# Determining Work Readiness of Vocational Education Students to Assist in Developing Green Jobs: The Mediating Role of Green Intention

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## ABSTRACT

This research aims to measure the significance of the influence of green competencies, learning supports, and green intention on green work readiness in vocational education students. In addition, the mediating role of green intention is also tested in bridging the indirect influence of green competencies and learning supports on green work readiness. Expost-facto research was conducted in vocational education (VE), which has Adiwiyata status, with a total involvement of 424 participants who joined as students voluntarily and had specific criteria tailored to their needs. Data collection was assisted by using a closed questionnaire with four Likert scales, which had been tested for validity and reliability. Structural Equation Modeling was used to analyze data through path analysis and bootstrap methods. This research proves the importance of green intention in playing a crucial role as a determinant of green work readiness in vocational education students. This research also provides an essential insight that green competencies and learning supports play a significant role in growing green intention and determining green work readiness. These results provide an essential signal especially for vocational education agencies to balance the power of competencies and learning supports to stimulate the growth of green work readiness. The synergy between various stakeholders and socio-cultural communities is an important key that must continue to be pursued.

**Keywords:** Green jobs, green work readiness, green intention, green competencies, learning supports, and vocational education

## INTRODUCTION

Vocational education has an important role in equipping its graduates with practical and specific skills that can be directly applied in the world of work. (Billett, 2011). In contrast to traditional academic education, vocational education focuses on mastering technical competencies, soft skills such as communication and teamwork, and an understanding of relevant industries (Clark & Winch, 2007). These programs are often designed in collaboration with related companies or institutions, ensuring that their performance is in line with the needs of the labor market (Muhammad et al., 2022; Vengidason et al., 2021). In addition, through project-based approaches, internships, and work simulations, vocational education not only improves employability but also helps employees adapt quickly to a dynamic professional environment while reducing poverty rates and increasing workforce competitiveness (Surti et al., 2022; Sutiman et al., 2022; Syauqi et al., 2022). However, there is a significant amount of poverty resulting from vocational education, especially if we add in the number of graduates who do not work in the field of expertise they have studied (Cheong & Narayanan, 2021; Kurniawan et al., 2021). At its peak, this issue saw the most significant upheaval in the last four years, exacerbated by the COVID-19 pandemic (Astuti et al., 2021; Mutohhari et al., 2021).

The complexity of vocational education problems does not stop here, but behind it, various problems have the potential to appear in the future. The transformation of work towards green jobs is additional homework that must be prepared immediately as a response to new qualifications in the future (Pavlova, 2019; Stanef-Puică et al., 2022). Green jobs have great potential to occur shortly, considering their urgency in the interest of building

a sustainable environment for the benefit of humanity (de la Vega et al., 2024). Although in developing countries like Indonesia, issues related to green jobs are not yet significant compared to developed countries, this needs to be prepared immediately because this issue is a common problem that must be solved together by all countries. (Dordmond et al., 2021; Sofroniou & Anderson, 2021). The importance of vocational education and its responsibility in helping to realize green jobs lies in its essence as a human resource development institution (Pavlova, 2009). This means that they must take a significant role in building green human resources as the core of a series of industrial processes. Although vocational education in Indonesia is faced with a high dilemma, namely the need to carry out a profound revolution, integrating environmental content must also be attempted simultaneously in providing competencies to align green job qualifications (Maclean et al., 2018).

Green work preparation for students is the most important aspect to be provided by vocational education as an effort to produce green human resources. (Gomes et al., 2023; Parida et al., 2021). This preparation includes five important indicators that all children must build before they graduate: adaptation, resilience, green innovation, influencing others, and taking initiative. (Garavan et al., 2023; Sharpe & Martinez-Fernandez, 2021). Adaptation helps students adjust to changes in technology and environmental policies (Wahyuni & Mutohhari, 2024). Resilience gives them the ability to survive under pressure and move on despite failure (Mansoor et al., 2022). Green innovation drives them to create creative solutions to environmental problems. (Mittal & Kaur, 2023). In addition, the ability to influence others and take initiative enables them to be effective agents of change in supporting sustainability in the workplace (Jaedun et al., 2024). Unfortunately, these five aspects of readiness are actually viewed by vocational education practitioners as something that is not useful and actually adds new problems for them (Asnawi & Djatmiko, 2016; Ramli et al., 2020). Various obstacles that come from the economic sector, the complexity of learning, the challenges of differences in student characteristics, and the dynamics of work and industry are the main reasons they ignore providing green work readiness to students (Sofroniou & Anderson, 2021).

