

Future Leadership Capacity for VET with the Various Demands

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ABSTRACT

Along with the rapid development of technology. Vocational education has a role that needs to be handled properly by a leader. The goal of this research is to look at (1) the influence of leader assessment on personal development; (2) the influence of the technology revolution on personal development; (3) the influence of thinkers on personal development; (4) the influence of personal development on empowered people; (5) the influence of leader assessment on thinkers; (6) the influence of thinkers on the technology revolution; and (7) the influence of leader assessment on the technology revolution of future vocational leadership. This research uses quantitative. The research location is SMK in Indonesia. Data collection techniques using a questionnaire. The number of research respondents was 305 people. Sampling technique using stratified. The construct indicators were tested using content validation with the Aiken V Index formula. Construct validity, construct reliability, and hypothesis testing using SEM (Structural Equation Modeling). The SEM model was analyzed using AMOS 24. The findings of this study's analysis are as follows: (1) the t-value of 3.470 > 1.967 then H_0 is rejected, which means that the leader assessment has an effect on personal development in future vocational leadership; (2) the t-value of 4.627 > 1.967 then H_0 is rejected; (3) The t-value is 2.256 > 1.967 then H_0 is rejected; (4) The t-value is 12,214 > 1,967, so H_0 is rejected; (5) The t-value is 10,853 > 1,967, so H_0 is rejected; (6) The t-value of 9.993 > 1.967 then H_0 is rejected; and (7) the t-value is 10,819 > 1,967, so H_0 is rejected.

Keywords: Vocational leader, technology revolution, human development, competency.

INTRODUCTION

The development of science and technology is an important part for a leader to be able to adapt. Adaptability in the self-development process is a mandatory thing that needs to be improved by the leader (Mahmudah, 2021a). This is directly related to the leadership of vocational schools whose main goal is to produce graduates who have strong resilience in facing the needs of the world of work. In order to achieve this goal, the right strategy is needed (Tóth, 2012). Conducting environmental scanning, establishing teaching plans, implementing activities, executing objectives, and assessing graduations in meeting job targets are all ways to measure educational leadership's performance in strategy (Amin, 2016). The design of vocational graduates must be in line with the strategies that have been made by the vocational leadership. Independent, competent, have skills according to their field of expertise, and able to adapt in all conditions (Khusni & Mahmudah, 2020; Azmy, 2020; Saputra et al., 2021).

Future vocational leadership is important to involve all available resources in schools. The principle, as the educational leader, plays a critical role in mobilizing all school resources. (Kusumaningrum et al., 2018). In schools, leadership is defined as the action of mobilizing and enabling people to fulfill the academic requirements of children with the highest expertise and integrity (Pratomo & Arifin, 2020). Fundamentally, principals should be equipped to cope effectively with the issues they face in the twenty-first century (Mestry, 2017). School leaders must build excellent networking and cooperation abilities, as well as

connect with peers and intermediary entities within the local education system (Pont, Nusche, & Moorman, 2010). The ability to lead by example is crucial to the success of vocational leadership. transfer of responsibility. Thus, it requires effective collaboration between vocational leadership and teachers and employees and students in schools.

The importance of empowering people's mindset is one of the alternatives in the transformation of future leadership. Mobilizing existing human resources in schools means that vocational leadership has a visionary mindset. This means that future vocational leadership requires efforts to involve the entire school community. Likewise with the development of technology that requires more skills to utilize technology

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in all vocational education activities. In response to the rapid growth of the digital world, individuals must become competitive and productive subjects (Syakdiyah et al., 2019). The basic purpose of vocational leadership is to help people succeed in their careers. It is to have graduates who are ready to work. That is, this is the basic capital for vocational leadership in involving all resources in schools to build partnerships with the world of work. The leadership concept of empower people needs to be known, applied, and developed by vocational education leaders so that the implementation of partnerships between vocational high schools with the business world and industry is more effective, efficient, and synergistic in improving the quality of graduates.

The new paradigm of future VET leadership can not be separated from the changes in the habits they have. This proves that VET leaders are abandoning old ways to create new strategies and/or combining both strategies that are in line with technological developments and the needs of today's world of work. Most school leadership institutes around the world take a blended approach to leadership development programs (Munby, 2020). Leadership thinking must evolve through multiple paradigms (Burns & Mooney, 2018). This paradigm is the basis for school principals to develop, both personally and in terms of skills. Including how the mindset of vocational leadership that is relevant to all activities in schools using technology. Build a system that can be used in the learning process, the process of managing school finances, a system for inventorying goods in schools, a system of cooperation, and a system of relations with the community.

Developing technology can be both an obstacle and a supporter for school programs prepared by vocational leaders. With the technological revolution, it means that vocational leaders are able to adapt well to the changes that occur. Technology may become more significant in achieving educational objectives (Özkan et al., 2017). Careful leadership abilities The school follower's virtue will improve good interpersonal characteristics such as mutual aid, mutual respect, a sense of belonging, technology utilization, and partnership working issues (Zakaria et al., 2014). Successfully transforming leadership to understand the change process and the complexities of social change (Nikmatuzaroh, 2019). For the effectiveness of education and the renewal of professional abilities, vocational leaders must be able to continue to reflect on their learning (Agustina et al., 2020).

Based on the various descriptions of the perspectives above regarding future vocational leadership, it will be more effective if a leader is able to have various components to be able to play his role. Future vocational leadership will be able to utilize all skills and abilities in dealing with unstable problems. So that future vocational leadership requires surrounding human resources, namely teachers, employees, and students to be able to collaborate with each other. This research is important to do in order to

know the effect on future vocational leadership. Therefore, based on these various problems, this study aims to determine the influence of empower people, personal development, technological revolution, leader assessment, and thinkers.

LITERATURE REVIEW

Based on the problems on the background of the problem that it is important for future VET leadership to change the paradigm regarding several factors that are the focus of this research.

Empower People

Vocational leadership to achieve the goals of the school, cannot stand alone. This needs to be supported by human resources in schools. The achievements of vocational high schools require direct involvement from the world of work, so that it is necessary to empower people from future vocational leadership. This synergy from empower people will ultimately bring vocational high school programs to be able to develop in line with uncertain conditions. A principal must show strong leadership with a long-term vision and integrity, be willing to empower others, be motivating and capable of organization, and preserve harmony between an individual's ambitions and the goals of the organization (Dardiri et al., 2017). Empowerment and social inclusion are two aspects of the social transformation process that are inextricably intertwined (Tremblay & Gutberlet, 2012). Better access to and use of expert information empowers people to make better health-care decisions (Al-Shorbaji, 2012). Empowerment is an endeavor to give people the power or strength they need to be self-sufficient and overcome issues they've faced (Ramadani et al., 2020). Empowering leadership through changing people's willingness to change through the people dimension (employee engagement) and work method dimension (culture of innovation) (Arizqi & Fachrunnisa, 2017).

