

# Analysis of Student Interests in the Electrical Engineering Education Study Program FPTK UPI in the Vocational Teacher Profession in the 4.0 Education Era

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**Abstract**—Facing challenges in the 4.0 education era, teachers as the front line of education are required to be ready to change and adapt. Teacher competence is the main requirement in achieving the quality of education. The component of student interest in the vocational teacher profession is crucial to achieving the required teacher competencies. The purpose of this study was to determine student interest in the vocational teacher profession in the 4.0 education era, the comparison of interest between gender, and internal and external factors that influence student interest in the vocational teaching profession. The research method applied in this research is quantitative by using a survey conducted online. The population of this research is students of the Electrical Engineering Education Study Program class of 2017, 2018, 2019, and 2020 as many as 323 students. The number of samples taken as many as 120 students. Data collection techniques using questionnaires and documentation. The study results revealed that the level of interest of students of the Electrical Engineering Education Study Program FPTK UPI in the vocational teacher profession in the 4.0 education era was in the medium category, namely 64 students (53.33%). The average interest of male students is higher than that of female students (71.27:67.97), but the average is significantly the same. There is a positive and significant influence of internal factors on student interest in the vocational teaching profession. There is a positive and significant influence of external factors on student interest in the vocational teaching profession. There is a positive and significant influence of internal and external factors simultaneously on student interest in the vocational teacher profession that is equal to 79.3%.

**Keywords**—interest, vocational teacher profession, gender, internal factors, external factors, education 4.0

## I. INTRODUCTION

Education 4.0 is the term used by education experts to integrate Cyber System technology in learning. Education 4.0 was conceptualized to respond to the urgent need of RI 4.0

(Fourth Industrial Revolution) where humans and machines are aligned with each other to find solutions, overcome problems, and of course to find new development prospects. Education 4.0 has the aim of developing humans to be ready to be creative and innovative [1]. Education 4.0 plans to improve performance by improving teacher skills and improving student learning outcomes [2]. Education must adapt to new methods to keep up with the changes taking place in the new digital era.

Changes in the RI 4.0 era have an impact on the learning process which will affect the role of vocational education, especially the role of educators [3]. Vocational education as a vital part of the national education system has a strategic position to produce competent personnel. Based on the pillars of the strategy for implementing the revitalization of vocational education, the most important thing is to improve the quality of educators (teachers/lecturers/instructors) [4]. The competence of educators is the main requirement in achieving the quality of education. As curriculum implementers, efforts to improve the competence of educators are very important [5]. Judging from the definition of a teacher according to the law RI, Number 14 of 2005 concerning Teachers and Lecturers, it is clear that teachers have an essential role in education.

Facing the challenges in the Education 4.0 era, teachers as the frontline in the world of education are required to be ready to change and adapt [6]. Some of the competencies that teachers must prepare to face the 4.0 education era include educational competencies (educational competence with the internet as a basic skill), technology commercialization competencies, globalization competencies, future strategy competencies and counselor competencies [7]. Through these competencies, it is hoped that teachers will become more innovative and professional in the learning process so that they can build generations for the future of the country that can compete and adapt to technological developments and their environment [8]. Of course, the component of student interest

who takes an educational study program towards the teaching profession is crucial in achieving the required educator competencies. If the level of student interest in the teaching profession decreases, it will cause the quality of students as prospective teachers to be low, can also have an impact on the formation of teacher competencies to be less than optimal [6].

Interest is one of the components of human psychology that is needed for a person's progress and achievement. In psychology, interest refers to a psychological state of relatively enduring involvement and predisposition to certain content over time [9]. Interests positively influence attention, goal setting, and learning strategies for people of all ages both in and out of school [9]. Interest in becoming a teacher is a person's more interest in the teaching profession by being more likely to like the teaching profession than other professions [10]. Interest in work will determine how far a person's participation and readiness in a job is. The stronger a person's interest and attention, the more caring and ready a person is to do the job. There is a strong correlation between interest in becoming a teacher and the readiness to teach students of the Padang State University Building Engineering Education Study Program [10]. That is, if students are interested in becoming teachers, they will be better prepared to carry out their duties as teaching staff so that teacher performance and competence can increase.