Realizing green work readiness actually only requires simple efforts that must be strengthened long before students graduate from vocational education. This effort is about strengthening green intentions in students, which is the main factor that is seen by various experts as a determinant of individual readiness to be ready to strive for environmental sustainability through the activities and work they do (Norton et al., 2017). Green intention includes long-term vision, attitude of desire, self-efficacy, benefits, and ease of implementation which are important for vocational students to build green work readiness (Pavlova, 2009; Zameer & Yasmeen, 2022). This vision directs students to sustainability goals that are relevant to future careers. (Guo et al., 2020). Sustainability attitudes motivate them to integrate environmentally friendly practices into their work (Junsheng et al., 2020). Self-efficacy helps students confidently apply green skills while understanding the benefits increases enthusiasm for green career opportunities. (Jaedun et al., 2024). Ease of implementation makes green practices more realistic and supports students' adaptation to sustainable industry needs (Derasid et al., 2021).

Unfortunately, building a strong green intention in students does not reveal the palm, which is behind all of that there is a huge challenge. According to previous research reports, individuals in the age range of children at the secondary education level have problems with intentions and determination that are not yet consistent (Wahyuni & Mutohhari, 2024; Walker et al., 2021). Moreover, psychologically, the level of awareness and emotions of students at this age has not yet matured, so it is not easy to strengthen them in achieving a long-term context such as the environment (Ibrahim et al., 2021; Mets et al., 2021). There are at least two most important efforts to build green intentions as a driver for realizing green work readiness, namely through building green competencies and providing learning support (J. Wang et al., 2020; Yahya et al., 2022). Green competencies and learning support have an important role in building green intentions of vocational education students as a strategic step to prepare them for green jobs (Cledumas et al., 2020). Green competencies, which include green awareness, literacy, capability, creativity, and criticality, equip students with in-depth understanding, practical skills, and innovation to face environmental challenges in the world of work (Cui et al., 2020; Pavlova, 2009). On the other hand, learning support from family, school, and community creates a learning ecosystem that encourages the internalization of sustainability values holistically (Cui et al., 2023; Pham et al., 2023). The combination of strong green competencies and consistent learning support ensures that students not only have the technical skills but also the mindset and commitment to implement green practices effectively. Thus, they are able to become an adaptive workforce, relevant to the needs of sustainable industries, as well as agents of change to realize green jobs.

Based on these problems and the support of various theories and previous research studies, this study aims to measure the influence of green competencies, learning support, and green intentions on green work readiness in students in line with helping to realize green jobs. We also examine the role of green intentions in mediating the indirect influence of green competencies and learning support on green work readiness. We focus our research on vocational students in the highest-grade class considering that they have completed a series of learning from all competencies, so they only need to face in-depth material and various exams. Various theories and reinforcements in previous studies above produce several hypotheses that are proposed, namely as follows:

H1: Green competence has a significant positive effect on green intention

H2: Learning support has a significant positive effect on green intention

H3: Green competence has a significant positive effect on green work readiness

H4: Learning support has a significant positive effect on green work readiness

H5: Green intention has a significant positive effect on green work readiness

H6: Green intention plays a significant positive role in mediating the influence of green competence on green work readiness.

H7: Green intention plays a significant positive role in mediating the influence of learning Support on green work readiness.