Based on the above understanding, it can be concluded that a future leader must be able to empower all people in the school to be able to carry out joint responsibilities. It aims to be able to accelerate the achievement of the goals that have been determined together. School programs will be better able to be carried out together if vocational leadership is able to empower appropriately according to the competencies possessed by each person. In connection with this research, empower people variables that can be used as indicator constructs are professional, responsibility, and other support. These three indicators reflect that a vocational leader can empower people by properly transferring responsibilities. In the end, it is this togetherness that forms other support in the process of implementing the program that has been made.

Personal Development

The very rapid development and uncertain climate change demand skills and competencies for a vocational leader.

Its goal is to be able to adjust to the school environment in accordance with changes in the workplace. Personal development plans are a crucial part of the educational process (Radu, 2018). Personal development and learning activities, expertise-growth, adaptability, and performance are all part of a personal development strategy (Beusaert et al., 2011). Personal growth is defined as progress toward self-awareness, the ability to reflect and create self-standards, and the pursuit of goals (King, 2008). The development of skills is seen as equally vital as the acquisition of knowledge (Estienne, 1991). Most instructors and tutors' work has been affected by the development of initiatives in schools and colleges to accommodate specific student needs and foster autonomous learning (Bullock & Jamieson, 1998). The transformation of the concept into a set of activities based on the processes of achievement tracking, reflection, evaluation, and planning (Strivens & Ward, 1969). Personal development should provide employee motivation in the workplace, as well as enable employees to enhance their professional abilities, offer them with some work perspective, and make the company's job more appealing (Chlebkova et al., 2015). Personal development community program that emphasizes each woman's value via an inspiring, practical, and experienced approach to learning (Spry & Marchant, 2014). These decisions are thought to aid in the development and expression of individual potentialities, which contributes to a sense of subjective well-being (Ugur, Constantinescu, & Stevens, 2015).

Based on the foregoing, it may be inferred that a person's personal growth vocational leadership includes activities that can increase self-awareness and identity. It aims to be able to develop talent and potential for future vocational leadership. An important strategy of a vocational leadership in self-development is to be able to build human resources and facilitate the performance of teachers and employees in schools. Likewise in improving the quality of life of the school community and vocational leadership is able to contribute in realizing the goals. Based on this, the indicators of this research are related to skills, competence, and adaptability.

Technological Revolution

The technological revolution in vocational education is a drastic change in school residents to utilize technology in processes and activities at school. The ability to use technology in a system in schools is the technological revolution in vocational leadership. Acceptance of technology, in turn, was linked to job satisfaction (Molino et al., 2021). An important role of vocational leadership is the mindset in dealing with changes from technological developments. While the prospect of enormous technology change may seem scary, company executives that have a global perspective or migratory mentality are more likely to succeed (Akberdina

& Pushkareva, 2019). Technology can help schools respond more quickly by reducing production time (Tulasi et al., 2019). This stimulates the productivity of school residents. Digital technology is something they're familiar with, and they're conscious of how it affects their schools and how they work (Mihai & Crețu, 2019). A leader who is neither fluent in or completely comprehends the digital area but is capable of producing technology-related tasks (Agung et al., 2020). The adoption of leadership necessitates financial commitment and a willingness to adapt to cultural change (Guzmán et al., 2020). To realize educational advantages, leaders must change the way they think about connecting people with digital technology (Daud et al., 2021). It may be inferred, based on the foregoing information, that a vocational leadership understands the uncertain conditions, especially in technological change. So, technology can be utilized by implementing it. It can be possible for vocational leadership to develop a mindset so that vocational school systems are formed that are ready to be used as needed. Therefore, the indicators developed in this research are implementation and system.

Leader Assessment

A reliable vocational leadership is a leader whose quality has been tested. This can be seen in the potential they have, the style used in leading, and the motivation given to all school members. Assessment programs are useful for identifying high-potential employees, managing succession, and informing leaders' continuous growth (Reynolds et al., 2018). As a result, it is critical for a school or group to design an instrument for measuring vocational leadership. The leader evaluation tool is intended to assist leaders in their efforts to enhance their leadership skills over time (Metz et al., 2013). The evaluation focuses on how principals perceive six leadership components (high expectations for student learning, demanding curriculum, quality instruction, culture of learning and professional behavior, links to external communities, and performance accountability) and six processes (planning, implementing, supporting, advocating, communicating, and monitoring) (Kelley & Halverson, 2012). It's critical to figure out not just where leadership evaluations take place (assignment, course, or program), but also what these evaluations measure (Martin et al., 2015) it becomes increasingly important to effectively assess students' leadership skills. The development and subsequent use of a formative competency based leader assessment was used with (N=124).

Based on the above understanding, it can be concluded that leader assessment is an important part in seeing the quality of vocational leadership. Leader assessment is a tool that can be used to evaluate how the competence of vocational leaders can improve quality. Leadership competencies are vocational leadership skills and behaviors that contribute to superior

performance to achieve goals more optimally. In connection with this, the indicators used in this study are performance and achievement.

Thinker

One of the duties of a vocational leader is to act on the results of thought. It aims to establish harmony between the school community. The continual necessity for leaders to strengthen their leadership talents and skills (and all of this is in a world in transition) (Calvin, 2002). Job pressure was adversely connected to constructive self-talk, which was favorably related to successful leadership of others and creativity/originality as judged by subordinates and superiors (Rogelberg et al., 2013). One of the most significant things for current students to be productive in their future organizations by contributing to the quality of their organizations is having self-leadership and critical thinking abilities (Ay et al., 2015).

Based on the above understanding, it can be concluded that a future vocational leader must have self-help, relationship, and lifestyle attitudes. These three attitudes are an important part used in the construction of this research.