The Electrical Engineering Education Study Program is one of the educational programs at the Faculty of Technology and Vocational Education, Universitas Pendidikan Indonesia. The competence of the Electrical Engineering Education Study Program is as educators who master competencies in their fields, are communicative, have character, are able to develop their knowledge and have a leadership spirit. Therefore, students who choose the Electrical Engineering Education Study Program will be directed to become a teacher or educator. However, the problem is that not all students who take the educational study program, when they graduate, want to enter a profession with an educational background as well, namely to become a teacher. In fact, many are more interested in non-educational professions. Research conducted by Ariska and Soeryanto resulted that the tendency of the variable of interest in becoming a vocational teacher for students of the Mechanical Engineering Education Study Program, Faculty of Engineering, State University of Surabaya was in the medium category as many as 62 students (50%) [6]. This shows that students' interest in the high category of vocational teacher profession still does not dominate.

There is an influence of gender on interest in becoming a teacher [11]. This indicates that there are differences in interest in becoming a teacher between male and female students. Interest does not just form within a person, but arises from the influence of internal factors and external factors [12]. Factors that can influence interest in the teaching profession can come from within or outside students.

This study focused on analyzing the interest of students of the Electrical Engineering Education Study Program FPTK

UPI in the vocational teacher profession in the 4.0 education era, the comparison of interests between male and female students, as well as the influence of internal and external factors on student interest in the vocational teaching profession.

## II. RESEARCH METHODS

This study uses a quantitative research approach, which is designed to measure the extent to which students are interested in the vocational teaching profession. The research method applied in this study is a survey method carried out online (on a network) through a web-based application, namely Google Form. Data analysis used descriptive statistical analysis and hypothesis testing. The data collection used was a series of instruments in the form of a questionnaire.

The population in this study were all active students of the Electrical Engineering Education Study Program, FPTK UPI class 2017, 2018, 2019, and 2020. Table I shows the total population of the study. Sampling technique using Probability Sampling type Proportionate Stratified Random Sampling. Samples were taken as many as 120 students.

TABLE I. TOTAL RESEARCH POPULATION

No.	Force	Number of Students		
		Man	Woman	Total
1.	2017	49	28	77
2.	2018	55	30	85
3.	2019	59	31	90
4.	2020	49	22	71
<b>Amount</b>		212	111	323

### A. Research Instrument

The dependent variable in this study is interest in the vocational teacher profession (Y) with indicators consisting of elements of cognition (knowledge and information about the vocational teaching profession), emotional elements (feeling good about the vocational teaching profession), and elements of connotation (willingness and desire to vocational teacher profession). The independent variables in this study are the factors that influence student interest in the vocational teacher profession consisting of internal factors ( $X_1$ ) and external factors ( $X_2$ ). Internal factor indicators include emotional, talent, perception, self-efficacy, mastery of knowledge, and motivation. While the indicators of external factors include the family environment, the association of friends, the community environment, and the campus environment. The dummy variable in this study is gender, namely male students and female students.

The measurement of this research variable uses a Likert scale which will be filled in by the respondent in the form of a closed statement. In this study, the rating scale was made using a graded scale. There are five alternative answers given to respondents, namely Strongly Agree (SS), Agree (S), Doubtful (R), Disagree (TS), and Strongly Disagree (STS). The instrument quality test consists of validity and reliability tests.

**B. Data Analysis**

1) *Descriptive statistical analysis:* Descriptive statistical analysis in this study is used to analyze data from questionnaires that have been filled out by respondents and then presented in the form of data descriptions. Calculations in data analysis are assisted by using Microsoft Excel and IBM SPSS statistics 26 software. Descriptions of the data used include:

a) *Variable tendency:* The trend of the variables is done by categorizing the scores on each variable. From these scores then grouped into three categories, namely low, medium, and high. Categorization of scores using hypothetical statistics. This categorization is based on the ideal mean (Mi) and the ideal standard deviation (SDi) obtained. To measure the ideal mean (Mi) and the ideal standard deviation (SDi) can use Equations 1 and 2.

