

Comparative Study of Students' Career Adaptability in Computer and Network Engineering with Welding Engineering

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Abstract—Vocational High Schools prioritize the preparation of students to enter the world of work and develop a professional attitude and it is hoped that graduates will be able to work according to the skill program chosen during school. The number of graduates of each skill competency in Vocational High Schools will create a Supply-Demand imbalance and affect the level of competition in the world of work. As in Indonesia, Computer and Network Engineering expertise programs are mostly held by every Vocational High School, while Welding Engineering expertise programs are still rare. This is the cause of the large number of unemployed Vocational High School graduates. In preparing for a career, students often have problems such as ambiguity, uncertainty and considerable stress when facing career exploration and career decision making. Career adaptability is the ability and readiness to face unexpected situations, assignments, and career transitions including participating in school demands to prepare for a career. The purpose of this study was to find out the comparison of career adaptability between students in Computer and Network Engineering and in Welding Engineering. This research method is a quantitative method with comparative analysis, data collection using the Career Adapt-Abilities Scale developed by Savickas, data analysis using Independent T-Test. The results showed that the total respondents were 160 Vocational High School students with 80 Computer and Network Engineering students and 80 Welding Engineering students. The level of student career adaptability is at a high level but there are differences between the sample groups, the career adaptability of students in Computer and Network Engineering is lower than the career adaptability of students in Welding Engineering. The determining factor for the difference in the level of career adaptability of students is thought to be due to the level of career anxiety of students towards career challenges, career obstacles, and career threats which ultimately affect the Confidence dimension. Researchers suggest increasing career adaptability to prepare before entering the world of work. There is a need for further research related to the factors that affect career adaptability, especially career anxiety.

Keywords—career adaptability, students, computer and network engineering, welding engineering

I. INTRODUCTION

Career is a very important thing for humans in life. According to Healy, career can occur throughout a person's life which includes before work (preoccupational), during work (occupational), and at the end or after work (postoccupational). [1]. This statement is in line with Super's opinion that career is a lifelong process that has a pattern or stage of career development from birth to death [2]. As time goes by, career challenges are increasingly diverse, namely globalization, new technologies, migration, international competition, market changes, environmental challenges, and transnational politics [3].

Educational institutions are a place to help someone to prepare for their future career, one of which is a vocational school. Vocational High School is a form of formal secondary school that is more specific in preparing students for the world of work. This is explained in the Government Regulation of the Republic of Indonesia Number 29 of 1990, where Vocational High School is education at the secondary education level that prioritizes the development of students' abilities to carry out certain types of work. In accordance with its form, Vocational High Schools organize educational programs that have been adapted to the types of employment [4].

But in fact, based on data from the Badan Pusat Statistik, it was recorded that the number of open unemployment according to the highest education completed from February 2021 was at 8,746,008 people, with one of the biggest contributors to the unemployment rate being graduates from Vocational High Schools with a total of 2,089,137 person [5]. This happens because career development is not optimal in adolescence, this is in line with Santrock's opinion that the problems often experienced by adolescents related to career preparation are ambiguity, uncertainty, and considerable stress when faced with career exploration and decision making [6]. Adolescent confusion in dealing with the career world will not occur if adolescents have the readiness to choose and develop themselves according to their career desires which is the concept of career adaptability. Yunikawati in her research that

the cause of youth unemployment in Indonesia is caused by the perception of choosing a Vocational High School, the perception of the content and curriculum of the Vocational High School, the skills possessed, the factors of parents, peers, schools and labor users [7].

The main construct in adolescent career preparation is called career adaptability [8,9]. Career adaptability was first created by Super and Knasel [10], as a center for career development and has since been suggested as a key competency in career success in general. Savickas proposed that career adaptability replace career maturity as the main construct in career development [8]. Savickas stated that career adaptability is a person's readiness to cope with predictable tasks and to be able to participate in his work role [8,11]. Career adaptability is central to the career construction theory popularized by Savickas, which explains that a person's process through a period of career development, the way they work, and their career goals [12]. Adaptability represents a critical ability in individuals to direct the decision-making process in careers and the world of work [13], Career adaptability has a relationship with the formation of vocational identity, where graduates who are able to adapt can have various additional skills and make them more dynamic in choosing the field of work [14]. According to Savickas, career adaptability includes several important dimensions, namely concern, control, curiosity, and confidence [14]. Factors that can affect career adaptability are age, gender, work experience, family, educational institutions, socioeconomic status [9].

One of the factors that affect career adaptability is educational institutions. The number of graduates of each skill competency in Vocational High Schools will create a Supply-Demand gap and affect the level of competition in the world of work. As is the case in Indonesia, based on the results of a search on the information system from the "Data Pokok SMK 2021", there are 14,464 Vocational High Schools [15]. Computer and Network Engineering expertise competencies are held by 5,842 Vocational High Schools in Indonesia. While Welding Engineering are held by 400 Vocational High Schools in Indonesia.