The relevance of the literature review above with this research is to answer the problem of future vocational leadership by compiling a SEM model (structural equation model) to determine the influence that forms the basis for future vocational leadership seen from the construct of research indicators. The hypotheses of this research are:

- Hypothesis 1 Leader assessment affects the personal development of future vocational leadership
- Hypothesis 2 Technology revolution affects the personal development of future vocational leadership
- Hypothesis 3 Thinkers influence the personal development of future vocational leadership
- Hypothesis 4 Personal development has an effect on empowering people for future vocational leadership
- Hypothesis 5 Leader Assessment influences future vocational leadership thinkers
- Hypothesis 6 Thinkers influence the technology revolution of future vocational leadership
- Hypothesis 7 Leader assessment influences the technology revolution of future vocational leadership

METHODOLOGY

Research Design

This study uses a quantitative with a correlational approach. The reason for using this method is to determine the relationship and degree of relationship between several research variables.

Measuring degrees between variables (Carr et al., 1964). Weak or strong relationship between variables that can be seen for future vocational leadership with various demands of the world of work. It aims to explain the importance of future vocational leadership behavior so that it can predict vocational programs based on the results of analysis and discussion.

This research was conducted in Indonesia by involving a Vocational High School. The sampling technique used was Stratified Sampling, because the respondents who were used as research were taken from the sample depending on the established criteria. The criteria set in this study were the age of vocational leadership > 3 years, not currently on a learning assignment, and being the principal of a vocational school from a productive field. Based on the stratified sampling conducted, the respondents of this study consisted of 30 principals of vocational schools in Indonesia.

Data Collection Technique

The technique used in this research is a questionnaire. Data was collected using a blended technique, namely sending a g-form link and providing print-outs of questionnaires to the respondents. The preparation of the questionnaire using a Likert scale (5 scale). A total of 15 items. The questionnaire was compiled based on construct indicators which were concluded from various definitions in the literature review.

Analyzing of Data

Analysis of the data used in this study begins with a content validity test involving expert judgment. This validity test is to determine the relevance between the construct indicators and the questionnaire used. According to Mardapi (2008) validity is defined as a test conducted to test the test items as a whole. The validity test was analyzed using the Aiken V Index. Furthermore, the validation was carried out using the construct validity test. Construct validity in SEM testing looks at the factor loading value on the standardized regression weight: (group number 1 – default model). The next test is construct reliability to determine the consistency value of the research construct indicators. Test the SEM model in this study using AMOS 24.

FINDINGS

Instrument Content Validity

Content validation testing is done through three expert judgments. This test aims to obtain a reliable questionnaire in accordance with the indicator constructs that have been made. The analysis was carried out using Ms. Excel. The score of each Aiken V Index item can be presented in table 1.

Based on table 2 above, it can be concluded that the scores obtained for the future vocational leader-

Table 1: Score of Content Validation Test Results

No	Expert			S ₁	S ₂	S ₃	Σs	n(c ⁻¹)	V	Keterangan	Kategori
	1	2	3								
1	5	5	5	4	4	4	12	12	1,000	Validity	High
2	4	4	5	3	3	4	10	12	0,833	Validity	High
3	5	5	5	4	4	4	12	12	1,000	Validity	High
4	4	5	5	3	4	4	11	12	0,917	Validity	High
5	4	4	4	3	3	3	9	12	0,750	Validity	Midle
6	4	5	5	3	4	4	11	12	0,917	Validity	High
7	5	4	4	4	3	3	10	12	0,833	Validity	High
8	4	4	4	3	3	3	9	12	0,750	Validity	Midle
9	5	5	5	4	4	4	12	12	1,000	Validity	High
10	5	5	5	4	4	4	12	12	1,000	Validity	High
11	4	5	5	3	4	4	11	12	0,917	Validity	High
12	5	5	5	4	4	4	12	12	1,000	Validity	High
13	4	4	4	3	3	3	9	12	0,750	Validity	Midle
14	5	4	4	4	3	3	10	12	0,833	Validity	High
15	5	4	5	4	3	4	11	12	0,917	Validity	High
16	4	4	4	3	3	3	9	12	0,750	Validity	Midle
17	4	5	5	3	4	4	11	12	0,917	Validity	High
18	5	4	5	5	3	4	12	12	1,000	Validity	High
19	4	4	5	3	3	4	10	12	0,833	Validity	High
20	4	5	4	3	4	3	10	12	0,833	Validity	High
21	4	4	4	3	3	3	9	12	0,750	Validity	Midle
22	5	5	5	4	4	4	12	12	1,000	Validity	High
23	4	4	4	3	3	3	9	12	0,750	Validity	Midle
24	5	5	5	4	4	4	12	12	1,000	Validity	High
25	4	5	5	3	4	4	11	12	0,917	Validity	High
Rata-rata indeks Aiken V									0,887	Validity	Tinggi

Table 2: Validity Value

		Estimate
Y1	<---	Leader_Assessment 1,007
Y1	<---	Thinker 1,214
Y1	<---	Tech._Revolution ,432
TS4	<---	Thinker ,701
TS3	<---	Thinker ,742
TS2	<---	Thinker ,702
TS1	<---	Thinker ,684
LA3	<---	Leader_Assessment ,637
LA2	<---	Leader_Assessment ,723
LA1	<---	Leader_Assessment ,698
TR6	<---	Tech._Revolution ,643
TR5	<---	Tech._Revolution ,743
TR4	<---	Tech._Revolution ,673
TR3	<---	Tech._Revolution ,719
TR2	<---	Tech._Revolution ,658
TR1	<---	Tech._Revolution ,716
Y2	<---	Y1 ,062
Y2	<---	Tech._Revolution ,996
Y2	<---	Leader_Assessment 1,721

ship measurement instrument using V Aiken validity analysis. The test decision is the analysis result can be categorized as valid if it meets the V Aiken coefficient limit. The boundary conditions for the V Aiken coefficient for 5 rating scales and 3 raters are 0.75 with a probability of 0.41 (Lawshe, 1975) reasonable and procedurally fair and to the right to written reasons for administrative action as contemplated in section 33 of the Constitution of the Republic of South Africa, 1996; and to provide for matters incidental thereto. Preamble WHEREAS section 33 (1. All items obtained from the analysis results above 0.75. Therefore, the instrument is

declared valid so that it is feasible to continue the analysis and be used in measuring future vocational leadership.

Instrument Construct Validity

The second validity test is using SEM by looking at the value of standardized regression weights: (Group number 1 - Default model).

