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The influence of Teaching Factory (TEFA) implementation and work readiness on vocational high school students' future job perspectives

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ABSTRACT

Graduates who are superior, competitive, and ready to work are the goals of vocational education. The purpose of this research is to determine the impact of Teaching Factory (TEFA) implementation with the Context, Input, Process, and Product (CIPP) evaluation model and student work readiness on the Occupational Future Time Perspective (OFTP). Indeed, nowadays, professional/vocational graduates must be ready to enter the industrial world after graduation. This research involved 456 respondents of Vocational High School (VHS) students in South Sulawesi, Indonesia, who were determined using a proportional random sampling technique. This type of research is descriptive quantitative with data analysis using SEM AMOS. The results showed that there was a significant influence between the implementation of TEFA and the level of work readiness up to 57%, while the actual contribution of teaching and work readiness factors to future employment time was 80.7%. Overall, the results show that the implementation of TEFA has successfully helped students become more independent and ready to face the competitive world of work. Although 19.3 factors still influence work readiness and prospects, the research results do not change much. Therefore, the application of a teaching factory in the learning process is highly recommended for teachers and students in vocational schools. The implementation can be adjusted to the learning conditions and resources available in VHS. This research contributes as a source of reference in future studies related to improving practical learning and developing students' entrepreneurial skills.

INTRODUCTION

Education is an important investment for every individual to learn and develop skills to prepare themselves and compete in the world of work. The learning process in schools and universities continues to improve in terms of curriculum, models, methods, and teaching techniques (Agustina & Dwanoko, 2021; Rosalin et al., 2020). This continuous improvement aims to prepare graduates better to work efficiently and be ready to adapt to the needs of business and industry. (Khoiron, 2016) shows that the largest unemployment rate is currently in the group with higher education levels. Educational institutions are currently facing severe criticism for failing to produce ready-to-use graduates. There needs to be more match between educational outcomes and the needs of economic development. The quality of graduates has yet to meet market demand.

Data from the Central Statistics Agency (BPS) of the Republic of Indonesia shows that the Open Unemployment Rate (TPT) for Vocational High Schools (VHS) is still the highest. The number reached 11.13% in August 2021 (Badan Pusat Statistik Republik Indonesia, 2023). Meanwhile, the TPT for Senior High School (SMA) was recorded at 9.09% in second place. Then, the TPT for Junior

High School (SMP) was 6.45%, Bachelor's degree was 5.98%, Diploma I/II/III was 5.87%, and Elementary School (SD) was 3.61% (See Figure 1).