## METHOD

Our research focuses on data in the form of phenomena or conditions that have occurred and are relevant to the theory that is built as an introduction to the hypothesis. Given this, we adopt an ex-post facto research method, the design of which is developed to examine events that have occurred. (Cohen et al., 2011). This study is a cross-sectional study in which data were collected through a questionnaire designed with structured questions. Based on the existing conceptual framework and theoretical studies, direct and mediation effects were measured based on actual data in the field. The analyzed data explain the extent to which green competencies, learning support, and green intentions influence green work readiness in vocational education students. The analyzed data also explain the significance of the role of green intentions in mediating the indirect influence of green competencies and learning support on green work readiness. We ensure that the direction of the study is in line with the importance of building green jobs, building environmentally friendly human resources through vocational education. The collected data were analyzed systematically using three stages with 300 iterations to ensure a high level of accuracy even when comparing the three measures (Avkiran & Ringle, 2018).

The research participants were selected by considering the criteria that all of them came from Adiwiyata schools as the identity of green (environmentally friendly) schools in Indonesia. Secondly, we decided on participants with sufficient experience in learning and internship implementation. Thus, the students chosen were students in the third grade. The probabilistic simple random sampling calculation obtained 424 participants who were students in vocational high schools that had Adiwiyata status. From this number, we filtered again using voluntary sampling techniques and brought the involvement of 366 students. Of all the participants, fifty-six percent were women, and the rest were men. At least three areas of expertise in vocational education were represented: Technology and Engineering (36%), Information and Communication Technology (34%), and Tourism (30%).

We collected data from VEs in several regions in Indonesia from July to September 2024. The data in this study was collected using a questionnaire technique through Google Forms, which has been validated in terms of content and construct. The questionnaire used was a 4 Likert scale questionnaire, with the answer options Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Instrument development was carried out by adopting the expert opinion of each variable. The instrument is equipped with respondent identities that include essential dimensions related to class choice, school status, gender, status of the field of expertise pursued, and domicile of residence. Table 1 presents the instrument development (grid) results in this study, which is used

as a data collection tool.

Table 1. Instrument grid

| Variable | Indicators | Example Item | References |
|---|---|---|---|
| Green competencies | Green awareness | I'm aware of the importance of protecting the environment through work | (Cui et al., 2020; Pavlova, 2009) |
| | Green literacy | I understand about how to work in an environmentally friendly way | |
| | Green capability | I can implement environmentally friendly work processes | |
| | Green creativity | I can develop environmentally friendly work processes | |
| | Green criticism | I can analyze environmental risks | |
| Learning supports | Family support | Family provides moral support to work in an environmentally friendly manner | (Cui et al., 2023; Pham et al., 2023) |
| | School support | The school supports my green literacy development | |
| | Community support | The people around me provide examples of working in an environmentally friendly manner | |
| Green intention | Long-term vision | Working in an environmentally friendly manner is my long-term vision | (Norton et al., 2017; Zameer & Yasmeen, 2022) |
| | Sustainability attitude | I am determined to participate in environmental sustainability | |
| | Self-efficacy | I have confidence in being able to contribute to environmental sustainability | |
| | Benefits | I am sure we will benefit from environmentally friendly jobs in the future | |
| | Ease of implementation | Environmentally friendly work can be done starting from the simplest | |
| Green work readiness | Adaptation | I am able to follow changes in environmental issues | (Garavan et al., 2023; Sharpe & Martinez-Fernandez, 2021) |
| | Resilience | I have the resilience to continue trying to work in an environmentally friendly manner | |
| | Green innovation | I have an idea to create an environmentally friendly innovation | |
| | Influencing others | I am able to influence others to work in an environmentally friendly manner | |
| | Taking initiative | I initiated an eco-friendly movement at work | |

Research hypotheses are formulated based on relevant teoretical support regarding the path of influence of exogenous variables on endogenous variables directly or using mediation, as stated in the previous literature insight. Structural Equation Modeling (SEM) analysis was used to test the hypothesis of direct influence between

variables and the role of mediation through path analysis and bootstrap methods. Path analysis measures the direct role of green competencies, learning supports and green intention in determining student green work readiness in vocational education. Furthermore, the bootstrap method was used to measure the role of the mediating effect of green intention. Bootstrapping was adopted by considering its accuracy, considering that this method is the most reasonable and can obtain confidence limits for certain indirect effects in most conditions (Preacher & Hayes, 2008). Statistical analysis in this study used Smart-PLS 4.0 support software with a varying number of iterations to obtain the most accurate positional analysis.