Based on the output of table 2 on the standardized regression weights: (Group number 1 - Default model) above, it can be seen that the construct indicator for future vocational leadership research is valid, because it has a factor loading value of > 0.5. Each construct indicator in the leader assessment is LA1, LA2, and LA3. There are four construct indicators of

Table 3: Construct Reliability Test Results

Variable	Leader Assessment			Technological Revolution			Thinker		
	Loading	Loading2	error	Loading	Loading2	error	Loading	Loading2	error
LA3	0,637	1,274	0,363						
LA2	0,723	1,446	0,277						
LA1	0,698	1,396	0,302						
TR4				0,701	1,402	0,299			
TR3				0,742	1,484	0,258			
TR2				0,702	1,404	0,298			
TR1				0,684	1,368	0,316			
TS6							0,643	1,286	0,357
TS5							0,743	1,486	0,257
TS4							0,673	1,346	0,327
TS3							0,719	1,438	0,281
TS2							0,658	1,316	0,342
TS1							0,716	1,432	0,284
Sum of Std. Loading	2,058			2,829			4,152		
Sum of Std. Loading ²		4,116			5,658			8,304	
Sm of Error			0,942			1,171			1,848
Construct Reliability	0,81376			0,828525			0,81797		
Variance Extract		0,81376			0,828525			0,817967	

Table 4: Regression Weights: (Group number 1 – Default model)

			Estimate	S.E.	C.R.	P	Label
Personal_Develop.	<---	Leader_Assessment	,880	,402	3,470	,638	par_11
Personal_Develop.	<---	Tech_Revolution	,615	,574	4,627	,530	par_12
Personal_Develop.	<---	Thinker	,731	,854	2,256	,798	par_14
Empower_People	<---	Personal_Develop.	,426	,084	12,214	,671	par_16
Thinker	<---	Leader_Assessment	,326	,104	10,853	,449	par_8
Tech_Revolution	<---	Thinker	,467	,117	9,993	,567	par_9
Tech_Revolution	<---	Leader_Assessment	,584	,100	10,819	,167	par_10

technological revolution, namely TR1, TR2, TR3, and TR4. The construct indicators for thinkers are TS1, TS2, TS3, TS4, TS5, and TS 6. Meanwhile, the variables are unobserved personal development (Y1) and empower people (Yes). Therefore, the analysis of this research can be continued.

Construct Reliability

The construct reliability test was conducted to measure the level of consistency of the construct indicators used in the study. The following is the result of calculating construct reliability using Ms. Excel.

Based on the test results above (Table 3), the construct reliability value of the leader assessment variable is 0.814, technological development is 0.828, and thinker is 0.818. The result of the calculation is > 0.70 so it has a good and consistent reliability value.

Research Hypothesis Testing

Based on the results of the study, it can be as follows in Table 4: Based on the results of hypothesis testing in table 4, it can be explained that the $t\text{-value} > 1.967$ so that H_0 is rejected and H_a is accepted. In detail it can be explained as follows:

- Hypothesis Testing 1 T-value 3.470 > 1.967 then H_0 is rejected, which means that leader assessment has an effect on personal development in future vocational leadership.
- Hypothesis Testing 1 The t-value of 4.627 > 1.967 then H_0 is rejected, which means that the technology revolution has an effect on personal development in future vocational leadership.
- Hypothesis Testing 1 T-value 2.256 > 1.967 then H_0 is rejected, which means that thinkers have an effect on personal development in future vocational leadership.

- Hypothesis Testing 1 The t-value of 12.214 > 1.967 then H_0 is rejected, which means that personal development has an effect on empowering people in future vocational leadership.
- Hypothesis Testing 1 The t-value 10,853 > 1,967 then H_0 is rejected, which means that the leader assessment has an effect on the thinker on future vocational leadership.
- Hypothesis Testing 1 The t-value of 9.993 > 1.967 then H_0 is rejected, which means that thinkers have an effect on the technology revolution in future vocational leadership.
- Hypothesis Testing 1 The t-value is 10,819 > 1,967, so H_0 is rejected, which means that the leader assessment has an effect on the technology revolution in future vocational leadership.

The result of the next analysis is Structural Equation Modeling (SEM) in full model. This analysis is carried out after analyzing the level of unidimensionality of the dimensions wherever the indicators form the variables.

Based on the results of the SEM test in Figure 1 above, it can be interpreted that the Chi-square value is 107.613 with good fit criteria (< 117.724). The significance probability value is 0.036 (> 0.05) so that the significance probability criterion is bad fit. A GFI value of 0.954 (> 0.90) means that the GFI value is good fit. The AGFI value of 0.934 (> 0.90) means that the AGFI criteria are good fit. The TLI value is 0.985 (> 0.95) which means that the TLI value is good fit. The RMSEA value of 0.031 (< 0.08) means that the RMSEA criteria are good fit.

DISCUSSION

Based on the results of data analysis of research hypothesis testing, it can be discussed in detail as follows:

The Influence of Leader Assessment on Personal Development

The results showed that the leader assessment had a significant effect on personal development. This shows that leader assessment can be an instrument for human resources in developing themselves optimally to face the future. Leader assessment is a measurement of a vocational leadership to find out how much abilities, skills, and competencies they have in providing opportunities for vocational teachers. The results of this study are in accordance with the opinion of Niehaus et al., (2012) that “it’s vital that leaders have competencies and make it assessment to the global leaders

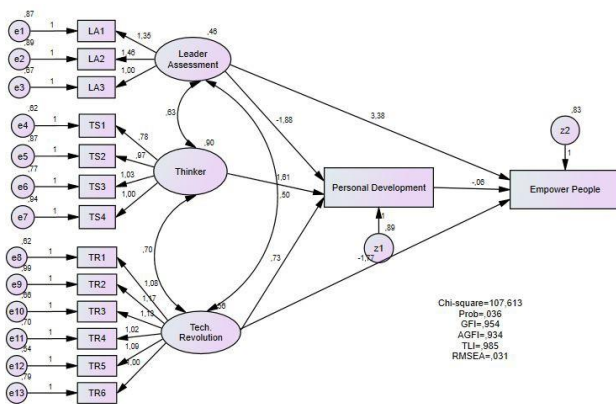


Fig. 1: Structural Equation Modeling Future Vocational Leadership

of tomorrow”. This statement can be interpreted that an assessment is important for vocational leadership in order to see the measurement results as a recommendation in personal development.