$$Mi = \frac{1}{2} (\text{maximum score} + \text{minimum score}) \quad (1)$$

$$SDi = \frac{1}{6} (\text{maximum score} - \text{minimum score}) \quad (2)$$

Because in the assessment using a Likert scale score of 1-5, the maximum score is equal to the number of statement items multiplied by 1 and the minimum score is equal to the number of statement items multiplied by 5. In determining the score category, the following rules are used:

- High category if all respondents have a score greater than or equal to the ideal average plus 1 ideal standard deviation ( $X \geq (Mi + 1SDi)$ )
- Medium category if all respondents have a score greater than or equal to the ideal average minus 1 ideal standard deviation and a score less than the average plus 1 ideal standard deviation ( $(Mi - 1SDi) \leq X < (Mi + 1SDi)$ )
- Low category if all respondents have a score less than the ideal mean score minus 1 ideal standard deviation ( $X < (Mi - 1SDi)$ )

b) *Respondent Achievement Level (RAL):* The level of achievement of respondents' answers is described in the form of percentages. To measure RAR using Equation 3.

$$RAL = \frac{\text{average score}}{\text{maximum score}} \times 100\% \quad (3)$$

Table II shows the interpretation of the Respondent Achievement Level criteria.

TABLE II. RESPONDENT ACHIEVEMENT LEVEL CRITERIA

No.	RAR (%)	Criteria
1	90-100	Very good
2	80-89	Well
3	70-79	Pretty good
4	55-69	Not good
5	1-54	Not good

2) *Analysis prerequisite test:* Before processing the data, it is necessary to test certain prerequisites for the analysis of the data that has been collected. The analysis prerequisite test is used as a condition to carry out further tests according to the research objectives. In this requirement test using IBM SPSS Statistics 26 software. The analysis prerequisite test includes normality test, homogeneity test, linearity test and multicollinearity test.

3) *Hypothesis testing*

a) *Independent sample t-test:* Independent sample t-test is used to test whether there is a difference in 1 (one) dependent variable which is interval or ratio caused by 1 (one) nominal or ordinal independent variable originating from 2 (two) different groups. If the p value < 0.05, it can be said that there is a significant average difference between 2 (two) different groups and vice versa if the p value is > 0.05 then it can be said that there is no significant difference between the 2 (two) groups that different. This Independent Sample t-Test test uses the help of IBM SPSS Statistics 26 software. To find out the significance value (p) can be seen on the Sig value. (2-tailed).

b) *t test:* The t test is used to partially test the effect of the independent variables on the dependent variable. The independent variable is said to have a partial effect on the dependent variable if the tcount > ttable and the p value < 0.05. Vice versa if the value of tcount < ttable and p value > 0.05, then there is no partial effect of the independent variable on the dependent variable.

c) *F test:* The F test is used to simultaneously test the effect of the independent variable (X) on the dependent variable (Y). This test is done by comparing the values of Fcount and Ftable. If the value of Fcount > Ftable, it can be interpreted that there is a simultaneous influence between the independent variable (X) on the dependent variable (Y). If the value of Fcount < Ftable, it can be interpreted that there is no simultaneous effect between the independent variable (X) on the dependent variable (Y).

d) *Coefficient of determination test:* The coefficient of determination (R<sup>2</sup>) test is used to measure how far the model's ability to explain the variation of the dependent variable (Y). A low R<sup>2</sup> value (close to 0) means that the ability of the independent variables (X) in explaining the variation of the dependent variable is very limited. A high value of R<sup>2</sup> (close to 1) means that the independent variables (X) provide almost all the information needed to predict the variation of the dependent variable (Y). To determine the value of R<sup>2</sup>, by looking at the SPSS output results in the Adjusted R Square column.

To find out which factors are the most influential of the independent variables on the dependent variable, the partial determination coefficient test (r<sup>2</sup>) is used. To determine the value of r<sup>2</sup>, by looking at the results of the SPSS output in the Partial column and then squared.

