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THE INFLUENCE OF GREEN SKILL TRAINING ON SUSTAINABLE TALENT COMPETENCE, MODERATED BY DIGITAL INFRASTRUCTURE, IN VOCATIONAL HIGH SCHOOLS IN TASIKMALAYA REGENCY

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Abstract

With digital infrastructure acting as a moderating variable, this study examined the effect of green skills training on the sustainable talent competency of Tasikmalaya Regency vocational high school students. Vocational education is vital in providing students with the sustainability ideals and skills that the future workforce will require as the green economy grows. This study used a causal-associative design and a quantitative methodology. A proportional random sample procedure was used to pick 366 students as respondents, and closed questionnaires were used to gather data. According to the preliminary descriptive analysis, green skills training was generally well-received and well-integrated by Tasikmalaya Regency vocational high school pupils (Mean = 4.10, SD = 0.589). Additionally, students' foundational readiness in sustainability was indicated by their high degree of sustainable talent competency (Mean = 4.11, SD = 0.528). Though there were minor differences between schools, perceptions of the accessibility of digital infrastructure were also largely positive (Mean = 3.97, SD = 0.692). The results of the study show that sustainable talent competency is strongly influenced by green skills training. This shows that there is a direct link between vocational high school students' increased sustainable talent competency and better green skills training. Digital infrastructure also considerably modifies this relationship. The benefit of green skills training is more noticeable for pupils who have greater access to digital resources, according to this report. In order to support efficient and sustainable education, this research emphasizes how crucial it is to develop digital infrastructure and incorporate green capabilities into the SMK curriculum. This study underscores the imperative for vocational high schools to comprehensively integrate green competencies into their curriculum, coupled with robust digital infrastructure, to foster effective sustainable education. Policymakers are encouraged to formulate supportive policies and foster an integrated digital ecosystem, while industries should actively collaborate in curriculum development and provide experiential learning opportunities.

Keywords: Green Skills, Sustainable Talent Competence, Digital Infrastructure, Vocational Education, Moderation Regression Analysis.

INTRODUCTION

Perspectives in many areas, including the workplace, have changed as a result of the worsening climate crisis and environmental deterioration (IPCC, 2020). The need for a workforce that is not only technically proficient but also cognizant of and capable of sustainability is therefore increasing (OECD, 2020). In this context, green skills—defined as competencies that enable individuals to support and contribute to a green economy and sustainable society—have become critically important.

Vocational education, particularly at the level of vocational high schools(SMK), plays a pivotal role in preparing young people to navigate the evolving demands and opportunities of the labor market (Kemendikbud, 2020). SMKs are expected to equip students with relevant green skills so that

they are prepared to enter sustainability-oriented sectors, such as sustainable agriculture, renewable energy, and waste management (ILO, 2019).

However, the effectiveness of green skill training in nurturing sustainable talent depends on supporting components—particularly digital infrastructure, which is increasingly vital in the modern era (World Bank, 2021). Elements such as stable internet access, availability of online learning platforms, and teachers' digital literacy can enhance the dissemination and accessibility of green skill training materials (European Commission, 2020). Conversely, inadequate digital infrastructure can impede the optimization of student training and skills development.

Tasikmalaya Regency possesses abundant natural resources that offer significant potential for sustainable development across various economic sectors, including agriculture, plantations, and nature-based tourism—provided these are pursued through environmentally responsible practices (BPS Kabupaten Tasikmalaya, 2024; Pemerintah Daerah Kabupaten Tasikmalaya, 2021). Nevertheless, this potential remains underutilized, partly due to the persistent challenge of preparing a competent workforce that aligns with the growing demands of the green economy (OECD, 2020). Strategic interventions in vocational education systems are thus essential to bridge the gap between sustainable economic opportunities and the availability of green talent.

Recent studies increasingly indicate that green skill training conducted in isolation—without adequate digital readiness—tends to be suboptimal. The persistence of the digital divide remains a major barrier to educational reform, particularly in developing countries (International Telecommunication Union, 2024). Without sufficient ICT infrastructure, learning innovations often remain fragmented efforts that fail to yield transformational impact. In the age of AI-driven adaptive learning, the synergy between sustainable education and digital access should be regarded not as a supplementary resource but as a strategic necessity.

