to enhance employability. Lastly, establishing robust support systems, including mentoring and coaching, can help boost students' self-efficacy, particularly for those with limited prior exposure to applied learning or digital technologies.

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