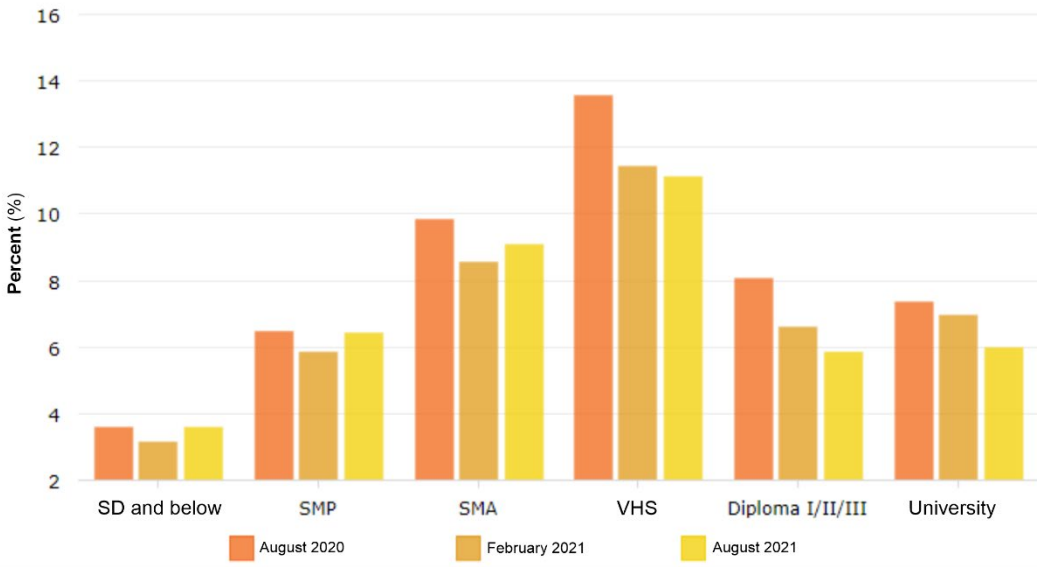

Figure 1. Unemployment Rate by Education Level (Badan Pusat Statistik Republik Indonesia, 2023)

Vocational High School (VHS) is one of the vocational education institutions that play an important role in producing quality human resources. Vocational high schools are designed to equip students with the basic knowledge, skills, and attitudes needed to become a future workforce, to start working in a particular profession, or even to open their field of activity. Today's increasingly fierce global competition requires vocational schools to improve the quality of their graduates to create a skilled, productive, and work-ready workforce. Graduates with quality vocational education are expected to advance their careers and compete in today's competitive job market (Caballero & Walker, 2010).

To improve the quality and competitiveness of human resources, particularly VHS graduates, the President of the Republic of Indonesia issued Presidential Instruction No. 9 Year 2016 on Restoring and Improving the Quality of Human Resources. The objectives of this professional revival include linking and engaging VHS with industry through affiliation programs; strengthening cooperation with ministries/agencies, local governments, and the business/industrial world; increasing the number and capacity of teachers and professional teachers, and improving access to VHS graduate certificates and VHS accreditation.

The link and match policy is an effort to strengthen cooperation between the VHS and industry in order to establish and develop education and training programs at the VHS. The planning and implementation of studies and training at VHS are done with attention to the changing needs of the labor market and with a focus on the quality of graduates. The expected output is an increase in the graduation rate of VHS graduates who are accepted in the industrial world and an increase in the interest in independent work by graduates. The current problem faced by VHS is the need for dynamic VHS graduates (Fattah et al., 2021; Wijaya, 2013).

The objectives of this professional innovation, including linking and engaging VHS with industry through affiliation, are (1) Strengthening cooperation with ministries/sectors, local communities, and businesses; (2) Increasing the number and capacity of teachers, professional teachers; and (3) Increasing access to graduate certificates and recognition of VHS. The linkage and correspondence policy is mainly aimed at strengthening cooperation between VHS and industry to establish and develop education and training programs in VHS (Schoen & Teddlie, 2008; Sudira, 2013).

One potential solution is to implement a workshop teaching model. This concept is an innovation in vocational education in Indonesia. Vocational education in Indonesia is considered a specialized educational institution whose main objective is to train qualified human resources with emotional, cognitive, and psychological skills who are truly ready to enter the world of work after completing their studies (Siswandi & Sukoco, 2016). Therefore, there must be a link between the skills and competencies acquired in the learning process and the demands of the labor market.

Fajaryati (2013) adds that the workshop learning model combines a skills-based approach and production-based learning. Professional processes or skills are designed and applied based on actual standards and processes to produce products that meet market or consumer needs. The products produced can be in the form of goods or services. Through work-based learning, the development of student skills can be achieved thoroughly, which will have an impact on the work readiness of VHS students. Through the policy of improving the quality of vocational education, the government has launched a teaching factory program (Hakan & Seval, 2011; Supriyantoko et al., 2020).

The Vocational High School Development (VHSD) management explains that the education factory is the development of production units and the application of the partner industry system to the VHS production units. The production block is a means of developing school businesses outside of increasing school income, which can be used for equipment maintenance, improving human resources, etc., and providing practical work experience to students (Grube et al., 2019; Pratiwi et al., 2019). Teaching factories are an effort to bring the real world of industry/work to the school environment (Dewi & Sudira, 2018; Zutiasari et al., 2021).