# RESULTS AND DISCUSSION

## Results

Before testing the SEM model, we analyzed the outer loading value, which describes the level of item validity, and the α and AVE values, which represent the reliability level of the measuring instrument. We measure the level of validity using the CFA method and the level of reliability using Cronbach Alpha with the help of the SmartPLS 3.0 application. The validity test results showed that all indicators for all research variables had outer loading values exceeding 0.700, so none of the indicators for all variables failed. By the theory of partial least squares, this value is above the safe threshold for the appropriate level of validity so that all items that have met are decided to have validity criteria and are ready to be used for research (Avkiran & Ringle, 2018). Likewise, the reliability test results show that the value of α is in the high range for the reliability value (Reid, 2014). Table 2 presents the results of the validity and reliability tests in more detail.

Table 2. Validity and reliability test results

| Variable | Reliability | | | Validity | | | |
|---|---|---|---|---|---|---|---|
| | α | AVE | Decision | Item | Outer Weight | Outer Loading | Decision |
| Green competencies (GC) | 0.927 | 0.712 | High Reliability | GC 1 | 0.328 | 0.956 | Valid |
| | | | | GC 2 | 0.264 | 0.963 | Valid |
| | | | | GC 3 | 0.292 | 0.947 | Valid |
| | | | | GC 4 | 0.352 | 0.963 | Valid |
| | | | | GC 5 | 0.226 | 0.930 | Valid |
| Learning supports (LS) | 0.916 | 0.781 | High Reliability | LS 1 | 0.286 | 0.957 | Valid |
| | | | | LS 2 | 0.296 | 0.969 | Valid |
| | | | | LS 3 | 0.292 | 0.951 | Valid |
| Green Intention (GI) | 0.942 | 0.794 | High Reliability | GI 1 | 0.228 | 0.962 | Valid |
| | | | | GI 2 | 0.254 | 0.980 | Valid |
| | | | | GI 3 | 0.218 | 0.982 | Valid |
| | | | | GI 4 | 0.222 | 0.974 | Valid |
| | | | | GI 5 | 0.248 | 0.978 | Valid |
| Green work readiness (WR) | 0.935 | 0.602 | High Reliability | WR 1 | 0.226 | 0.931 | Valid |
| | | | | WR 2 | 0.216 | 0.944 | Valid |
| | | | | WR 3 | 0.204 | 0.934 | Valid |
| | | | | WR 4 | 0.240 | 0.947 | Valid |
| | | | | WR 5 | 0.238 | 0.941 | Valid |

We evaluate the model's suitability to measure the suitability level and determine changes to the structural model

designed based on the theoretical framework. The overall fit index of the research model is presented (as the primary model) in Table 3. All the fit indices for the primary model obtained good test results, as presented. The chi-square value obtained shows a relatively small critical number. The probability value evaluated shows a significant number at a high level (> 0.050). GFI, AGFI, and NFI tested well, showing values above the threshold (≥0.90). Likewise, the SRMR < 0.05 and RMSEA < 0.08. Based on these results, the fit model is based on the acquisition of values included in the goodness of fit category so that structural model analysis can be carried out (Johnson & Wichern, 2007). Meanwhile, the structural analysis model used is presented in Figure 2.