**III. RESULTS AND DISCUSSION**

**A. Instrument Test Results**

Prior to data collection, validity and reliability tests were conducted. In this study, the instrument was tested on 32 respondents. Respondents of the instrument trial were taken from outside the research sample in the same population, namely active students of the Electrical Engineering Education Study Program, FPTK UPI. The results of the instrument validity test can be summarized as shown in Table III.

Based on Table III, it shows that there are five invalid statement items so that they are declared void (elimination) and are not used in data collection. So for data collection, 50 statement items were declared valid, consisting of 20 statement items for the variable Y, 15 for the statement item for the variable X<sub>1</sub> and 15 for the statement item for the variable X<sub>2</sub>.

TABLE III. SUMMARY OF VALIDITY TEST RESULTS

No	Variable	No. Statement Items Invalid	Number of Invalid Items
1	Interest in the vocational teacher profession (Y)	6, 8, 22, 24, 25	5
2	Internal factor (X <sub>1</sub> )	-	-
3	External factor (X <sub>2</sub> )	-	-

TABLE IV. SUMMARY OF RELIABILITY TEST RESULTS

No	Variable	Score Cronbach's Alpha	Information
1	Interest in Vocational Teacher Profession (Y)	0.927	Reliable
2	Internal Factor (X <sub>1</sub> )	0.926	Reliable
3	External Factors (X <sub>2</sub> )	0.866	Reliable

After the validity test was carried out, the reliability test was carried out. Reliability tests were carried out on statements that were declared valid. Table IV shows a summary of the results of the reliability test. Based on Table IV shows that Cronbach's Alpha value > 0.60, it can be stated that the instrument is reliable for all variables.

**B. Analysis Prerequisite Test Results**

1) *Normality test results:* Normality test is used to determine the distribution of research data distribution. Normality test was performed as a prerequisite for performing parametric statistical tests. Based on the results of the normality test that has been carried out, the p value = 0.059. Because 0.059 > 0.05, it can be concluded that the residual value is normally distributed.

2) *Homogeneity test results:* Homogeneity test is carried out to ensure that the data group does come from a population that has the same variance (homogeneous). The homogeneity test in this study was carried out by the Levene test. Based on the results of the homogeneity test that has been carried out,

the p value = 0.284. Because 0.284 > 0.05, it can be concluded that the distribution data is homogeneous.

3) *Linearity test results:* The linearity test was conducted to determine whether the relationship between the dependent variable (interest in the vocational teacher profession) and each independent variable (internal factors, external factors) had a significant linear relationship or not. Based on the results of the linearity test that was carried out in this study, the relationship between the interest variable in the vocational teacher profession (Y) and the internal factor variable (X<sub>1</sub>) obtained a deviation from linearity significance value of 0.939 (0.939 > 0.05). This means that the internal factor variable (X<sub>1</sub>) has a significant linear relationship with the interest variable in the vocational teacher profession (Y). Then the relationship between the variables of interest in the vocational teacher profession (Y) with external factors (X<sub>2</sub>) obtained a significance value of deviation from linearity of 0.521 (0.521 > 0.05). It means that the external factor variable (X<sub>2</sub>) has a significant linear relationship with the interest variable in the vocational teacher profession (Y).

4) *Multicollinearity test results:* The multicollinearity test was conducted to determine whether the internal factor variables (X<sub>1</sub>) and external factor variables (X<sub>2</sub>) were similar or not. In this study, a multicollinearity test has been carried out with the results that the VIF value is 2.313 (2.313 ≤ 10) and the Tolerance value is 0.432 (0.432 ≥ 0.10), so it can be concluded that there is no multicollinearity between each independent variable.

**C. Results and Data Analysis**

1) *The level of student interest in the vocational teacher profession in the education 4.0 era:* The description of the level of interest of students in the Electrical Engineering Education Study Program, FPTK UPI, on external factor variables is based on a hypothetical score. From the results of the calculation of the hypothetical score, grouping is carried out into three categories, namely high, medium, and low categories. Table V shows the magnitude of the frequency for each category based on the scores obtained by the respondents. The level of student interest in the vocational teacher profession in the 4.0 education era, based on Table V, the results showed that from 120 students showed a tendency for the variable interest in the vocational teacher profession to be in the medium category, namely 64 students (53.33%). Furthermore, for Respondents' Level of Achievement based on the average percentage of respondents' overall answers calculated using equation 3, the level of interest reached 69.62%.