In its implementation, the teaching factory has several objectives, namely: (1) Increasing the capacity of VHS graduates; (2) Increasing the entrepreneurship of VHS graduates; (3) Producing value-added products in the form of goods or services; (4) Increasing school revenue sources; and (5) Strengthening cooperation with related industries or business units. Learning in factories not only equips students with skills but also develops character and work attitudes (discipline, responsibility, honesty, cooperation, leadership, etc.) in the business and industrial world. In addition, teaching factories can also improve the quality of learning outcomes with the ability to produce goods/services and as a place to innovate and test new ideas in collaboration with industry and community partners (Centea et al., 2019; Sadaj et al., 2020; Sanatang, 2020; Siswanto, 2011).

Research on the effect of TEFA implementation and work readiness on the future job perspectives of VHS students is urgent and important to do, where currently in Indonesia in particular, that VHS graduates fall into the category of high unemployment rates due to the mismatch of skills and competencies possessed with the needs of the industrial world (Vitriani et al., 2023). Therefore, research on the effect of TEFA implementation and work readiness that researchers develop is expected to help identify effective learning models and overcome the obstacles that arise which cause high unemployment rates of VHS students, which in turn the contribution of this research is to be able to improve the employment prospects of VHS students themselves.

Ganefri's (2013) research shows that production-based learning is a process that needs to be applied by educators to help students learn, participate and interact actively, with a focus on skills, producing goods or services. This work experience will improve students' preparation in facing their future, especially to compete in the world of work. Simply put, this research aims to examine how much influence the teaching factory learning model and students' work readiness have in preparing students to face their future careers. Therefore, this research can provide valuable insights into the work readiness of VHS students in facing future employment perspectives. By studying the effect of TEFA implementation on work readiness, this research can help identify areas that need to be improved in preparing students to enter the world of work.

METHOD

This research model uses path analysis with more than one exogenous independent variable, namely X1 and X2, and one endogenous dependent variable, Y. This model has a path diagram, as shown in Figure 2.

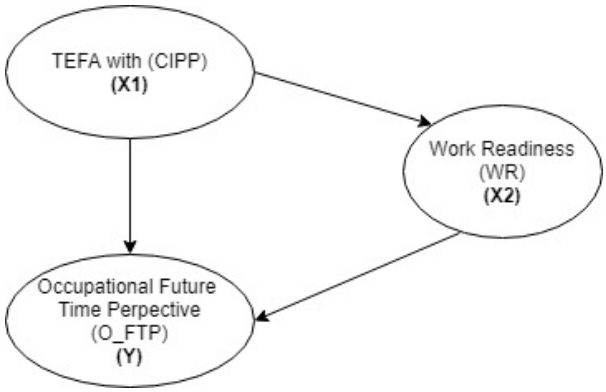

Figure 2. Framework Research

In Figure 2, it can be seen that the path analysis of the multiple regression model shows that X1 is the first exogenous independent variable, X2 is the second exogenous independent variable, and Y is the endogenous dependent variable. Path analysis is a useful technique for examining the pattern of relationships between variables and determining which variables have the greatest influence on the desired outcome (Kim & Lee, 2021). In this research, path analysis was used to identify whether TEFA implementation and job readiness have an effect on VHS students' future perspectives on employment and to determine the specific pathways through which these factors influence the outcomes (Sun et al., 2018).

The type of research used is quantitative research with descriptive narrative. The data collected in this research is quantitative. This research was conducted in one of the VHSs in South Sulawesi Province, Indonesia, which implemented a factory education program. The subjects of this research were VHS class XII students who had carried out practical work in the teaching factory. The selection of the number of class XII students was based on the assumption that class XII students have had practical experience in the teaching factory. A sample of 457 students was determined using a proportional random sampling technique. The variables in this research include independent variables, namely the implementation of the curriculum in the factory (X1) and the level of work readiness (X2), while the dependent variable is the time perspective and future career (Y).