Table 3. Model fit evaluation result

| Goodness of fit indices | Estimated | Desired level | Evaluation |
|---|---|---|---|
| Chi-square | 18.691 | Expected to be small | Small |
| Probability | 0.281 | >0.050 | Good/fit |
| GFI | 0.914 | ≥0.900 | Good/fit |
| AGFI | 0.920 | ≥0.900 | Good/fit |
| NFI | 0.908 | ≥0.900 | Good/fit |
| SRMR | 0.052 | <0.050 | Good/fit |

We tested the hypothesis systematically based on the theoretical framework that had been built previously. Testing the hypothesis, which states the results of the role or direct influence, is based on path analysis results based on the estimated value of the correlation, t-statistic, and p-value with a significance level of 5%. In addition, we get certainty regarding the confidence interval obtained from the analysis results of 97.5% (CI 97.5%) and an error rate of 2.5%. The hypothesis testing specifically measures the direct effect of green competencies, learning supports, and green intention on green work readiness and the direct effect of green competencies and learning supports on green intention. Table 4 presents the results of hypothesis testing using path analysis with the intact sample and samples in each class. Overall, the results of the path analysis state that all hypotheses proposed based on the theoretical framework are accepted. These results were identified based on the p-value of all pathways, which were less than 0.050 (p<0.050) at the 5% significance level. First, these results confirm that green competencies and learning supports significantly affect green intention. Besides that, green competencies, learning supports, and green intention significantly affect the green work readiness of vocational education students.

Table 4. The results of hypothesis testing

| Path | Estimated Correlation | SE | p | Decision |
|---|---|---|---|---|
| GC → GI (H1) | 0.678 | 0.002 | 0.000*** | Supported |
| LS → GI (H2) | 0.270 | 0.002 | 0.012** | Supported |
| GC → WR (H3) | 0.448 | 0.000 | 0.000*** | Supported |
| LS → WR (H4) | 0.246 | 0.001 | 0.020** | Supported |
| GI → WR (H5) | 0.317 | 0.002 | 0.000*** | Supported |

Note: ***significant at the 0.01% level; **significant at the 0.05% level

The main role of this research is to examine the role of green intention as a mediator for green competencies and learning supports to determine green work readiness. In this case, testing is carried out using the bootstrap method to test and analyze the significance of this role. Bootstrap was used considering that previous research proved that Bootstrap is the most robust and reasonable method for obtaining confidence limits for certain indirect effects in most conditions. Table 5 shows the role of green intention in mediating green competencies and learning supports in determining green work readiness in VE students. The confidence interval obtained for

the bootstrap method is still the same as before, namely 97.5%. Overall, green intention was able to show its main role in mediating green competencies and learning supports in influencing green work readiness (indirect influence) with a proven significance value of 0.000*** for both. These results confirm that the two hypotheses indicating the mediating role of green intention (H6 and H7) are supported.

Table 5. The mediating role of green intention

| Path | Direct Effect | | Indirect Effect | | Total Effect | |
|---|---|---|---|---|---|---|
| | Estimated | p | Estimated | p | Estimated | p |
| GI → WR | 0.317 | 0.000*** | - | - | 0.317 | 0.000*** |
| GC → GI | 0.678 | 0.000*** | - | - | 0.678 | 0.000*** |
| GC → WR | 0.448 | 0.000*** | 0.218 | 0.000*** | 0.666 | 0.000*** |
| LS→ GI | 0.270 | 0.012** | - | - | 0.270 | 0.000*** |
| LS → WR | 0.246 | 0.020** | 0.193 | 0.000*** | 0.439 | 0.000*** |

**Discussion**

Vocational education plays a crucial role in preparing workers for green jobs and supporting the transition to a sustainable economy. Research highlights the need to integrate green skills and competencies into vocational curricula to address the growing demand for environmentally-friendly practices across industries (Asnawi & Djatmiko, 2016; Pavlova, 2009). This includes developing both specialized green skills for new occupations and "topping up" existing skills with green content for evolving jobs (Pavlova, 2019). A strong vocational education system is considered essential for successful green growth strategies, as demonstrated by China's potential to leverage vocational education for sustainable development (Jaeger, 2014). To effectively green vocational education, a holistic approach is needed, emphasizing not only technical skills but also values and attitudes related to environmental sustainability (Wahyuni & Mutohhari, 2024). Government support is crucial in stimulating demand for green skills and promoting innovation in industries to drive the transformation of vocational education towards sustainability (Woods et al., 2023).