Personal leadership must be adapted to the demands and goals of future vocational leadership competencies. Kjellström et al., (2020) that “leadership development activities may also imply that employees are being treated as a follower”. One of the things that underlies the assessment (Nofrida et al., 2022) for leadership is the involvement of vocational leaders in dealing with and dealing with potential problems in teacher competence, vocational learning processes, and vocational graduates. The assessment can be used as further information and analysis related to vocational practices.

The Influence of the Technology Revolution on Personal Development

The results show that the technology revolution has a significant effect on personal development. The technology revolution under any circumstances becomes an important part that needs to be implemented in the vocational education process. The COVID-19 pandemic has become a culture shock for vocational teachers who do not have personal development (Mahmudah, Putra, & Wardana, 2021). The context of school principals and vocational teachers who can develop themselves within the framework of a technology-based system (Mulyadi, 2019). The technological revolution in vocational learning is the basis for increasing the creativity and innovation of principals. This is in line with the need for teachers to develop personal through the implementation of technology in the vocational learning process. Teacher skill development is a strategic effort for teachers to be able to improve their abilities, knowledge, and pedagogical competencies in learning (Mahmudah, 2021). Therefore the technology revolution is a time and condition for school principals to be able to deal with personal development. Self-development of vocational leadership through the use of technology and efforts to build systems used in the vocational education process, is one of the strategic efforts in following the development of the technology revolution.

The Influence of Thinkers on Personal Development

The results showed that the thinker had a significant effect on personal development. The real strategy of the thinker of a leader is personal development. This is closely related because the thinker’s output is an action to develop and plan appropriate plans for self-development. The findings of this study support the assumption that leaders’ thinking patterns will be linked to transformational leadership and successful leadership behaviors (Curtis, 2020). For youngsters on the verge of becoming active citizens, leadership development is

critical, but one of the important characteristics of leadership development is the capacity to communicate effectively (Ricketts, 2005). Based on the discussion, it can be concluded that the thinker has an influence on personal development because the real action of the thinker is the existence of self-development for a vocational leadership. This applies to self-development in preparing the right solution to face the future. Especially in the competition for vocational graduates who require increased competence and skills.

The Influence of Personal Development on Empowered People

The results of the study indicate that personal development has a significant effect on empower people. Vocational leadership that is able to empower teachers and employees in the school environment is mass leadership that involves all human resources in a program. The program runs in a way that is prepared in depth and translated into plans. One of the right planning is with personal development (Sumiran et al., 2022). It aims to improve the self-quality, productivity, and performance of vocational teachers. Leaders believe that employees with attitudes, knowledge, and skills would be able to give significant performance and productivity for the organization (Nurmahmudah & Putra, 2020). Teachers who can adjust and be ready for any change will be able to give a balance to help vocational high school students improve their skills (Cahyono et al., 2021). Future vocational leadership is important to understand strategies that can be used in self-development, so that they will be better able to know important strategies in managing and empowering human resources in schools. This is especially related to the challenges in the future. Ability to face future challenges begins with self-ability in personal development and empowering people.

The Influence of Leader Assessment on Thinkers

The results showed that the leader assessment had a significant effect on the thinker. Leader assessment is one of the foundations for a future vocational leadership in thinking. The ability to think maturely is also a strategy that must be possessed by vocational leadership in dealing with turmoil and problems in the future. This leadership mentality is concerned with how the process of vocational leadership talents adapts to the issues and possibilities that are and will be encountered (Mahmudah et al., 2022). All good leaders have critical thinking as a talent and a behavior (McVey, 1995). Making judgments on leadership actions in various scenarios using critical thinking skills (Jenkins & Cutchens, 2011). Leaders who want to improve their critical thinking and problem- solving abilities (Green & Jax, 2011) Based on the discussion, it can be concluded that one of the efforts to take vocational leadership is the leader assessment which is an important part of the thinker.

The Influence of Thinkers on the Technology Revolution

The results show that thinkers have a significant effect on the technology revolution. The ability of vocational leadership in adapting technology and utilizing it in the education and learning process is due to having a good thinker pattern. The good thinker is one of the skills that shape the actions of the principal. The power to influence the essence of human identity through human-machine augmentation and expanded cognitive capability is the most crucial feature of this revolution (Bashir et al., 2021). The embodiment of the thinker on the technology revolution is that the principal is able to know the development of the world of work. So that with this they are able to develop themselves through the mind in order to improve the quality of graduates. Process, strategic management, and roles and responsibilities are three crucial things that vocational schools and industry must perform in order to carry out and build capabilities (Mahmudah & Santosa, 2021). Based on this, it can be understood that a vocational leadership that can face the future is a thinker who is able to build a technology system.

The Influence of Leader Assessment on the Technology Revolution

The results of the study show that the leader assessment has a significant effect on the technology revolution. Leader assessment is important for teachers to find out whether the principal can apply technology to a vocational education process in schools. This relates to how the principal's efforts in providing opportunities for teachers to improve their abilities and skills in the technology used. Leadership learning itself is an action intended to develop a technology revolution so that it is productive and satisfying for the teacher (Agungi & Gunawan, 2020). In order to successfully develop a culture of innovation through technology, businesses must have strong leadership (Guzmán et al., 2020). Long-term evolutionary processes, such as the changing of jobs and job profiles, are examples of automation and digitalization (Sima et al., 2021). Based on this understanding, it can be concluded that the results of the measurement of future vocational leadership will influence the actions to be taken, especially in the technology revolution. This has an impact on both the vocational education system and the media used by vocational teachers in learning.

CONCLUSION

Future vocational leadership with various demands for the development of the world of work has a very important role. The role of leadership in the development of vocational education, especially for teachers and employees, is a part of overcoming the problems faced in the future. Vocational leadership born from the measurement results will be more capable of making personal development.

This has an impact on the pattern of thinkers they have, so they are able to adapt to changes in the development of science and technology. In particular, the ability of vocational leadership in the technology revolution that can be implemented in the vocational education process. Vocational leadership ability is certainly no longer due to one's own abilities but because of leadership abilities that are able to empower people so that it has an impact on productivity, performance, and the quality of vocational graduates produced. These qualities will ultimately be able to answer challenges in the future according to the needs of the world of work.