This study aims to comprehensively examine how green skill training influences the sustainable talent capabilities of vocational students in Tasikmalaya Regency, with digital infrastructure positioned as a moderating variable expected to amplify or modulate this relationship. Accordingly, the objective of this research is to contribute meaningfully to the development of policy recommendations and programs that align vocational education with the needs of sustainable regional development. Furthermore, the study seeks to empower vocational school graduates with the competencies necessary to thrive in environmentally responsible work environments.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Green Skill Training

In order to promote environmental sustainability and ease the shift to a green economy, green skills training is a systematic learning process created to build both technical and non-technical competencies. These talents include systemic thinking, environmentally friendly technical capabilities, and important social skills like teamwork and moral leadership (Pavlova & Singh, 2022).

In the context of vocational education in Asia, many Technical and Vocational Education and Training (TVET) institutions—including those in Indonesia—are still slow in integrating green skills training into their curricula (Maclean et al., 2018). Meanwhile, the demand for a workforce that is aware of and skilled in sustainable practices continues to increase in various industrial sectors. The *Global Green Skills Report 2024* warns of the urgent need to double the global green talent pool by 2050 to meet projected labor demands (Linkedin, 2024). Green skills training in vocational schools (SMKs) must be contextual, project-based, and closely linked to green industry practices so that students not only understand the concepts but are also able to apply them in real-world settings (Farich & Kustono, 2022).

Sustainable Talent Competence

Sustainable talent competence is defined as a set of knowledge, attitudes, and behaviors that enable individuals to actively participate in eco-innovation, ethical practices, and sustainable leadership in the workplace. These competencies are typically categorized into four key dimensions: Embodying sustainability values, Embracing complexity in sustainability, Envisioning sustainable futures, and Acting for sustainability (Bianchi et al., 2022).

Students who receive sustainability-focused training tend to exhibit better decision-making, critical thinking, and adaptability to changing industry demands (Muaddab, 2024). Within the vocational education context, these competencies are crucial, as graduates are expected to directly enter the workforce, which is increasingly shaped by sustainable development principles.

Digital Infrastructure

In today's digital era, digital infrastructure plays a critical role. It refers to the information and communication technology (ICT) networks that connect people, organizations, and institutions globally (Supa, 2023). This includes internet connectivity, hardware and software, as well as systems and policies that enable effective technology-based learning.

Digital infrastructure is fundamental to shaping a digitally literate, creative, and competitive future society (Kominfo, 2024). With support from digital tools such as virtual labs, learning management systems (LMS), and e-learning platforms, schools can improve the effectiveness of their training programs (Farich & Kustono, 2022).

Integrating digital platforms and simulations is essential for expanding access and enhancing the impact of green skill training (Maclean et al., 2018). Therefore, in the context of this study, digital infrastructure is considered a moderating variable that strengthens the relationship between green skills training and sustainable talent competence.

The Relationship Between Green Skills Training dan Sustainable Talent Competence

Within the framework of Human Capital Theory, investment in education and training is considered a strategic effort to enhance individual competencies (Becker, 1993). When such investments focus on green or sustainability-oriented training, they contribute to the development of competencies aligned with sustainable development goals.

Previous research has demonstrated that green training significantly influences the development of green competencies (Yafi et al., 2021). Similarly, other studies confirm that the implementation of green skills in vocational education substantially enhances students' critical thinking and their capacity to act sustainably (Haloho et al., 2023).

This evidence highlights that green skills training is an essential component in building sustainable talent competence. Through such training, individuals acquire not only technical knowledge relevant to environmentally friendly practices but also internalize sustainability values and mindsets that foster environmentally and socially responsible work behavior.