Data collection uses a tool in the form of a questionnaire with a Likert Scale model with four alternative answers, namely: strongly agree, agree, sometimes disagree, and disagree. A linguist validated the research tool before it was distributed to respondents. The research design uses AMOS SEM, as shown in Figure 3, with two independent variables and one dependent variable. Each category has five indicators listed in Table 1.

Table 1. Research Instruments

Variabel	Indicator	Question Number
TEFA		
Context	TCONT	1, 2
Input	TINP	3, 4, 5, 6, 7, 8, and 9
Process	TPRO	10, 11, 12, and 13
Product	TPRD	14 and 15
Work Readiness	WR1- WR5	26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, and 40
Occupational Future Time Perspective	OF1-OF5	16, 17, 18, 19, 20, 21, 22, 23, 24, and 25

The method used in this research is descriptive quantitative with path analysis. Data processing using SEM AMOS. Structural Equation Modeling (SEM) is used to answer multidimensional research to explain various practical phenomena through various dimensions or relatively complex indicators (Agustina et al., 2020). The analysis prerequisite test consists of normality test and linearity test with a significance level of 0.05 (5%).

RESULTS AND DISCUSSION

Results

After modeling using AMOS, the data obtained is entered into each variable to be calculated after calculating the resulting Figure 3, which is a representation of the coefficient of the relationship value of each path.