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REFEREN CES

- Agung, A., Mas, S., Asri, A. N., & Darma, G. S. (2020). Revealing the Digital Leadership Spurs in 4.0 Industrial Revolution. *International Journal of Business, Economics & Management*, 3(1), 93–100. Retrieved from <https://doi.org/10.31295/ijbem.v3n1.135>
- Agungi, B., & Gunawan, I. (2020). Instructional Leadership as an Effort to Increase Teacher Professionalism in the Industrial Revolution Era 4.0. *Advances in Social Science, Education and Humanities Research*, 381(CoEMA), 216–220. <https://doi.org/10.2991/coema-19.2019.43>
- Agustina, R., Kamdi, W., Hadi, S., Muladi, & Nurhadi, D. (2020). Influence of the principal's digital leadership on the reflective practices of vocational teachers mediated by trust, self efficacy, and work engagement. *International Journal of Learning, Teaching and Educational Research*, 19(11), 24–40. <https://doi.org/10.26803/ijlter.19.11.2>
- Akberdina, V., & Pushkareva, L. (2019). Key aspects of technological leadership within the context of fourth industrial revolution. *4th International Conference on Social, Business, and Academic Leadership (ICSBAL 2019)*, 359(Icsbal), 9–14. <https://doi.org/10.2991/icsbal-19.2019.3>
- Al-Shorbaji, N. (2012). Empowering People and Organizations through Information. *Journal of Health Communication*, 17(SUPPL. 2), 1–4. <https://doi.org/10.1080/10810730.2012.670553>
- Amin, M. (2016). Impelemntasi Manajemen Strategis Kepala Sekolah Menengah Pertama Kabupaten Serang [Implementation of the Strategic Management of the Serang District Junior High School Principal]. *Euphytica*, 18(2), 22280. Retrieved from <https://dx.doi.org/10.1016/j.jplph.2009.07.006%0Ahttp://dx.doi.org/10.1016/j.neps.2015.06.001%0Ahttps://www.abebooks.com/Trease-Evans-Pharmacognosy-13th-Edition-William/14174467122/bd>
- Arizqi, & Fachrunnisa, O. (2017). Empowering Leadership, Quality of People dan Quality of Work Methods dalam Mendorong

- Kesiapan Individu untuk Berubah. *Jurnal Ilmiah Manajemen*, VII(2), 288–300. Retrieved from <https://mix.mercubuana.ac.id/media/publications/155249-empowering-leadership-quality-of-people-d58c5e6d.pdf>
- Ay, F. A., Karakaya, A., & Yilmaz, K. (2015). Relations Between Self-leadership and Critical Thinking Skills. *Procedia - Social and Behavioral Sciences*, 207(541), 29–41. <https://doi.org/10.1016/j.sbspro.2015.10.147>
- Azmy, A. (2020). Employment Productivity Strategy at Vocational High School: Case Study Darur Roja West Java Indonesia. *International Journal of Management, Accounting and Economics*, 7(11), 1–22. Retrieved from <http://www.ijmae.com>
- Bashir, S., Dahlman, C. J., Kanehira, N., & Tilmes, K. (2021). *Technology Revolution and Human Capital*. International Bank for Reconstruction and Development. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/36156/9781464817199.pdf>
- Beausaert, S., Segers, M., & Gijsselaers, W. (2011). The use of a personal development plan and the undertaking of learning activities, expertise-growth, flexibility and performance: The role of supporting assessment conditions. *Human Resource Development International*, 14(5), 527–543. <https://doi.org/10.1080/13678868.2011.620782>
- Bullock, K., & Jamieson, I. (1998). The effectiveness of personal development planning. *The Curriculum Journal*, 9(1), 63–77. <https://doi.org/10.1080/0958517970080106>
- Burns, D. J., & Mooney, D. (2018). Transcollegial leadership: a new paradigm for leadership. *International Journal of Educational Management*, 32(1), 57–70. <https://doi.org/10.1108/IJEM-05-2016-0114>
- Cahyono, S. M., Kartawagiran, B., & Mahmudah, F. N. (2021). Construct exploration of teacher readiness as an assessor of vocational high school competency test. *European Journal of Educational Research*, 10(3). <https://doi.org/10.12973/EU-JER.10.3.1471>
- Calvin, J. R. (2002). Book Reviews: The Future of Leadership (Today's Top Leadership Thinkers Speak to Tomorrow's Leaders). In *Journal of Leadership Studies* (Vol. 8, pp. 116–117). <https://doi.org/10.1177/107179190200800418>
- Carr, D., Boyle, E. H., Cornwell, B., Correll, S., Crosnoe, R., & Mary C. Waters. (1964). Art and science of Social Research. In W. W. Norton & Company (Vol. 4). America.
- Chlebkova, D., Misankova, M., & Kramarova, K. (2015). Planning of Personal Development and Succession. *Procedia Economics and Finance*, 26(15), 249–253. [https://doi.org/10.1016/s2212-5671\(15\)00828-x](https://doi.org/10.1016/s2212-5671(15)00828-x)
- Curtis, G. J. (2020). Follower-rated leadership styles, leader behaviours, and leaders' thinking styles: A test of the cognitive experiential leadership model. *Australian Journal of Psychology*, 72(4), 318–327. <https://doi.org/10.1111/ajpy.12291>
- Dardiri, A., Alfianto, I., Kuncoro, T., Sugandi, R. M., Suswanto, H., Wibawa, A. P., & Sudjani. (2017). Implementing entrepreneurial leadership in technology and vocational education (TVE) organisations. *World Transactions on Engineering and Technology Education*, 15(4), 361–367.
- Daud, S., Noordiana, W., Hanafi, W. A. N., & Othman, N. M. (2021). Determinant Factors for Fourth Industrial Revolution (4IR) Leadership Attributes : An Empirical Study from Malaysia*. *Journal of Asian*, 8(9), 301–311. <https://doi.org/10.13106/jafeb.2021.vol8.no9.0301>
- Estienne, M. (1991). A Personal Development File: Self-Development Among Business Studies Students. *Management Learning*, 22(1), 15–22. <https://doi.org/10.1177/135050769102200102>
- Green, K., & Jax, C. (2011). Problem solvers are better leaders: Facilitating critical thinking among educators through online education. *Procedia - Social and Behavioral Sciences*, 15, 727–730. Elsevier B.V. <https://doi.org/10.1016/j.sbspro.2011.03.173>
- Guzmán, V. E., Muschard, B., Gerolamo, M., Kohl, H., & Rozenfeld, H. (2020a). Characteristics and Skills of Leadership in the Context of Industry 4.0. *Procedia Manufacturing*, 43(4), 543–550. <https://doi.org/10.1016/j.promfg.2020.02.167>
- Guzmán, V. E., Muschard, B., Gerolamo, M., Kohl, H., & Rozenfeld, H. (2020b). Characteristics and Skills of Leadership in the Context of Industry 4.0. *Procedia Manufacturing*, 43(14), 543–550. <https://doi.org/10.1016/j.promfg.2020.02.167>
- Jenkins, D. M., & Cutchens, A. B. (2011). Leading Critically: A Grounded Theory of Applied Critical Thinking in Leadership Studies. *Journal of Leadership Education*, 10(2), 1–21. Retrieved from <http://0-search.ebscohost.com.source.unco.edu/login.aspx?direct=true&db=eue&AN=88906203&site=ehost-live>
- Kelley, C., & Halverson, R. (2012). The Comprehensive Assessment of Leadership for Learning : A Next Generation Formative Evaluation and Feedback System. *Journal of Applied Research on Children: Informing Policy for Children at Risk*, 3(2), 1–31. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1188829.pdf>
- Khusni, W., & Mahmudah, F. N. (2020). The principal's managerial ability in developing effective schools. *International Journal of Educational Management and Innovation*, 1(2), 99–108. <https://doi.org/10.12928/ijemi.v1i2.1611>
- King, L. (2008). *Personal growth and personality development: well-being and ego development*. University of Missouri-Columbia.
- Kjellström, S., Stålné, K., & Törnblom, O. (2020). Six ways of understanding leadership development: An exploration of increasing complexity. *Leadership*, 16(4), 434–460. <https://doi.org/10.1177/1742715020926731>
- Kusumaningrum, D. E., Sumarsono, R. B., & Gunawan, I. (2018). Empowering the Principal of Boarding House-Based Junior High School in East Java Province Indonesia. *3rd International Conference on Education Management and Administration (CoEMA 2018)*, 269(CoEMA), 147–151. <https://doi.org/10.2991/coema-18.2018.36>
- Lawshe, C. . (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 1–21. Retrieved from <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>
- Mahmudah, F. N. (2021a). Adaptabilitas Guru dalam Pengembangan Kompetensi Berkelanjutan Era Smart Society 5.0 [Teacher Adaptability in Sustainable Competency Development Era Smart Society 5.0]. In *Pengembangan Keprofesional Berkelanjutan Era Society 5.0/ Era Society Continuing Professional Development 5.0* (p. 69). Bandung: Widina Bhakti Persada Bandung. Retrieved from https://scholar.google.co.id/citations?view_op=view_citation&hl=id&user=vqUnJ9kAAAAJ&cstart=20&pagesize=80&citation_for_view=vqUnJ9kAAAAJ:NaGl4SEjCO4C
- Mahmudah, F. N. (2021b). Self-innovation guru dalam meningkatkan prestasi siswa pada masa pandemi COVID-19 [Self-innovation of teachers in improving student achievement during the COVID-19 pandemic]. *Ta'dibuna: Jurnal Pendidikan Islam/*