The findings in this study confirm that green work readiness is one of the important assets that must be built through vocational education to help realize green jobs. Various studies report that one of the main challenges in developing green jobs or industries is human resources or workers who are not ready to handle various environmental problems (Dordmond et al., 2021; Sofroniou & Anderson, 2021; C. H. Wang, 2019). They also contribute to high carbon footprint emissions through environmentally unfriendly working methods (Muhafidin, 2020). Therefore, readiness becomes the first capital, so that various efforts from vocational education can be focused on increasing green work readiness in its students. Adaptation helps students adjust to changes in technology and environmental policies (Wahyuni & Mutohhari, 2024). Resilience gives them the ability to survive under pressure and move on despite failure (Mansoor et al., 2022). Green innovation drives them to create creative solutions to environmental problems. (Mittal & Kaur, 2023). In addition, the ability to influence others and take initiative enables them to make effective changes in support of desires in the workplace (Jaedun et al., 2024).

This study also confirms that the right concrete step in building green work readiness in education students to realize green jobs is to foster green intentions in themselves. Green intentions in building green work readiness in vocational education students are closely related to global developments that increasingly demand wise demand and management of natural resources (Mealy & Teytelboym, 2022; Sern et al., 2021). Green intention or the intention to act in an environmentally friendly manner does not only refer to awareness of environmental issues but also includes the motivation to implement behaviors and habits that support the principles of living in everyday life and at work. (Sunarjo et al., 2021). In the context of vocational education, green intentions form the basis for the development of technical and non-technical skills relevant to green industries, such as renewable energy management, resource efficiency and environmental impact reduction (Sabokro et al., 2021). In addition, students who have green intentions are better prepared to adapt to the increasingly demanding demands of the

job market, strengthen their competitiveness in the global marketplace, and drive positive social change in their communities and workplaces (Zhu & Tan, 2022). In the long term, this green work readiness not only provides benefits for individuals but also supports sustainable development goals which are a priority in global and local policies (Midilli et al., 2006).

Green competencies and learning supports have also opened up opportunities to further increase green work readiness in vocational education students, which indirectly coincides with increasing green intentions in students (Chaudhary, 2020; Wahyuni & Mutohhari, 2024). Green competencies together with learning support from family, education, and community greatly participate in fostering green intentions and green work readiness in vocational education students. These green competencies equip students with the knowledge and skills needed to understand environmental issues, manage resources efficiently, and innovate in environmentally friendly solutions (Pavlova, 2009). Support from family, education, and community strengthens the values of desire and creates an environment that supports the formation of green intentions, namely the intention to act proactively for the environment (Cai et al., 2020). Green intention acts as a mediator that connects green competencies and learning support with green work readiness because this intention will encourage students to apply green competencies in the context of their work, adapt to the challenges of the green industry, and innovate to create more environmentally friendly solutions. (Alnaqbi et al., 2024). Thus, green intention directs students to not only understand the importance of sustainability but also to commit to implementing these principles in the world of work.

## CONCLUSION

Environmental degradation, climate change, and declining global public health indexes are triggering ongoing disparities, thus demanding changes in various sectors, including jobs. Work must be carried out in an environmentally friendly manner, without damaging the environment and endangering humans. Although green jobs are still just an ideal in developing countries, important things that are the main capital for developing a green industry must be started from now on. One of the main challenges in developing green jobs or industries is human resources or workers who are not ready to handle various environmental problems. In fact, they also contribute to high carbon footprint emissions through environmentally unfriendly working methods. Green work readiness is one of the important capitals that must be built through vocational education to help realize green jobs. This study also confirms that the right concrete step in building green work readiness in education students to realize green jobs is to foster green intentions within themselves. Green intentions in building green work readiness in vocational education students are closely related to global developments that increasingly demand sustainability and wise management of natural resources. Green competencies and learning supports have also opened up opportunities to further increase green work readiness in vocational education students, which indirectly coincides with increasing green intentions in students. Green competencies together with learning support from family, education, and community play a major role in fostering green intention and green work readiness in vocational education students.

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