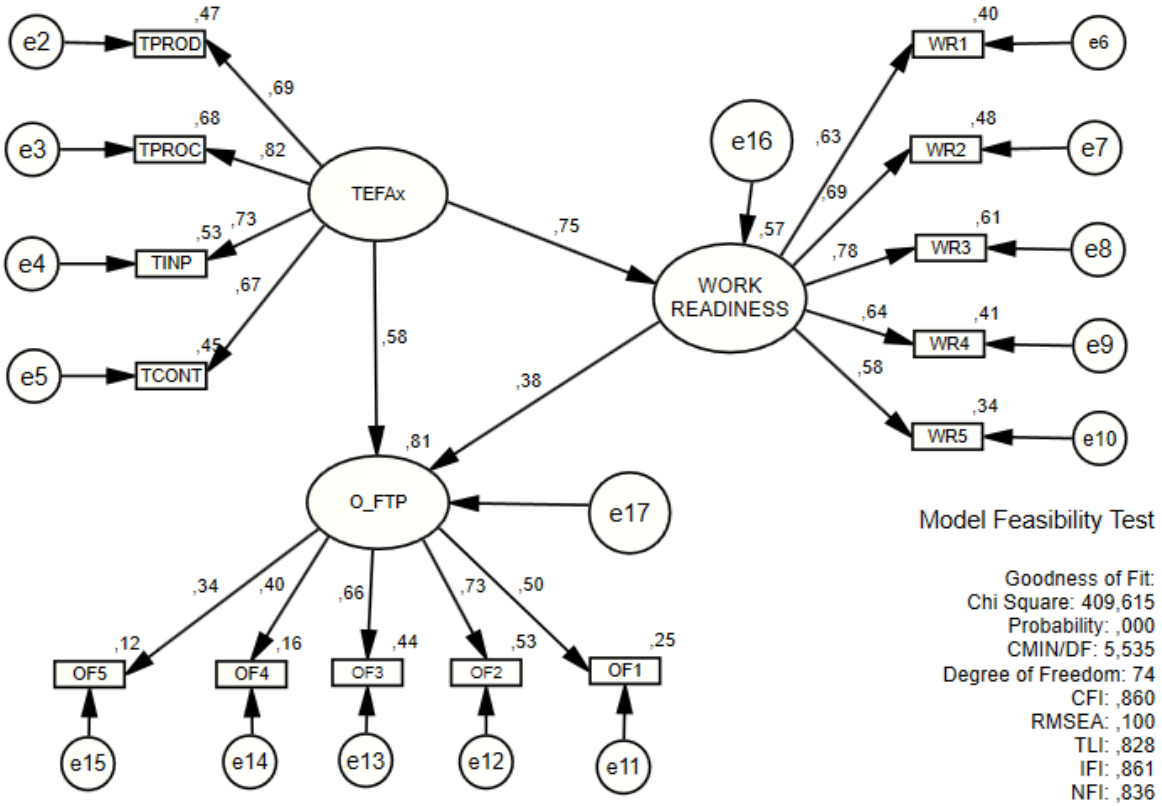

Figure 3. Models with AMOS

Table 2. Regression Weights (Group Number 1 - Default Model)

			Estimate	S.E.	C.R.	P	Label
WR	<---	TEFAx	.750	.069	10.839	***	par_6
O_FTP	<---	TEFAx	.466	.080	5.798	***	par_11
O_FTP	<---	WR	.304	.073	4.192	***	par_14
WR2	<---	WR	1.000				
WR3	<---	WR	1.107	.079	14.039	***	par_1
WR5	<---	WR	.891	.083	10.746	***	par_2
TCONT	<---	TEFAx	.931	.077	12.160	***	par_3
TINP	<---	TEFAx	1.019	.077	13.270	***	par_4
TPROC	<---	TEFAx	1.102	.073	15.009	***	par_5
TPROD	<---	TEFAx	1.000				
OF1	<---	O_FTP	1.000				
OF2	<---	O_FTP	1.194	.125	9.531	***	par_7
OF3	<---	O_FTP	1.225	.131	9.387	***	par_8
OF5	<---	O_FTP	.660	.112	5.880	***	par_9
WR4	<---	WR	.917	.078	11.697	***	par_10
OF4	<---	O_FTP	.762	.113	6.734	***	par_12
WR1	<---	WR	.926	.077	12.028	***	par_13

Table 2 explains the estimation of the model whether it is fit or not. In column P, it can be seen that the significant value is 0.00 or < 0.05, this indicates that the model is fit. From the output results in Table 3, it can be seen that Teaching Factor (TEFAx) plays a role on Work Readiness (WR) with a standardised regression coefficient of 0.755 and p < 0.05. Furthermore, Teaching Factor (TEFAx) plays a direct role on Occupational Future Time Perspective (O_FTP) with a standardised regression coefficient of 0.580 and p < 0.05, while Work Readiness (WR) plays a direct role on Occupational Future Time Perspective (O_FTP) with a standardised regression coefficient of 0.377 and p < 0.05.

Table 3. Standardized Regression Weights (Group Number 1 - Default Model)

			Estimate
WR	<---	TEFAx	.755
O_FTP	<---	TEFAx	.580
O_FTP	<---	WR	.377

The multiple correlations in Table 4 show the effective contribution of the dependent variable to the independent variable. If we look at the output in SPSS, this value is indicated by the R Square value. From the output in Table 4, it can be seen that the effective contribution of Teaching Factory (TEFAx) to Work Readiness (WR) is 0.570 (57%), while the effective contribution of Teaching Factory (TEFAx) and Work Readiness (WR) to Occupational Future Time Perspective (O_FTP) is 0.807 (80.7%).

Table 4. Squared Multiple Correlations (Group Number 1 - Default Model)

	Estimate
WR	.570
O_FTP	.807
TCONT	.449
TINP	.532
TPROC	.680
TPROD	.472

Another output shown in Table 5 is that we can see the direct effect of the TEFA variable on the OFTP variable of 0.580. the indirect effect, which is the multiplication between axb or in Table 6, can be directly seen as 0.284, because the direct effect is greater than the indirect effect, it can be said that there is a mediating role in this model, or in other words, WR is mediating the relationship between TEFAx and O_FTP even though the value is relatively small.