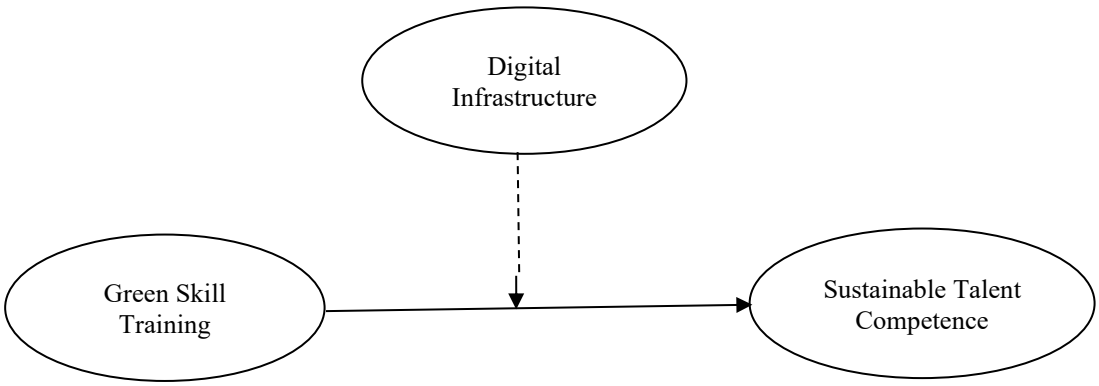


Figure 1. Research Model

H1: Green skills training has a positive effect on sustainable talent competence.
H2: Digital infrastructure moderates the effect of green skills training on sustainable talent competence.

RESEARCH METHODS

This study used a quantitative approach with a causal-associative survey design to examine the relationships between green skills training and sustainable talent competency, as well as the moderating role of digital infrastructure among Tasikmalaya Regency's vocational high school students (Creswell & Creswell, 2018). The research population comprised 4,158 twelfth-grade students from 14 public vocational high schools in Tasikmalaya Regency. The Slovin algorithm was used to calculate a sample size of 366 respondents with a 5% margin of error. The proportionate random sample method was used in the sampling procedure. By calculating the number of students in each school proportionately, allocating samples appropriately, and then randomly selecting students using a random number table, this method methodically achieved proportional representation from each vocational high school within the sample (Sugiyono, 2013). Closed questionnaires were used to gather data (Hair et al., 2019). These surveys assessed students' level of sustainable proficiency, their opinions on green skills training, and the accessibility of digital infrastructure. To make sure that every statement consistently measured every variable, reliability tests were carried out. Descriptive statistics, Moderation Regression Analysis, and moderation analysis were performed on the gathered data using SPSS software.

RESULTS AND DISCUSSION

With digital infrastructure acting as a moderating variable, the main goal of this study was to investigate how green skills training affected the sustainable talent competency of Tasikmalaya Regency vocational high school students. To guarantee a true representation of the varied vocational high school student body throughout the regency, a proportional random sample was used. This analytical technique is essential for improving the findings' external validity and enabling more compelling extrapolations to actual situations. This study attempts to give a thorough grasp of the phenomenon being studied by incorporating both descriptive and inferential studies into the discussion.

Descriptive Analysis of Research Variables and Sample Representation

Understanding the initial conditions of the study's variables is essential before looking at the causal-associative linkages. Descriptive analysis provides crucial information about the sample's characteristics and respondents' opinions about digital infrastructure, sustainable talent competency, and green skills training in Vocational high school in Tasikmalaya Regency.

Each vocational high school in the population had a proportionate probability of being represented in the final sample by using a proportional random sampling approach, which was in line with the relative size of the school (Sugiyono, 2013). By enabling inferences from the sample to be extrapolated to the larger population, this precise representation guarantees the validity of the findings. The exact distribution of the population and sample is shown in Table 1 (assuming the user would supply it).

Table 1. Population and sample distribution

NAME	POPULATION	PROPORTION	SAMPLE
SMK NEGERI BOJONG GAMBIR	72	36%	26
SMKN 2 CIPATUJAH	31	87%	27
SMKN BANTARKALONG	704	4%	26
SMKN CIKALONG	149	17%	26
SMKN CIPATUJAH	265	10%	26
SMKN KADIPATEN	629	4%	27
SMKN KARANGJAYA	132	20%	26
SMKN MANONJAYA	506	5%	26
SMKN PANCATENGAH	271	10%	26
SMKN PARUNGPONTENG	172	15%	26
SMKN PUSPAHIYANG	243	11%	26
SMKN RAJAPOLAH	729	4%	26
SMKN SPP	48	54%	26
SMKN SUKARESIK	207	13%	26
TOTAL	4158		366

In addition, each research variable exhibits key characteristics, as illustrated by the descriptive statistics presented in Table 2.