Career adaptability has a positive impact on preparation and career development that will be carried out by someone [9]. Previous research has shown that career adaptability provides benefits, namely that individuals have a sense of power and life satisfaction [9], stability and realism of career aspirations [16], career satisfaction [17], increase exploration, vocational commitment, and identification with vocational commitment over time [18], career determination [19], and entrepreneurial intentions [20]. With the ability of career adaptability, a person will be able to respond to the demands of a career at this time that many occur such as an unstable or turbulent work environment, uncertain things, and events that are always changing in the work environment [21]. Research on career adaptability in adolescents conducted by Jessie Koen, et al. said that by practicing career adaptability, students can increase their chances of finding decent work and achieving success during the school-to-work transition phase [22]. Savickas said,

in a world full of changes that occur in the world of work and the environment, the concept of career adaptability is useful for further research in adolescents [11].

Based on the phenomenon of the number of unemployed graduates of Vocational High Schools, the challenges of the world of work, and the high competition for jobs that match the skill program, the problems of students as prospective workers in preparing and determining careers, as well as the benefits and importance of the concept of career adaptability. Thus, this study aims to reveal the career adaptability between Computer and Network Engineering students and Welding Engineering, as well as to analyze whether the differences in the chosen skill program will affect the career adaptability of students.

II. METHODOLOGY

This research method is a quantitative method with comparative analysis. The criteria for research subjects are Vocational High School students in the program of expertise in Computer and Network Engineering and Welding Engineering, having ages that can be classified into the category of middle and late teens with an age range of 15 to 22 years. The research subjects were Vocational High School students with 80 students in Computer and Network Engineering and 80 students in Welding Engineering, a total of 160 respondents.

The measurement of career adaptability in this study was adapted from the Career Adapt-Abilities Scale developed by Savickas [14]. The measurement of career adaptability in this study consisted of 4 dimensions, namely concern, control, curiosity and confidence, with 3 indicators in each dimension. There are 50 items used and have passed the validity test, and obtained a score of 0.956 for the reliability test, which according to Guilford is included in the criteria for a very reliable questionnaire [23]. The career adaptability instrument in this study uses a list of statements with four alternative answers consisting of answer choices Strongly Agree, Agree, Disagree, and Strongly Disagree. Each item was given a score of 1 to 4. Technical Data analysis using Independent T-Test with the help of MiniTab 17 Statistical Software.

III. RESULTS AND DISCUSSION

The results of data processing showed that respondents who were in the Computer and Network Engineering expertise program came from SMKN 1 Kempas, SMKN 5 Bandung and SMKN 7 Garut with 40 male respondents and 40 female respondents. Respondents in the Welding Engineering expertise program came from SMKN 2 Sungailiat, SMKN 1 Losarang, and SMK YP Gajah Mada Palembang with 79 male respondents and 1 female respondent. Of the total 160 respondents, 25 were from SMKN 1 Kempas, 43 from SMKN 5 Bandung, 12 from SMKN 7 Garut, 22 from SMK YP Gajah Mada Palembang, 14 from SMKN 1 Losarang, 44 from SMKN 2 Sungailiat. Based on the calculation of the career adaptability scores of the respondents, the career adaptability data obtained are as follows:

TABLE I. CATEGORIZATION OF CAREER ADAPTABILITY VARIABLE DATA

Program	Score Range	Category	f	%
Computer and Network Engineering	134 - 200	Tinggi	74	92,5%
	67 - 133	Sedang	6	7,5%
	0 - 66	Rendah	-	-
Total				100%
Program	Score Range	Category	f	%
Welding Engineering	134 - 200	Tinggi	80	100%
	67 - 133	Sedang	-	-
	0 - 66	Rendah	-	-
Total			80	100%

Based on Table 1, it is known that from 80 respondents in Computer and Network Engineering, 74 respondents (92.5%) have career adaptability in the high category, and there are 6 respondents (7.5%) have career adaptability in the medium category, and no subject who have career adaptability in the low category. The results of the category also show, from 80 respondents in Welding Engineering, 80 respondents (100%) have career adaptability in the high category, and no subject has career adaptability in the medium and low categories. These results can be concluded that most of the research subjects have career adaptability which can be categorized as high.

TABLE II. NORMALITY AND HOMOGENEITY TEST RESULTS

Variable	Subject	Kolmogorov-Smirnov	Levene's Test
		Sig.	Sig.
Career Adaptability	Computer and Network Engineering Students	0,150	0,281
	Welding Engineering Students	0,150	

The results of the normality test using Kolmogorov-Smirnov from Computer and Network Engineering have a score of 0.150 and the Welding Technique has a score of 0.150. This can be interpreted that the data is normally distributed because the significant value is more than 0.05. The results of the homogeneity test using Levene's Test obtained a significance value of the career adaptability variable of 0.281, so the two sample groups of students with competence in Computer and Network Engineering and welding techniques had a homogeneous variance because they had a significance value of more than 0.05.