- Journal of Islamic Education*, 10(1), 119–134. <https://doi.org/10.32832/tadibuna.v10i1.4075>
- Mahmudah, F. N., Putra, E. C., & Wardana, B. H. (2021). The impacts of covid-19 pandemic: external shock of disruption education and financial stress cohesion. *FWU Journal of Social Sciences*, 15(2), 2013–2015. Retrieved from <http://doi.org/10.51709/19951272/Summer-2/3>
- Mahmudah, F. N., A-G Baswedan, A. R., Usman, H., Mardapi, D., & S Putra, E. C. (2022). The importance of partnership management to improve school-to-work transition readiness among vocational high school graduates. *The Education and Science Journal*, 24(5), 64–89. <https://doi.org/10.17853/1994-5639-2022-5-64-89>
- Mahmudah, F. N., & Santosa, B. (2021). Vocational school alignment based-on industry needs. *Journal of Vocational Education Studies*, 4(1), 36–45. <https://doi.org/10.12928/joves.v4i1.3611>
- Mardapi, D. (2008). *Teknik penyusunan instrumen tes dan nontes [Techniques for preparing test and non-test instruments]*. Mitra Cendekia Pres.
- Martin, I., Goulet, L., Martin, J., & Owens, J. (2015). The Use of A Formative Assessment In Progressive Leader Development. *The Journal of Leadership Education*, 14(4), 55–66. <https://doi.org/10.12806/v14/i4/a1>
- McVey, R. S. (1995). Critical Thinking Skills for Leadership Development. *Journal of Leadership Studies*, 2(4), 86–97. <https://doi.org/10.1177/107179199500200407>
- Mestry, R. (2017). Empowering principals to lead and manage public schools effectively in the 21st century. *South African Journal of Education*, 37(1), 1–11. <https://doi.org/10.15700/saje.v37n1a1334>
- Metz, Cuseo, & Thompson. (2013). Leadership Self-Assessment: Assessing Your Leadership Skills & Leadership Development. *Peer-to-Peer Leadership: Transforming Student Culture*, 1(1), 1–3. Retrieved from https://www.researchgate.net/publication/284444646_Leadership_Self-Assessment_Assessing_Your_Leadership_Skills_Leadership_Development
- Mihai, R.-L., & Crețu, A. (2019). Leadership in the Digital Era. *Valahian Journal of Economic Studies*, 10(1), 65–72. <https://doi.org/10.2478/vjes-2019-0006>
- Molino, M., Cortese, C. G., & Ghislieri, C. (2021). Technology acceptance and leadership 4.0: A quali-quantitative study. *International Journal of Environmental Research and Public Health*, 18(20), 1–18. <https://doi.org/10.3390/ijerph182010845>
- Mulyadi, Y. (2019). Vocational Teacher Perception on Industry 4.0 and Society 5.0. *Global Conferences Series: Sciences and Technology (GCSST), Volume 2, 2019 The 1st International Conference on Education, Sciences and Technology*, 2, 62–68. <https://series.gci.or.id/assets/papers/icestech-2019-126.pdf>. Retrieved from doi: <https://doi.org/10.32698/tech1315126>
- Munby, S. (2020). *A new paradigm for leadership development?* Victoria: The Centre for Strategic Education. Retrieved from <http://atrico.org/wp-content/uploads/2020/05/Occasional-Paper-164-February-2020.pdf>
- Niehaus, E. K., O'Rourke, M. A., & Ostick, D. T. (2012). Global leadership development plans: Engaging students as agents their own development. *Journal of Leadership Studies*, 6(2), 116–122. <https://doi.org/10.1002/jls.21244>
- Nikmatuzaroh, R. . dan N. M. (2019). Influence of technolgy on the leadership of 21st-century career and technical education administrators (Fordham University). Fordham University. Retrieved from <https://files.eric.ed.gov/fulltext/ED534852.pdf>
- Nurmahmudah, F., & Putra, E. C. S. (2020). What Makes Employees Productive and Have High Performance? Human Capital Investment in Universities. *Asian Journal of Education and Social Studies*, 1(11), 21–36. <https://doi.org/10.9734/ajess/2020/v1i1130281>
- Nofrida, E. R., Ph, S., Prasojo, L. D., & Mahmudah, F. N. (2022). The development of an instrument to measure the college student entrepreneurship skills. *Pegem Journal of Education and Instruction*, 13(1), 241–250. <https://doi.org/10.47750/pegegog.13.01.26>
- Özkan, T., Tokel, A., Çelik, M., & Öznacar, B. (2017). Evaluation of technology leadership in the context of vocational school administrators. *CSEdu 2017 - Proceedings of the 9th International Conference on Computer Supported Education*, 1(Csedu), 727–731. <https://doi.org/10.5220/0006384107270731>
- Pont, B., Nusche, D., & Moorman, H. (2010). Improving School Leadership. In *Improving School Leadership* (Vol. 1). United Kingdom: OECD Publishing. <https://doi.org/10.1787/9789264082915-et>
- Pratomo, B. D., & Arifin, Z. (2020). The Effect of School Principal's Servant Leadership of Vocational Schools in Temanggung Regency. *International Journal of Applied Business and International Management*, 5(3), 1–12. <https://doi.org/10.32535/ijabim.v5i3.975>
- Radu, C. (2018). Self-awareness and personal development plans of students. *New Trends and Issues Proceedings on Humanities and Social Sciences*, 4(8), 176–183. <https://doi.org/10.18844/prosoc.v4i8.3029>
- Ramadani, R. F., Heryanto, N., Komar, O., & Hasanah, V. R. (2020). Community Empowerment through Social Compass Strategy: Case Study of Empowerment in Processing Waste and Water Hyacinth. *Journal of Nonformal Education*, 6(2), 139–147. Retrieved from https://digilib.esaunggul.ac.id/public/UEU-Journal-20875-11_1738.pdf
- Reynolds, D. H., McCauley, C. D., & Tsacoumis, S. (2018). A critical evaluation of the state of assessment and development for senior leaders. *Industrial and Organizational Psychology*, 11(4), 630–652. <https://doi.org/10.1017/iop.2018.84>
- Ricketts, J. C. (2005). The Relationship between Leadership Development and Critical Thinking Skills. *Journal of Leadership Education*, 4(2), 27–41. <https://doi.org/10.12806/v4/i2/rf3>
- Rogelberg, S. G., Justice, L., Braddy, P. W., Paustian-Underdahl, S. C., Heggstad, E., Shanock, L., ... Fleenor, J. W. (2013). The executive mind: Leader self-talk, effectiveness and strain. *Journal of Managerial Psychology*, 28(2), 183–201. <https://doi.org/10.1108/02683941311300702>
- Saputra, W., Rusdinal, R., & Gistituati, N. (2021). Kepemimpinan Demokratis Kepala Sekolah di Sekolah Menengah Kejuruan [Principal Democratic Leadership in Vocational High School]. *Edukatif : Jurnal Ilmu Pendidikan/Journal of Educational Science*, 3(5), 2905–2910. Retrieved from <https://edukatif.org/index.php/edukatif/article/view/996>
- Sima, V., Gheorghe, I., Subic, J., & Nancu, D. (2021). Influences of the Industry 4.0 revolution on the human capital development and consumer behavior: a systematic review. *Journal of Ambient Intelligence and Humanized Computing*, 14(4035), 2–28. <https://doi.org/10.1007/s12652-021-03177-x>