Table 5. Standardized Direct Effects (Group Number 1 - Default Model)

	TEFAx	**WR**	**O_FTP**
WR	.755	.000	.000
O_FTP	.580	.377	.000

Table 6. Standardized Indirect Effects (Group Number 1 - Default Model)

	TEFAx	**WR**	**O_FTP**
WR	.000	.000	.000
O_FTP	.284	.000	.000

To find out the descriptive statistics related to the normalisation of the model can be seen in Table 7 through the c.r. value which is less than 1.9. Based on the data in Table 7, it can be said that the model is normally distributed and fit.

Table 7. Assessment of Normality (Group Number 1)

Variable	min	max	skew	c.r.	kurtosis	c.r.
WR1	1.000	6.000	.168	1.465	-.829	-3.612
WR4	1.000	6.000	.083	.722	-.830	-3.619
OF4	1.000	6.000	.205	1.783	-.909	-3.961
WR5	1.000	6.000	.024	.206	-.952	-4.151
OF5	1.000	6.000	.211	1.842	-.958	-4.174
OF1	1.000	6.000	.112	.979	-1.040	-4.535
OF2	1.000	6.000	.053	.463	-.867	-3.779
OF3	1.000	6.000	.068	.596	-.920	-4.009
WR3	1.000	6.000	.031	.267	-.839	-3.658
WR2	1.000	6.000	.196	1.713	-.833	-3.632
TCONT	1.000	6.000	.066	.575	-.984	-4.289
TINP	1.000	6.000	.164	1.430	-.821	-3.578
TPROC	1.000	6.000	-.034	-.301	-.893	-3.894
TPROD	1.000	6.000	-.005	-.046	-.936	-4.079
Multivariate					55.574	28.034

Discussion

This research explains the effect of teaching factory implementation with the CIPP model on the perspective of VHS students' future work readiness. The results of the analysis show that TEFA provides new experiences for students, this can be seen from the significant contribution of TEFA, which is 0.570 (57%) to work readiness, this indicates that TEFA has succeeded in providing added value to gradually increase student competence and foster confidence in their work readiness. This research is in line with research conducted by Khoiron (2016) and Sanatang (2020), which states that the application of the teaching factory learning model makes a significant contribution to work readiness by a percentage of 22.80%. These results also indicate that the application of a teaching factory in the learning process is highly recommended for teachers and practitioners in VHS. The implementation can be adjusted to the conditions and learning resources available in VHS.

The effective contribution of TEFA and Work Readiness (WR) to Occupational Future Time Perspective (OFTP) is 0.807 (80.7%). These results indicate that students have good future thoughts and careers. The results of this research are in line with the research of Putriatama et al. (2016), which shows that the implementation of internship experience has a significant influence on work readiness. However, the magnitude of the contribution of research Putriatama et al. (2016) is different from the results of this research. Based on the statistical test of research by Putriatama et al. (2016) found that the effect of vocational competence on student work-readiness was 14%, and the remaining 86% was influenced by other factors outside the model, while the results of this research directly contributed to work readiness by 80.7% and the remaining 19.3% were influenced by other factors. These results are also in line with research conducted by Zacher and Rudolph (2019), which state that there are other factors that influence OFTP besides age.

The results of this research are in line with research conducted by Lestari et al. (2020), which states that the results of the research are in the medium category, meaning that students experience an increase in creativity after the application of the teaching factory-based BMC implementation model and are effectively used to increase student creativity. This is in accordance with the level of student enthusiasm for their work readiness.

The results of Supriyantoko et al. (2020) showed that the evaluation of the implementation of the teaching factory policy program in DKI Jakarta State Vocational Schools with the CIPP model received very suitable criteria with an average percentage of 89% and the need for adjustments in several schools such as teachers having appropriate abilities in their fields to run teaching factories, teaching factory organizational structures formalized with legal documents and products that can

compete with the industrial world. This result has a significant value to the results of this research, namely, the role of TEFA with CIPP makes a considerable contribution of 80.7% to OFTP.