TABLE V. CATEGORY TENDENCY VARIABLE INTEREST IN THE PROFESSION OF VOCATIONAL TEACHER

Category	Limitation	Frequency	Frequency (%)
Tall	$X \geq 73.33$	48	40%
Currently	$46.67 < X < 73.33$	64	53.33%
Low	$X < 46.67$	8	6.67%
Total		120	100%

The tendency of students' interest in the Electrical Engineering Education Study Program FPTK UPI in the vocational teacher profession is in the medium category. This shows that the level of student interest in the vocational teaching profession is not in accordance with the expected conditions, namely the tendency of a high category as the competence of the Electrical Engineering Education Study Program, FPTK UPI, that as graduates of undergraduate education are directed to become teachers/educators. This could be because students from the beginning were in the wrong major or were forced to enter the education department. Based on the results of data analysis on statement item number 16, namely regarding students studying in the education department because they were not accepted in the non-education department, most of the students stated strongly agree and agree that as much as 57%.

The choice of major (study program) is related to career choice decisions. Career decisions often focus on choosing a field of study or training, choosing a job, moving from one job to another, and when and how to retire [13]. Because students from the beginning did not really want to enter the education department, of course also because they did not want to have a career as a teacher. In addition, it could also be because students prefer professions other than vocational teachers because they have more job opportunities. According to students' opinions on statement item number 18, as many as 58% of students stated strongly agree and agree about the statement that they prefer professions other than vocational teachers to the profession of vocational teachers.

Students who are interested in the vocational teaching profession will always pay more attention to the vocational teacher profession by seeking and following developments in information related to the vocational teacher profession from online media or asking experienced people. Student interest in the vocational teacher profession can come from before undergoing lectures or after undergoing lectures. Interest before undergoing lectures, namely, students aspire to be a vocational teacher since high school and when they graduate choose to study in the education department as an effort to realize their dreams. Then interest after undergoing lectures can come because students study science every day according to their majors so that there is an interest in the vocational teacher profession. The educational background of students and the learning situation on campus affect student interest. A learning environment that provides opportunities to interact and provide challenges, which leads to knowledge building can further deepen individual interests [14].

Student interest in the vocational teacher profession in the 4.0 education era can start with an understanding of the professional competencies that the vocational teacher profession must possess. Based on data analysis, most students know and understand the professional competencies of vocational teachers that are needed and must be possessed by vocational teachers in the 4.0 education era. Vocational teachers need a comprehensive understanding and competence of the elements of the industrial revolution 4.0 [15]. Most students also have the ability to utilize ICT (Information and Communication Technology) and can apply it in learning. One of the competencies that teachers must prepare in the 4.0 education era is educational competence, namely internet-based learning competencies as basic skills [7]. In addition, most students also agree that they are easy to adapt to technology and are interested in the teaching profession because they always have to improve their knowledge. RI 4.0 era educators must be able to respond to change [16]. Seeing that during the COVID-19 pandemic, which applies online learning, educators inevitably have to interact with technology. With students' understanding of technology in this 4.0 education era, it can be a good start to prepare themselves as prospective vocational teachers who are competent and responsive to change.

2) *Comparison of interests between male and female students in the vocational teacher profession:* Respondents who participated in this study based on gender consisted of 60 male students and 60 female students. To find out the comparison of interest between male and female students, that is by looking at the average score obtained by students. The average interest of male students was 71.27 while the average of female students was 67.97 with an average difference between male and female students of 3.300. Then, to find out whether there is a significant difference between the average interest in the vocational teacher profession for male and female students, an independent sample t-test was conducted. Based on the results of the independent sample t-test, a significance value of 0.164 was obtained ( $p > 0.05$ ). Thus,  $H_{01}$  is accepted and  $H_{a1}$  is rejected. It means that there is no significant difference between the average interest of the vocational teacher profession for male students and female students.