Table 2. Result of Descriptive Analysis

Variable	Minimum	Maxmum	Mean	Standar Deviation
Green Skill Training	1.00	5.00	4.10	0.589
Sustainable Talent Competency	1.00	5.00	4.11	0.528
Digital Infrastructure	1.00	5.00	3.97	0.692

On a scale of 1 to 5, the variable for green skills training produced an average score of 4.10. This suggests that Tasikmalaya Regency's SMK students have a generally positive opinion of the green skills projects and programs in which they have taken part. This implies that instruction in green skills is well-liked by pupils and has been successfully included into the curriculum. Additionally, the very low standard deviation of 0.589 suggests that students' perceptions and training experiences are highly uniform, suggesting a consistent comprehension of these programs. In line with the global need for a workforce with environmental knowledge and competency, this data indicates that Vocational high school in Tasikmalaya have taken important measures to meet the demands of a sustainability-oriented job market (Muaddab, 2024; Pavlova & Singh, 2022).

On a scale of 1 to 5, the average score for sustainable talent competency was 4.11, which shows that SMK students in the area often have good knowledge and skills related to sustainability. A uniform attainment of foundational abilities or understanding among respondents is implied by the comparatively small standard deviation of 0.528, which indicates little difference among pupils in terms of sustainable competency. Meeting the need for people with sustainable skills in the labor market requires this high degree of competency (OECD, 2020). Nonetheless, this information also promotes ongoing development of these abilities through curriculum upgrades and hands-on learning opportunities. Graduates of vocational high school will be more equipped to handle the difficulties presented by the changing green economy as a result.

On a scale of 1 to 5, the average score for digital infrastructure was 3.97, with a standard deviation of 0.692. Although the average score shows that students have generally positive opinions

about digital infrastructure, the slightly higher standard deviation points to certain differences in Tasikmalaya Regency's accessibility and availability of digital infrastructure.
This circumstance suggests a complicated dynamic.

While some institutions are still in the early stages of growth, others may have sufficient digital resources, including computers, reliable internet connections, and e-learning platforms. Supporting contemporary education, particularly the acquisition of 4.0 age skills, requires digital infrastructure (Supa, 2023). Therefore, these disparities may affect the quality of learning that depends on digital infrastructure, despite the fact that it is widely thought to be good.

Analysis of Instrument Testing

This section describes the outcomes of the instrument testing, which made use of validity and reliability testing, two essential evaluations. These tests are necessary to make sure the questionnaire, which is used to gather data, assesses the desired variables consistently and accurately. Table 3 displays the results of the validity test, and Table 4 displays the results of the reliability test.

Table 3. Result of Validity Test Using Pearson Product Moment

Questions	Green Skill Training	Sustainable Talent Competency	Digital Infrastructure
1	0.601	0.720	0.608
2	0.635	0.706	0.703
3	0,585	0.640	0.751
4	0.629	0.748	0.760
5	0.686	0.704	0.717
6	0.612	0.741	0.743
7	0.624	0.650	0.736
8	0.598	0.652	0.729
9	0.719	0.755	0.745
10	0.602	0.737	0.744

Table 4. Result of Reliability Test Using Cronbach's Alpha

No	Cronbach's Alpha	Variable
1	0.828	Green Skill Training
2	0.886	Sustainable Talent Competency
3	0.893	Digital Infrastructure

The Pearson Product Moment correlation coefficient was used to evaluate the questionnaire items' validity. The crucial r table value for this study, which had 366 respondents, was found to be 0.1022. The test findings showed that every item on the questionnaire was deemed to be legitimate. This indicates that each item's computed Pearson correlation coefficient was positive and greater than

0.1022, proving that each question accurately assesses the particular variable it was intended to evaluate. As a result, we can be certain that the questions faithfully capture the concepts they were designed to convey. Cronbach's Alpha (α) was used to assess the instrument's dependability, specifically its internal consistency. The findings, which are displayed in Table 4, demonstrate that all scales had Cronbach's Alpha values more than 0.600.

