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K-Workers Practice in Increasing Graduate Employability to Overcome the Challenges of the Fourth Industrial Revolution

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Abstract: The low employability rate among Vocational College (VC) graduates compared to TVET institutions such as Polytechnics and Community Colleges is an issue in this study. Coupled with the wave of the Fourth Industrial Revolution which will challenge VC graduates to find employment opportunities in the growing industrial sector now. This problem arises due to the lack of elements of K-worker competency elements in the curriculum of VC students and the lack of emphasis on the concept of IR 4.0 makes them insensitive to what is happening in the industry nowadays. K-worker is a term for "white collar" introduced by Peter Drucker in 1959 and is an important component for an employee to be accepted by the employers. The purpose of this study was to identify the perceptions of the college vocational students in diploma vocational (DVM) of welding technology about K-worker competency to overcome the challenges of the Fourth Industrial Revolution (IR 4.0). Quantitative research design by using the questionnaire was applied which has various sections related to demographics, technical competency, social and humanity competency, learning and methodology competency with Likert scale 5 for each item. Only 52 respondents who were selected as the study sample were students from Batu Pahat Vocational College and Kluang Vocational College. Research findings show that diploma students in technology welding have good individual knowledge in technical competency but lack in individual skills. Further, respondents have good teamwork in social and human competency but lack in communication skills. Also, the overall findings show that students of diploma welding technology had lifelong learning and information management skills at a good level in their learning and methodology competency. The findings also show a strong positive relationship between learning and methodology competency with humanity and social competency. In summary, this study also discusses the findings of the study with previous studies as well as further research proposals to help prospective VC graduates to face the challenges of IR 4.0.

Keywords: Vocational College, IR 4.0, Employability, K-workers

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1. Introduction

Issues such as the low market value among Vocational College graduates will negatively affect the image of Vocational College (VC), which has become the preferred field of parents in sending their children to enrolled vocational courses, which is likely to change. A report from the graduate tracking survey Kementerian Pendidikan Malaysia (2019), shows that almost 22.4% of the 3,046 people out of 13,597 of the Vocational College graduates in Malaysia are still unemployed and 727 people are in the status of waiting for employment. Compared to the unemployment rate for Polytechnic institutions and Community Colleges, the percentages showed a low percentage of 3.4% and 3.9%, according to statistics from the Ministry of Education (Kementerian Pendidikan Malaysia, 2019).

The wave of IR 4.0 that hit our nation's employment industry will impact graduates of Vocational College. The changing work environment today's employers need to be more flexible, creative, and has interpersonal skills (Norman, Zainon, M. Jenil, & Yahya, 2017). This is because the number of TVET graduates entering the labour market has increased and VC graduates find themselves ineligible to compete because they do not have the necessary skills to be in the industry 4.0. Also, the lack of awareness among the people including students because the measures taken by the government is not enough to announce the message of importance about industrial revolution 4.0 (Omar & Hasbolah, 2018). This is because the actions taken by the government to explain the importance of IR 4.0 in the country's economy are still inadequate to raise awareness among Malaysians.

Large industries involved in welding are less interested in recruiting VC graduates to work in their companies. According to Norman et al. (2017), this era of globalization has prompted employers not only to emphasize technical or hard skills but also to emphasize soft skills to adapt to a wide variety of jobs. This is due to the attitude of students who are not interested in improving their communication skills and professionalism for themselves to get the job they want. Then, Vice-Chancellor of Sultan Zainal Abidin University (UniSZA), Prof. Datuk Dr. Hassan Basri said that some of the factors that make graduates difficult to find are due to their lack of proficiency and communication skills in English (Baharin, 2019). In addition, according to Ting, Marzuki, Chuah, Misieng, & Jerome (2017), graduates' weaknesses in social skills in the workplace are very significant and create a bad working environment. According to Norman et al. (2017), employers place more emphasis on employees who have communication skills and can work with others. In addition to proficiency in English, communication skills and positive attitudes towards other employees are also emphasized by employers today to finding suitable employees for their company organization.

Sources from Sinar Harian newspaper article, Deputy Director-General of Higher Education, Department of Higher Education, Prof. Dr. Mohd Cairul Iqbal Mohd Amin said that the industry had complained about the attitude of some graduates who were not ready to learn anything new (Assan, 2019). The problem is that Vocational College graduates are still at the same level and lacking in skills related to industry requirements. According to Rus, Yasin, & Rasul (2014), some industrial investors are less confident in the productivity and skills of Malaysian workers to invest in the country. Some Vocational College graduates have problems in terms of information management skills. Jamaludin, Alias, Dewitt, & Kenayathulla (2019), states that many graduates lack the basic skills of computer software such as Microsoft Excel for information management. In addition, there are problems with lifelong learning, where VC graduates in the field of Welding Technology who are pursuing higher education represent a small number. This is because, the average starting salary for a mechanic is RM 1,500 and can reach up to five-digit number, based on the level of skills and experience he has (Che Lah, 2019). Therefore, the value of learning and methodology competency in K-worker elements needs to be applied among VC students to better prepare for the IR 4.0 challenge after graduating soon.