The results of this study can be said that the interest of male students in the vocational teacher profession is higher than female students, but there is no significant difference in average. This means that gender has no effect on student interest in the vocational teacher profession. In society, there is a perception that women and men are different so that there are certain fields that are only suitable for women and other fields for men. For example, women are more suitable in the field of literature or social, and men in engineering or exact sciences.

In the results of this study, the vocational teacher profession, especially in the technical field, can be entered by anyone regardless of gender. The profession of vocational teachers is not identical with men or women. Men and women

have equal opportunities to become vocational teachers. Although the average interest in the teaching profession for male students is higher than female students, the average is significantly the same.

3) *The influence of internal factors in determining student interest in the vocational teacher profession:* The description of the level of interest of students in the Electrical Engineering Education Study Program, FPTK UPI, on external factor variables is based on a hypothetical score. From the results of the calculation of the hypothetical score, grouping is carried out into three categories, namely high, medium, and low categories. Table VI shows the magnitude of the frequency for each category based on the scores obtained by the respondents. Based on Table VI, it was found that from 120 students, the frequency of internal factor variables tended to be in the high category, as many as 65 students (54%).

TABLE VI. TREND CATEGORY INTERNAL FACTOR VARIABLES

Category	Limitation	Frequency	Frequency (%)
Tall	X ≥ 55	65	54%
Currently	35 X < 55	53	44%
Low	X < 35	2	2%
Total		120	100%

TABLE VII. AVERAGE RAL INTERNAL FACTOR INDICATOR

Indicator	RAL	Criteria
Emotional	78.46%	Pretty good
Talent	67.18%	Not good
Perception	81.97%	Good
Self efficacy	77.26%	Pretty good
Mastery of science	74.87%	Pretty good
Motivation	68.89%	Not good

Furthermore, for Respondent Achievement Level (RAL) based on the average percentage of respondents' overall answers on internal factor variables, the level of interest reached 74.73%. The average RAL of each indicator is shown in Table VII. Based on Table VII, it is known that the perception indicator has the highest RAL with a value of 81.97%.

To determine the effect of internal factors ( $X_1$ ) on the interest of the vocational teacher profession ( $Y$ ), the t-test was used. After the t-test was carried out, it was found that the tcount value was 11.856, which means the tcount value is greater than the ttable value ( $11.856 > 1.97993$ ) and the significance value is 0.000 ( $p < 0.05$ ). Then the value of the beta coefficient is known to be positive, namely 0.759. Thus,  $H_{02}$  is rejected and  $H_{a2}$  is accepted. This shows that partially the internal factor variable has a positive and significant effect on the variable of interest in the vocational teacher profession, which means that the higher the influence of internal factors on students, the higher the interest of students in the Electrical Engineering Education Study Program, FPTK UPI, in the vocational teacher profession, and vice versa.

Based on the results of data analysis, it can be explained that interest in the vocational teacher profession is influenced by one of them, namely internal factors that exist in students. Interest in the vocational teacher profession is shown through emotions, talents, perceptions, self-efficacy, mastery of knowledge, and student motivation for this professional field. RAL on emotional indicators is 78.46% with good criteria. By having a growing interest in becoming a vocational teacher, prospective vocational teacher students will show emotions such as feeling happy and enthusiastic about learning education in their majors and will continue to develop their skills and abilities to achieve the competencies that should be possessed by a vocational teacher. So that students become more prepared to become vocational teachers and pursue the profession of vocational teachers. RAL on the indicator of mastery of science is 74.87% with good enough criteria and RAL on self-efficacy indicator is 77.26% with good enough criteria. When students have an interest in the vocational teacher profession that is supported by the mastery of the knowledge that they have possessed and developed, self-efficacy will grow in students so that students' teaching readiness will be higher. The stronger a person's self-efficacy, the more effort they put in, and the more persistent and resistant they are to fulfill their duties 26% with pretty good criteria. When students have an interest in the vocational teacher profession that is supported by the mastery of the knowledge that they have possessed and developed, self-efficacy will grow in students so that students' teaching readiness will be higher. The stronger a person's self-efficacy, the more effort they put in, and the more persistent and resistant they are to fulfill their duties 26% with pretty good criteria. When students have an interest in the vocational teacher profession that is supported by the mastery of the knowledge that they have possessed and developed, self-efficacy will grow in students so that students' teaching readiness will be higher. The stronger a person's self-efficacy, the more effort they put in, and the more persistent and resistant they are to fulfill their duties [17].