Result of Classical Assumption Tests

Normality, multicollinearity, and heteroscedasticity are three essential classical assumption tests that were carried out prior to the regression and moderation studies in order to guarantee the validity and reliability of the statistical model.

Table 5. Result Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

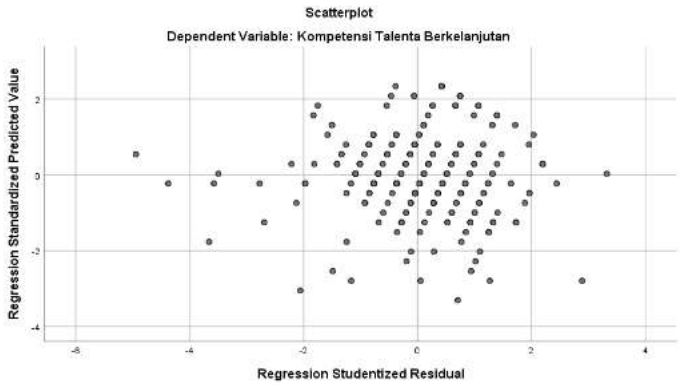
		Unstandardized Residual
N		366
Normal Parameters[a,b]	Mean	0,0000000
	Std. Deviation	1,85979497
Most Extreme Differences	Absolute	0,133
	Positive	0,133
	Negative	-0,101
Test Statistic		0,133
Asymp. Sig. (2-tailed)		.072[c]

a. Test distribution is Normal.
b. Calculated from data.

Tabel 6. Result of Multikolinearitas

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8,753	1,379		6,348	0,000		
	Green Skill Training	0,804	0,034	0,782	23,940	0,000	1,000	1,000



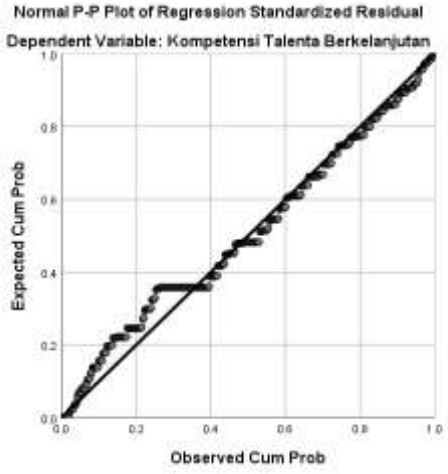


Figure 2. Result Of Scatterplot

Figure 3. Normal P-Plot

Both a Normal P-P plot and the Kolmogorov-Smirnov test were used to evaluate the residuals' normality. Kolmogorov-Smirnov Test: A significant value of 0.072 was obtained from the Kolmogorov-Smirnov test, as indicated in Table 5. This value suggests that the residuals are regularly distributed because it is higher than 0.05. Normal P-P Plot: The Normal P-P Plot (Table 7) revealed that the data points were densely packed along the diagonal straight line, which is in accordance with the Kolmogorov-Smirnov finding. The data are regularly distributed, meeting the normality assumption, according to the results of both tests. To make sure the independent variables were not overly correlated, which could skew regression coefficients, the multicollinearity test looked at their associations.

According to the findings, the Variance Inflation Factor (VIF) for each of the three variables was above 0.05 and below 10 (more precisely, 1.000), as shown in the pertinent table (which you mentioned includes the VIF values). The range of VIF values indicates that the independent variables in this study are sufficiently independent for the regression analysis, confirming the absence of multicollinearity.

The heteroscedasticity test was conducted to check whether the variance of the residuals is constant across all levels of the independent variables (homoscedasticity). From the analysis results (as indicated in your description, presumably referring to a scatterplot or a specific test's output table), it was observed that there was no clear pattern in the scatterplot of residuals against predicted values. The data points were randomly scattered both above and below the 0 on the Y-axis. This visual evidence, combined with any associated statistical test results (if available), leads to the conclusion that no heteroscedasticity occurred in the data, thus satisfying this assumption.