1.1 Problem Statement

As a result of the discussion above, the researchers found that there was a problem that led to the issue of employability of graduates of the Vocational College for welding technology courses. This is because researchers think that employers now need employees that have higher flexible working, creative and interpersonal skills. Therefore, graduates of Vocational College graduates are more comfortable working in regular workshops and less interested in pursuing a job at a large company and only focusing on existing skills. Besides, the lack of awareness among Malaysians including students in the country about the importance of IR 4.0 because of the role played by the government is not enough. This is particularly evident when the influence of the industrial revolution 4.0 gradually changes the nature of employment in Malaysia which will put pressure on graduates due to the lack of exposure to IR 4.0 as well as proficiency in Industrial 4.0 technology. These concerns the cause of cultural shock issues, if graduates of Vocational College are less prepared when they are in a real job environment. Large companies in Malaysia are moving ahead with the IR 4.0-based system to attract foreign investors and compete for global industries, thus changing the demands of employers on the employability of VC graduates. This can cause employers in large companies especially in the field of welding to be less interested in recruiting the Vocational College graduates to work with their company organization because VC graduates do not meet the requirements in Industry 4.0. Moreover, it is the result of the attitude of students who are not interested in improving their communication skills and professionalism in themselves. This will have an impact when they become graduates and will have to work hard to find other skills to meet the industry's demands for employment. However, the government is still working on various initiatives for TVET graduates to acquire the skills needed by the industry. Therefore, the purpose of the study is to identify the perception among diploma students in welding technology about K-worker practices to increase graduate's employability to overcome the Industrial Revolution 4.0 challenge.

1.2 Objective

- Identify the perception of Vocational College students in DVM Welding Technology according to the K-worker practice in terms of technical competency, social and humanity competency, learning and methodology competency for improving the rates of graduate employability.
- The relationship between learnings and methodology competency with humanity and social competency to enhance the graduate employability among the students at Vocational College in DVM Welding Technology in addressing the challenges of industrial revolution 4.0.

2. Methodology

The design of this study was based on a quantitative approach using the survey method. The survey method used in this study was to use questionnaire instruments. Questionnaire items in this study were measured using a Likert 5 scale of "Strongly disagree" (1), "Disagree" (2), "Neither agree nor disagree" (3), "Agree" (4), "Strongly agree" (5) as shown in Table 1.

Table 1: Likert 5 scale

Statement	Abbreviation	Value
Strongly disagree	SD	1
Disagree	D	2
Neither agree nor disagree	NAD	3
Agree	A	4
Strongly agree	SA	5

2.1 Research Design

A total of 60 populations were selected in this study that involved students in DVM Welding Technology from Batu Pahat Vocational College and Kluang Vocational College. However, based on table 2, according to the table of Krejcie and Morgan (1970) have shown a suitable sample value of the respondents for this study.

Table 2: The table of Krejcie and Morgan (1970)

Population (N)	Sample (S)
30	28
40	36
50	44
60	**52**
70	59
80	66

2.2 Research Procedure

Pilot study data were analysed using Cronbach Alpha reliability analysis to determine whether the consistency of the items in the construct was acceptable. Based on the results of the pilot survey data, the intrusions used were found to be of high reliability based on Cronbach Alpha values greater than 0.8 as shown in Table 3.

Table 3: Cronbach's Alpha values obtained by the pilot study

Reliability Statistic		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.817	0.929	23

The researcher has requested permission to conduct studies from the Director of the Batu Pahat Vocational College and the Director of the Kluang Vocational College. Once informed, the researcher contacted the lecturer on duty to set the appropriate date which gives time for the researcher to manage the questionnaire smoothly.

2.3 Research Instrument

The instrument used in this study is a set of questionnaires. This set of questionnaires contains sections A, B and C as shown in Table. Part A is to identify the respondents' information which contains gender, age, race, and semester. Part B consists of 8 items related to technical competency. Section C contains 10 items related to social and humanity competency. Also, section D contains 8 items related to learning and methodology competency. Table 3 shows the distribution of the questionnaire items. The questionnaire was reviewed by the supervisor and three experts from lecturers of Tun Hussein Onn University and made improvements based on the comments provided. A pilot study was conducted with 30 students from two vocational colleges and distributed the questionnaire. Students selected for this pilot study will not be included in the actual survey.

Table 4: Questionnaire item distribution

Variable	Factor	Part	Item
Demographics		A	4
Technical Competencies	Individual knowledge	B1, B2, B3, B4	8
	Individual skills	B5, B6, B7, B8	
Social and Humanity Competencies	Teamwork	C1, C2, C3, C4, C5	10
	Communication skills	C6, C7, C8, C9, C10	
Learning and Methodology Competencies	Information Management Skills	D1, D2, D3, D4	8
	Life-long learning	D5, D6. D7. D8	

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3. Results and Discussion

The results of the study are reported quantitatively descriptively based on the SPSS analysis software. The main purpose of this analysis is for researchers to identify the perception of welding Technology students in the two Vocational Colleges has K-worker competencies in themselves.