Teaching talent also has a role in encouraging interest in the vocational teaching profession. A person who realizes his teaching talent will certainly not waste this opportunity and develop his talent by choosing a relevant career, namely becoming a teacher. However, based on the RAL, the talent indicator is only 67.18% with poor criteria. This means that the talent indicator does not affect student interest in the vocational teacher profession. The RAL on the perception indicator is 81.97% which is the highest RAL on the internal factor indicator. The positive perception of students towards the vocational teacher profession will generate interest in the profession. The perception of a good vocational teacher profession such as being a teacher is a noble job, has high social values, and has a respectable position. Will show the ability of a teacher in the community so that it has more value in the community. Teaching is considered a highly respected position and teachers hold the same responsibilities as parents during school hours [18]. RAL on motivation indicator is 68.89% with poor criteria. Motivation is one of the things behind a person to take an action to achieve certain goals. The

will to work as a vocational teacher will appear in a person because of the urge to achieve success in the profession. Like wanting to realize the dream of becoming a vocational teacher and wanting to make parents happy by becoming a vocational teacher. Having a high desire also have a high impact on interest in the profession as a vocational teacher. However, based on RAL, student motivation does not affect student interest in the vocational teaching profession.

4) *The influence of external factors in determining student interest in the vocational teacher profession:* The description of the level of interest of students in the Electrical Engineering Education Study Program, FPTK UPI, on external factor variables is based on a hypothetical score. From the results of the calculation of the hypothetical score, grouping is carried out into three categories, namely high, medium, and low categories. Table 8 shows the magnitude of the frequency for each category based on the scores obtained by the respondents.

TABLE VIII. TREND CATEGORY EXTERNAL FACTOR VARIABLE

Category	Limitation	Frequency	Frequency (%)
Tall	X $\geq$ 55	35	6.67%
Currently	35 X < 55	77	64.17%
Low	X < 35	8	29.16%
Total		120	100%

Based on Table VIII, the results show that from 120 respondents the frequency of external factor variables tends to be in the medium category, namely as many as 77 students (64.17%). Furthermore, for RAL based on the average percentage of respondents' answers on external factor variables, the level of interest reached 66.03%. The average RAL of each indicator is shown in Table IX. Based on Table IX, it is known that community environmental indicators have the highest RAL with a value of 71.87%.

TABLE IX. AVERAGE RAL EXTERNAL FACTOR INDICATOR

Indicator	TCR	Criteria
Family environment	66.04%	Not good
Friends association	57.72%	Not good
Community environment	71.87%	Pretty good
Campus environment	70.77%	Pretty good

To determine the effect of external factors ( $X_2$ ) on the interest of the vocational teacher profession ( $Y$ ), the t-test was used. After the t-test was carried out, it was found that the tcount value was 2.589, which means the tcount value is greater than the ttable value ( $2.589 > 1.97993$ ) and the significance value is 0.011 ( $p < 0.05$ ). Then the value of the beta coefficient is known to be positive, namely 0.166. Thus,  $H_{03}$  is rejected and  $H_{a3}$  is accepted. This shows that partially external factor variables have a positive and significant effect on the interest variable in the vocational teacher profession, which means that the higher the influence of external factors on students, the higher the interest of students in the Electrical

Engineering Education Study Program, FPTK UPI, in the vocational teacher profession, and vice versa.