TABLE III. RESULTS OF INDEPENDENT T-TEST

Variable	T	Sig	df
Career Adaptability	-1,63	0,106	158

Based on the results of testing research data through independent t-test in Table 3, the results obtained $t = -5.792$ and a significance of 0.106. Meanwhile, the value of t table with $df (n-2) = 160-2 = 158$ is 1.975. Significance $0.106 > 0.05$, so it can be said that the hypothesis is accepted or there is a difference in career adaptability of students in Computer and

Network Engineering with students in Welding Engineering. The negative t-count value (-1.63) means that the average career adaptability of students in Computer and Network Engineering is lower than the average career adaptability of students in Welding Engineering.

TABLE IV. DESCRIPTIVE TABLE OF CAREER ADAPTABILITY

Subject	N	Mean	St.dev
Computer and Network Engineering	80	160,18	17,45
Welding Engineering	80	164,43	15,53

The results of data analysis showed that the average career adaptability of students in Computer and Network Engineering was 160.18 and the average career adaptability of students in Welding Engineering was 164.43, meaning that the average career adaptability score of students in Engineering welding is higher than the average career adaptability score of students in Computer and Network Engineering with a difference of 4.25 points.

The high level of career adaptability that students have in the competence of Computer and Network Engineering expertise with students in Welding Engineering is because Vocational High Schools have field work practice programs. The work experience possessed by Vocational High School students from the field work practice program (internship) implemented by the school is one of the causes of the high career adaptability in Vocational High Schools in the competence of the skills studied. In line with the explanation by Pond that students who have work experience, opportunities, and access to knowledge can be better prepared to make career decisions, especially as they develop attitudes and interests related to work [24]. Monteiro and Almeida stated that students who have work experience have a higher average career adaptability, especially in the aspect of career curiosity (exploration of identity, social roles, and interests related to the work environment) [25]. When an individual has work experience that matches his interests and abilities, he will get information related to his chosen career. The more experience he gains, the more he will be able to explore the career in greater depth. With the richer information they have, a person will be able to plan his career more maturely. Research conducted by Luzzo, regarding individuals who have work experience related to their career interests, they will feel that decision making in their careers is a continuous process where they have personal control over it [26].

Differences in career adaptability of students in Computer and Network Engineering with students in Welding Engineering. This research provides an understanding that the skill program that students participate in can affect the level of career adaptability. The increasing number of unemployed without being matched by the increasing number of jobs certainly strengthens the competition to get a decent job and in accordance with the academic field during school. It is undeniable that this competition can have an impact on students' career anxiety if they do not get the expected job after graduating from school [27]. Freud said anxiety is a reaction to

a threat [28]. Anxiety can affect a person's adaptability, especially on the confidence dimension. Maree and Hancke said, someone who has career confidence will use his problem-solving skills to make better career decisions. He will also be able to use his limitations to meet his own needs and adapt to the career challenges he faces [29]. Savickas said that someone who lacks career confidence will produce career obstacles that will hinder the realization of one's role and cause failure in achieving goals [8,12].

Jessie Koen, et al. said that by practicing career adaptability, students can increase their chances of finding decent work and achieving success during the school-to-work transition phase [22]. Therefore, the researcher suggests the need for serious attention from the school, family, and students themselves to improve the career adaptability of students.

This study still has some limitations, where in this study no analysis or control was carried out on other factors that could affect differences in career adaptability such as family [30], [31], economic status [32], gender [9], social support [10], and learning environment [31].

IV. CONCLUSION

The career adaptability of students in Computer and Network Engineering expertise competencies with students in Welding Engineering is in the high category, but there is a difference as seen from the average score that students in Welding Engineering are 4.25% higher than students in Computer Engineering and Network. This difference is thought to be due to the anxiety factor of students in Computer and Network Engineering against career threats, where the large number of graduates from these skill competencies is not matched by an increase in job opportunities, so that job opportunities are narrowing and job competition is getting tighter, as well as the challenge to get a good job. Appropriate and in accordance with the expertise program is increasingly difficult. This causes many Vocational High School graduates to be unemployed without being excluded from the competence of Computer and Network Engineering expertise. Researchers suggest the need for serious attention from the school, family, and students themselves to improve the adaptability of students' careers. Based on the limitations of this study, it is necessary to carry out further research related to the career adaptability of students, especially in Vocational High Schools to analyze the factors that influence career adaptability which were not examined in this study.

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