Analysis of Hypothesis Testing Result

The direct impact of green skills training on sustainable talent competency and the moderating function of digital infrastructure in this connection were the two primary hypotheses that this study investigated. SPSS was utilized to do the statistical analysis. Training in green skills has a favorable impact on sustainable talent competency.

Training in green skills and sustainable talent competency were shown to be strongly and statistically significantly correlated ($r=0.782$, $p=0.001$). H1 is clearly supported by this highly significant p-value ($p<0.05$). According to the positive correlation coefficient, vocational high school students' sustainable talent competency significantly rises in tandem with an increase in green skills training.

Additionally, 0.612 is the coefficient of determination (R 2). This indicates that green skills training accounts for 61.2% of the variation in sustainable talent competency. The significant influence of green skills training on the development of sustainable talent among vocational high school students is demonstrated by this significant explanatory power.

This hypothesis is substantially supported by the regression analysis. Sustainable talent competency was found to be positively and significantly impacted by green skills training ($\beta=0.804$, $p=0.001$). According to the positive regression coefficient ($\beta=0.804$), there will be a 0.804-unit improvement in sustainable talent competency for every unit increase in green skills training. The statistical importance of this positive link is confirmed by the related p-value of 0.001, which is significantly lower than the traditional significance level of 0.05.

This result clearly shows that green skills training is a strong predictor of increased sustainable talent competency among participants, as seen by the previously reported strong correlation ($r=0.782$) and significant coefficient of determination ($R 2 = 0.612$). It emphasizes how offering organized green skills courses directly advances students' knowledge and proficiency in sustainability.

Tabel 7. Result of Partial Hypothesis Testing

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3573,361	1	3573,361	573,112	.000[b]
	Residual	2269,546	364	6,235		
	Total	5842,907	365			

a. Dependent Variable: Sustainable Talent Competence
b. Predictors: (Constant), Green Skill Training

Tabel 8. Result of Simultaneous Hypothesis Testing

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8,753	1,379		6,348	0,000		
	Green Skill Training	0,804	0,034	0,782	23,940	0,000	1,000	1,000

a. Dependent Variable: Sustainable Talent Competence

Tabel 9. Coefficient of Determination

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.782[a]	0,612	0,611	2,49700	1,857

a. Predictors: (Constant), Green Skill Training
b. Dependent Variable: Sustainable Talent Competence

Tabel 10. Coefficient of Determination in Moderation Analysis (R2 Change

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.850[a]	0,722	0,720	2,11735	1,909

a. Predictors: (Constant), Green Skill * Digital Infrastructure, Green Skill Training, Digital Infrastructure
b. Dependent Variable: Sustainable Talent Competence

The fact that R^2 increased from 0.612 in the model without interaction to 0.722 in the model with the interaction factor is a significant discovery. This significant increase in R^2 indicates that the model that takes into account the relationship between digital infrastructure and green skills training

has a significantly higher predictive ability. The discrepancy, which represents an 11% increase in explained variance (0.722 - 0.612 = 0.110), highlights the fact that digital infrastructure, the moderating variable, accounts for a substantial amount of the variance in sustainable talent competency that cannot be explained by green skills training alone.

At first, green skills training alone accounted for 61.2% of the difference in sustainable talent competency. This illustrates how green curriculum content has a significant impact on students' preparation for the workforce. Nonetheless, a significant interaction effect is highlighted by the additional 11% predictive power obtained by using digital infrastructure. This implies that although green skills training is quite successful when done alone, when accompanied by sufficient digital infrastructure, its influence on sustainable talent competency is noticeably increased.

These findings specifically show that the beneficial effects of green skills training on sustainable talent competency are typically more noticeable when students have access to first-rate digital infrastructure. Efficient use of online learning materials, access to additional digital resources about green skills, peer collaboration through digital platforms, and participation in virtual simulations or real-world applications of green skills are all made possible by adequate digital infrastructure. Digital infrastructure essentially serves as a facilitator, increasing the effectiveness of green skills training and enabling students to use more green skills. This result supports the more general idea that technology can greatly support skill development and improve the efficacy of learning (Beeland, 2004).