The results of this research prioritize student work readiness towards OFTP, making the role of students more active in the learning process. This forces students to explore their potential in accordance with their competencies so that they can understand the atmosphere in the work environment that they will enter later. The results of this research are in line with the research of Brunoe et al. (2019), which also states that support for TEFA is needed because it makes students more independent.

The results of this research indicate that (1) The implementation of teaching factory from the context aspect with 44.9% of facilitator respondents is in a good category; (2) The implementation of teaching factory from the input aspect with 53.2% of facilitator respondents is in the very good category; (3) The implementation of teaching factory from the process aspect with 68% of facilitator respondents is in the very good category and (4) The implementation of teaching factory from the product aspect with 47.2% of facilitator respondents is in a good category.

The results of this research are in line with the research of Pratiwi et al. (2019), which concluded that the results of TEFA require schools to be more committed and consistent in establishing sustainable relationships with relevant government agencies to pay more attention to the achievement of students' soft skills in the implementation of teaching factories in accordance with the needs and demands of society, the industrial world and the vision and mission of schools. Schools need to strive for other supporting factors by establishing cooperation and investing funds in teaching factory workshops on a larger scale. The school should provide facilities for students before carrying out teaching factory activities so that students are more confident and have high creativity in carrying them out.

The results of this research are also supported by Purnawirawan et al. (2020), who stated the evaluation results that the CIPP of TEFA had been successfully implemented by 85% of the planned program and had been realized and had a good impact on the development of entrepreneurship education in schools, and made students more independent (Clark, 2013; Ridho & Siswanti, 2020; Teichmann et al., 2019).

The implications of the research emphasize the importance of improving collaboration between educational institutions and the industry. By understanding the perspectives of TEFA facilitators, relevant parties can work together to improve the relevance of the curriculum to industry demands and strengthen the implementation of the TEFA program. In addition, this research also points out the need for more in-depth follow-up research, including qualitative research, to understand the perspectives of students and other stakeholders regarding the implementation of TEFA and the work readiness of vocational students. This research was also limited to a particular location and a sample drawn from vocational high school (VHS) students in South Sulawesi. Therefore, the results of the research may not be directly applicable to VHS student populations in other areas.

CONCLUSION

The growing global competition requires VHS to improve the quality of its graduates in order to create a skilled, productive, and work-ready workforce. The aim of revitalizing the VHS is to connect and be relevant to the industry through curriculum alignment and strengthening cooperation with ministries/institutions, local government, and industry. Therefore, the concept of learning in vocational schools must be directed to provide learning experiences in real workplaces and hands-on learning in an environment appropriate to the world of work.

Vocational education in Indonesia is considered a specialized educational institution with the main objective of training qualified human resources with emotional, cognitive, and psychological skills who will be fully prepared for the future and ready to enter the world of work after completing their studies. Learning in factories not only equips learners with competency-based skills but also develops character and work readiness required by industry and enhances learning outcomes with the ability to produce goods/services, as well as a place to innovate and test new ideas in collaboration with industry and community partners.

The age factor is not an obstacle for students to perceive the remaining working time (OFTP), but the perception of the remaining working time is positively related to students' motivation to continue working, commitment to the profession, and their professional network. The results of the analysis show that TEFA brings new experiences for students, which can be seen from the significant contribution of TEFA of 0.570 (57%) to work readiness, which indicates that TEFA has succeeded in adding new value to improving student competence in preparing for work.

The results of this research indicate that teaching factories in schools require support from all stakeholders in order to function properly, such as preparing facilities, materials, teachers, and students, as well as helping students. The results of this research also show that the results of the CIPP assessment of the implementation of TEFA have been successfully implemented by 80.7% of the planned program, achieved and have a good impact on the development of TEFA, pedagogy, and making students more independent. Recommendations for future research are that this research can be continued by linking OFTP with student learning outcomes and adding variables such as self-efficacy, career adaptability, and student participation can be intermediate variables or independent variables, which will encourage the success of OFTP itself.

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