3.1 Results

This section describes the element competency of vocational college students in welding technology. Table 5 shows the frequency and percent analysis of these two factors of competency among welding technology students in Vocational College.

Table 5: Factors of Individual Skills and Individual Knowledge in Technical Competency

Item	Statement	Frequency (f)	Percentage (%)	Interpretation
1	I understand the overall command of the assignment.	38	73.7	Agree
2	I know how to use a Submerged Arc Welding (SAW) machine.	28	53.8	Agree
3	I know what kind of flaws on the product.	33	63.5	Agree
4	I can identify the cause of the defect in the product.	36	69.2	Agree
5	I can weld using a Submerged Arc Welding (SAW) machine.	31	59.6	Disagree
6	I am good at using Submerged Arc Welding (SAW) machines to do work.	38	73.1	Disagree
7	I can perform visual testing (NDT) on welding results.	31	59.6	Disagree
8	I can fix the defect on welding.	35	67.3	Agree

Table 6 shows factors of teamwork and communication skills in social and humanity competency while Table 7 shows factors of lifetime learning and information management skills in learning and methodology competency.

Table 6: Factors of teamwork and communication skills in social and humanity competency

Item	Statement	Frequency (f)	Percentage (%)	Interpretation
1	I was able to make the right decision and quickly.	38	73.1	Agree
2	I can work with team members at the workshop.	31	59.6	Agree
3	I can motivate team members to be positive in the workshop.	30	57.7	Agree
4	I can lead a group to do the assigned tasks.	36	69.2	Agree
5	I'm always positive when I'm with colleagues at workshops.	26	50	Agree
6	I can read the instructions in English.	38	73.1	Disagree
7	I can provide information or instructions in English.	39	75	Disagree
8	I can speak and write in English well.	33	63.5	Disagree
9	I respect the opinions and instructions of the group members.	32	61.5	Agree
10	I can express ideas clearly and verbally and in writing.	34	65.4	Agree

Table 7: Factors of lifetime learning and information management skills in learning and methodology competency

Item	Statement	Frequency (f)	Percentage (%)	Interpretation
1	I can use my computer as well.	38	73.1	Agree
2	I'm good at using Word and Powerpoint software for assignments.	31	59.6	Agree
3	I can use Excel software as well.	30	57.7	Agree
4	I know how to create an E-Portfolio on a website like Wix.com or Google Site.	36	69.2	Agree
5	I understand the skills needed to meet the needs of the industry.	32	61.5%	Disagree
6	I understand the concept of IR 4.0 well.	30	57.7%	Disagree
7	I'm interested in contributing expertise in welding at work.	29	55.8%	Agree
8	I'm interested in learning skills or knowledge that can improve job productivity.	29	55.8%	Agree

3.2 Discussions

- Technical competency
  Vocational College students have good teamwork based on the analysis of the findings. However, communication skills are seen to be relatively low with poor English proficiency by VC students. Studiers have argued that not only are the English usage factors in classrooms need to be improved but how they apply their use in communicating when in the workplace. Mastery of English is one of the important factors in communication skills, where the integration between social skills and social values in the technical curriculum is necessary because it meets the needs and wants of industry employers (Yahaya et al., 2016)

- Social and Humanity Competency
  Studies have found that VC students are already exposed to the latest technology but lacking in terms of applications. old and unusable equipment factors and poor equipment for use by VC students. According to Karpov (2016), he said to produce good workers in terms of skills and high cognitive knowledge, they need to be polished using the latest equipment and technology.

- Learning and Methodology Competency
  Researchers found that Vocational College students not only did not understand the goals of IR 4.0 but the findings showed Vocational College students did not follow current developments on the skills required by industry 4.0. VC is still bound by another school system that is less suitable for a student who will be called a diploma graduate. According to Yin & Kaynak (2015), IR 4.0 not only involves skills but on data integration connections and intelligent controls to move productivity in Industry 4.0.

4. Conclusion

This study demonstrates that K-workers' practices can give individuals the potential to address future global challenges such as the fourth industrial revolution. The findings of this study are more on the factors in K-workers that can give Vocational College graduates the opportunity to compete with graduates from other educational institutions. Besides, this finding has reinforced the Drucker's (1959) theory that the negative relationship between the unemployment rate and skill level means that if the individual's skill level is high, then the individual's unemployment rate is decreased (Hoyos et al., 2016). This is because K-workers practice could provide the high-quality ability for Vocational College graduates, where they can symbiosis with machines when they can achieve high levels of knowledge with existing skills to address the IR 4.0 challenges. In this regard, the involvement of certain parties in the implementation of K-workers' practices among students of Welding Technology is the great importance as the findings of this study are expected to contribute to the knowledge for students, lecturers, administrators and the ministry. Students need to be constantly exposed to information and issues related to the Fourth Industrial Revolution that is important to understand and apply to existing skills. These students should be considered as the heartbeats of the industry to meet the needs of skilled labour in Malaysia and comparable with the workforce in major countries.

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