This exchange demonstrates that the effectiveness of green skills training depends not only on its subject matter but also on how it is delivered. More comprehensive and contextualized learning is typically experienced by students who have access to digital learning platforms, simulation tools, and a reliable internet connection (UNESCO, 2022). These results reinforce the argument that digital integration can significantly enhance the mastery of 21st-century competencies, such as critical thinking and innovation.

Theoretically, this study fills a vacuum in the literature by examining the connection between the digital divide and sustainable education in the context of Indonesian vocational schools. Furthermore, by offering quantitative proof that digital infrastructure is not just a supporting condition but also a significant enhancer of training effectiveness, these findings confirm earlier research (Farich & Kustono, 2022; Maclean et al., 2018).

As a result, legislators and school officials need to think about funding curriculum innovation and improving digital infrastructure at the same time. As required by Indonesia's Low Carbon Development Plan, this dual-track method is a successful tactic for creating sustainable human resources that complement low-carbon development objectives (Bappenas, 2020).

CONCLUSION

This study offers strong proof of how green skills training affects Tasikmalaya Regency vocational high school students' sustainable talent competency. Students showed great sustainable talent abilities and a high degree of favorable perception toward the green skills training they received, demonstrating their ability to meet the demands of the green economy right away. The observed low variation among schools indicates that there is still opportunity for additional improvements in the equitable supply of digital infrastructure, despite the fact that it was usually well valued. The first hypothesis that green skills training has a major and beneficial impact on sustainable talent competency was validated. This emphasizes how directly and advantageously such training programs may provide students with the necessary sustainability skills.

Additionally, the inferential analysis validated Hypothesis 2, which states that the relationship between green skills training and sustainable talent competency is strongly moderated by digital infrastructure. This important discovery suggests that the benefits of green skills training are enhanced by technology support. Students profit more from their education in green skills when they have greater access to digital resources and platforms. These findings have important

ramifications for the development of vocational education with a sustainability focus. Vocational high school may make a substantial contribution to preparing students for success in a workforce that is becoming more and more focused on sustainable practices by funding efficient green skills training programs and guaranteeing the equitable improvement of digital infrastructure. They will then be better equipped to help achieve future sustainable development objectives as a result.

Limitation

This study provides valuable insights into the impact of green skill training on the sustainable talent competence of vocational high school students in Tasikmalaya Regency, with digital infrastructure acting as a significant moderating variable. However, several limitations warrant consideration. Firstly, the geographically restricted focus on vocational high schools solely within Tasikmalaya Regency inherently limits the generalizability of these findings to other regions or broader contexts. Future research could expand the geographical scope to enhance external validity. Secondly, the reliance on closed questionnaires for data collection, which primarily focused on student perceptions, may not fully capture the objective reality of green skill training implementation or the actual level of sustainable talent competence. While perceptions are crucial, integrating observational studies or performance-based assessments could offer a more holistic perspective. Lastly, while the causal-associative survey design proved effective in identifying relationships, it fundamentally limits the ability to comprehensively explain the complex interactions between variables and other confounding factors that may influence sustainable talent competence. Experimental designs could offer deeper insights into these complex dynamics.

Recomendation

A few strategic recommendations may be made based on the findings of this study, which confirms the significant impact of green competence training on sustainability talent's competencies and the moderation of digital infrastructure. For educational institutions (SMK), it is crucial to develop a comprehensive curriculum that aligns with local industry needs and potential while also optimizing services and utilizing digital infrastructure as the primary factor influencing student effectiveness. Increasing student capacity through instruction on green skills and digital pedagogy is also essential to facilitating effective knowledge transfer. On the other hand, it is anticipated that the regional government would be able to implement supportive measures that enhance the integration of green skills in vocational education, such as budget allocation and green job needs assessment at the regional level, and developing an integrated digital education system. It is also crucial for businesses to actively participate in the development of green skills curricula and provide guidance and support to SMK students who possess a broad range of talents. Finally, for the study of data collection, it is recommended to adopt a qualitative approach or Mix methods to explain implementation and perception factors in a more detailed manner, conduct a comparative study across regions to identify the most effective green skill training model, and evaluate the impact of training.

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