Based on the results of data analysis, it can be explained that interest in the vocational teacher profession is influenced by one of them, namely external factors that come from outside students. External factors can come from the student's immediate environment such as the family environment, the association of friends, the community environment and the campus environment where students study. RAL on family environment indicator is 66.04% with poor criteria and RAL on friend association indicator is 57.72% with poor criteria. In the family environment, students get attention, affection, encouragement, guidance, role models, and fulfilling the economic needs of their parents, so that students can develop all their potential for future development. Indirectly, parents can influence their children in choosing a career [9]. The association of friends such as the support of friends to become vocational teachers and often talking about matters related to the vocational teacher profession will increase student interest in the vocational teaching profession. However, in this study, indicators of the family environment and friends' associations had less effect on the interest of most students in the vocational teaching profession. RAL on community environmental indicators is 71.87% with good enough criteria which is the highest RAL on external factor indicators. Working with children/adolescents can generate one's interest in the vocational teaching profession. By liking work with children/adolescents, of course, students will tend to choose jobs that are always related to children/adolescents, one of which is becoming a vocational teacher. In addition, government policies in improving teacher welfare have a considerable influence in increasing student interest in the vocational teaching profession. RAL on campus environment indicators is 70.77% with quite good criteria. The environment where students study, namely on campus, also has a psychological influence on students' career choice decisions. Getting used to studying related to the vocational education profession and lecturers who always provide inspiration will foster student interest in the vocational teaching profession itself. It also has a psychological impact on students' career choice decisions. Getting used to studying related to the vocational education profession and lecturers who always provide inspiration will foster student interest in the vocational teaching profession itself. It also has a psychological impact on students' career choice decisions. Getting used to studying related to the vocational education profession and lecturers who always provide inspiration will foster student interest in the vocational teaching profession itself.

5) *The effect of simultaneous internal and external factors in determining student interest in the vocational teacher profession:* To determine the effect of internal factors ( $X_1$ ) and the influence of external factors ( $X_2$ ) on interest in the occupational teaching profession ( $Y$ ), the F test was simultaneously used, namely by comparing the tcount value with the ttable value at a significance level of 5%, which was 3.07. After doing the F test, it was found that the value of



tcount was 233.777. This means that the value of tcount is greater than the value of ttable ( $233,777 > 3.07$ ). Thus,  $H_{04}$  is rejected and  $H_{a4}$  is accepted. This shows that simultaneously internal factors and external factors have a positive and significant effect on student interest in the Electrical Engineering Education Study Program, FPTK UPI, in the vocational teacher profession.

To determine the magnitude of the influence of internal factors and external factors as a whole on interest in the vocational teacher profession, the coefficient of determination  $R^2$  test was used. After testing the coefficient of determination  $R^2$ , the adjusted R square value is  $0.793 = 79.3\%$ . This means that internal factors and external factors simultaneously affect interest in the vocational teacher profession by 79.3% and the remaining 20.7% comes from indicators or other factors that are not included in this study. To find out which factors have the most influence between internal and external factors on interest in the vocational teacher profession, the coefficient of determination  $r^2$  test is used. The magnitude of the coefficient of partial determination of internal factors ( $X_1$ ) is 54.61% which is obtained from the partial correlation coefficient squared (0.7392). The coefficient of partial determination of the external factor variable ( $X_2$ ) is 5.43% which is obtained from the partial correlation coefficient squared (0.2332). This means that internal factors are more dominant than external factors in influencing student interest in the Electrical Engineering Education Study Program FPTK UPI in the vocational teacher profession.

This research is in line with the theory proposed by Dalyono in Ilmawati that interest does not just form in a person, but arises from the influence of internal factors and external factors. Internal factors are factors that are able to grow one's interest because of the awareness of oneself without any coercion from others. While external factors are factors that are able to grow one's interest due to the role of other people and the environment around them [12]. In the results of this study, the influence of internal factors is more dominant than external factors, supported by the average results of respondents' answers on internal factor variables which is 8.7% higher than the results of respondents' answers on external factor variables.

#### IV. CONCLUSION

- The level of interest of students of the Electrical Engineering Education Study Program FPTK UPI in the vocational teacher profession in the 4.0 education era was in the medium category, namely as many as 64 students (53.33%).
- The average interest of male students is higher than that of female students (71.27:67.97), but the average is significantly the same.

- There is a positive and significant influence of internal factors on student interest in the vocational teaching profession.
- There is a positive and significant influence of external factors on student interest in the vocational teaching profession.

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