- Spry, N., & Marchant, T. (2014). How a personal development program enhances social connection and mobilises women in the community. *Australian Journal of Adult Learning*, 54(2), 32–53. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1033855.pdf>
- Strivens, J., & Ward, R. (1969). An overview of the development of Personal Development Planning (PDP) and e-Portfolio practice in UK higher education. *Journal of Learning Development in Higher Education*, (November). <https://doi.org/10.47408/jldhev0i0.114>
- Sumiran, Waston, Zamroni, & Mahmudah, F. N. (2022). The principal's role in improving the quality: A concepts framework to developing school culture. *Frontiers in Education*, 7(854463), 1–14. <https://doi.org/10.3389/educ.2022.854463>
- Syakdiyah, A., Mahmudah, N. F., & Wijayanti, W. (2019). Active Learner Strategies in Era of Disruption : a Literature Review. *Proceedings of the First International Conference on Progressive Civil Society*, 317(1), 165–168. Retrieved from <https://www.atlantis-press.com/proceedings/iconprocs-19/125908583>
- Tóth, P. (2012). Learning strategies and styles in vocational education. *Acta Polytechnica Hungarica*, 9(3), 195–216. Retrieved from https://www.researchgate.net/publication/266483469_Learning_Strategies_and_Styles_in_Vocational_Education
- Tremblay, C., & Gutberlet, J. (2012). Empowerment through participation: Assessing the voices of leaders from recycling cooperatives in são paulo, Brazil. *Community Development Journal*, 47(2), 282–302. <https://doi.org/10.1093/cdj/bsq040>
- Tulasi, D., Sigit, R., Pradana, D. W., & Ellitan, L. (2019). The Role of Leadership in Industrial Revolution 4.0. *International Journal of Trend in Research and Development*, 6(5), 97–100. Retrieved from <http://www.ijtrd.com>
- Ugur, H., Constantinescu, P. M., & Stevens, M. J. (2015). Self-awareness and personal growth: Theory and application of bloom's taxonomy. *Eurasian Journal of Educational Research*, 3(60), 89–110. <https://doi.org/10.14689/ejer.2015.60.6>
- Zakaria, N. Z., Jizat, N. A. M., & Zakaria, N. (2014). Leadership Skills among Technical and Vocational Educators. *Journal of Education and Practice*, 6(16), 50–55. Retrieved from <http://eric.ed.gov/?id=EJ1079940>