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Linguistic verbal intelligence in welding practice lectures

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Abstract. This study aims to determine student linguistic intelligence, the level of student linguistic intelligence, and measure the relationship between linguistic intelligence and learning outcomes of welding practice lectures in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University. The method used is a survey. The research was carried out in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University. The research was conducted from April to July 2020. The research subjects were students of the 2018 batch of Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University. The research variables are students' linguistic intelligence (independent) and the learning outcomes of welding practice lectures (dependent). The results showed that the students' verbal-linguistic intelligence was at an average value of 72.01%. 7.79% or as many as 6 students made verbal-linguistic intelligence the highest score compared to other intelligence. The significance value (Sig.) Is 0.450 and greater than 0.05, so it can be concluded that H_a is rejected, and H_0 is accepted, that is, there is no significant influence between the verbal-linguistic intelligence of students (X) on student learning outcomes of welding practice (Y). The value of R Square is 0.009, which means that the effect of verbal-linguistic intelligence on students (X) on the learning outcomes of students in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University (Y) is only 0.9% while 99.1% is influenced by other variables.

1. Introduction

Indonesia is in the scope of the implementation of the 4.0 industrial revolution era, where technology is a basic force in all aspects that have a close relationship with society, one of which is the aspect of education. Education in the current era of the industrial revolution 4.0 develops in line with technological developments so that the human resources implementing educational activities must also develop. One of the ways is through strengthening human resources which can be developed with various methods, such as training, workshops, and education.

Education is a conscious and planned effort in the realization of an atmosphere of learning and an active learning process so that the development of spiritual self-potential is religious, self-control, personality, intelligence, morals, and competencies that are needed by himself, society, nation and state. Education also stimulates an increase in a person's hard and soft skills. Hard skills are manifested in the form of student competencies in the process of skills according to expertise, while soft skills are manifested in the form of skills and proficiency in self-management to be more developed and competent [5]. Learning soft skills will shape someone to have good quality competence and according to the needs for competition. The formation of good self-competence is not easy, it requires a learning process that supports both adaptively, normatively and productively [5]. The implementation of the realization of education by supporting the concept according to the educational goals above is through the learning process through the role of parents as the main educators in informal education, the role of educators as educators in formal education, and the community as educators in non-formal education.



The learning process carried out by individuals aims at the concept of self-change and competency development which is the result of the implementation of the learning process that has been passed. This goal can be obtained by a good learning process. This learning process is expected to be able to explore all the potentials possessed by students, but not many universities can explore this potential optimally, instead, they do not know the other side of the potential possessed by their students.

In this regard, one of the problems that often arise and are related to student potential is problems in the category of verbal linguistic intelligence or language skills. Linguistic verbal intelligence is an important element of multiple intelligence because linguistic intelligence is a person's ability to use or process ideas that will be conveyed to others through words or language, either verbally or in writing. This is reinforced by the statement that this intelligence includes the ability to manipulate grammar or language structure, phonology or language sounds, semantics or language meanings, the practical dimension or the practical use of language [6]. People who are intelligent in this field can argue, convince people, entertain or teach effectively through spoken words. Linguistic intelligence is the ability to compose thoughts clearly and is able to use this ability competently through words to express thoughts in speaking, reading, and writing, usually, this intelligence is possessed by orators, negotiators, lawyers, or state leaders in world [2].

In supporting welding practice lectures, lecturers must understand the concept of linguistic intelligence possessed by students, because this intelligence is believed to be one of the important elements determining student learning success in welding practice lectures. However, the linguistic intelligence possessed by each student is not the same, but there is a high medium, and low grades. Students with high linguistic intelligence are expected to find it easier to follow lectures. This is because these students can process words effectively, both oral and written so that every flow and process described by the lecturer or lecture module can be followed properly.

Based on this, linguistic intelligence has an important role in determining the results of the learning that students have gone through. This needs to be developed so that the objectives of the teaching and learning process can be realized, assisted by the existence of information about the profile of linguistic intelligence and preliminary studies to determine the level of the linguistic intelligence profile of students.

2. Method

This study used a survey method with a quantitative approach to measure the level of the relationship between students' kinesthetic intelligence and learning outcomes in welding practice lectures. Surveys are used to collect data at certain points / sections that aim to describe the situation or identify standards between subjects being compared. Surveys can also be used to determine the relationship between variables [4]. This research was conducted in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University in the range of April to July 2020. The population used was students of the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University with the research sample being students of the 2018 Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University.

The independent variable is the variable that affects, and the dependent variable is the variable that is influenced by and in the study [4]. The variable used is the student's verbal-linguistic intelligence as an independent variable and is the learning outcome variable in welding practice lectures as the dependent variable. Data collection methods used in this study were questionnaires and documentation. Validity is a measure that shows the levels of validity or validity of an instrument [1]. The validity of this study uses logical validity and empirical validity. Logical validity that has been done for the research instrument is by expert judgment from 2 psychology lecturers. Empirical validity is done by testing the instrument directly on the respondent. The results of the t-test were analyzed using product-moment correlation using the SPSS 19 for windows computer program, with the results summarized in table 1. There are 9 valid items and 1 item invalid.

Table 1. Validity test results

Point	t count	t table	Description	Point	t count	t table	Description
Point 1	0,288	0,266	VALID	Point 6	0,358	0,266	VALID
Point 2	0,450	0,266	VALID	Point 7	0,537	0,266	VALID
Point 3	0,367	0,266	VALID	Point 8	0,535	0,266	VALID
Point 4	0,449	0,266	VALID	Point 9	0,432	0,266	VALID
Point 5	0,216	0,266	INVALID	Point 10	0,514	0,266	VALID

Reliability shows that an instrument can be trusted to be used as a data collection tool [1]. The reliability is calculated using the help of the SPSS 19 for windows computer program, the criteria used in this test are if ($\alpha = 5\%$). The results are summarized in table 2 and 3.

Table 2. Case processing summary results

		N	%
Cases	Valid	64	100.0
	Excluded ^a	0	.0
	Total	64	100.0

a. Listwise deletion based on all variables in the procedure.

Table 3. Results of the reliability statistics

Cronbach's Alpha	N of Items
.780	10

The questionnaire's reliability coefficient was 0.780 with a high level of reliability. This value $r_{\text{count}} > r_{\text{table}}$ ($0.780 > 0.244$), thus it can be concluded that the verbal-linguistic intelligence research questionnaire of students of the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University is reliable and can be trusted for research.

The research analysis used simple linear regression because the variables involved in this study were students' verbal-linguistic intelligence as an independent variable (X) and learning outcomes in welding practice lectures as the dependent variable (Y). In the process of simple linear regression analysis, researchers used the help of the SPSS 19 for windows program. Testing for normality is assisted by the SPSS 19 for windows computer program which results are summarized in table 4.

Table 4. One-sample Kolmogorov-Smirnov test

	Unstandardized Residual
N	64
Normal Parameters ^b	Mean
	Std. Deviation
Most Extreme Differences	Absolute
	Positive
	Negative
Kolmogorov-Smirnov Z	1.001
Asymp. Sig. (2-tailed)	.269

a. Test distribution is Normal.

b. Calculated from data.

Based on the SPSS output table above, the Asymp value is obtained. Sig. (2-tailed) is 0.269. This value is greater than 0.05 ($0.269 > 0.05$) so that by the basis for decision making in the Kolmogorov-Smirnov normality test, it can be concluded that the data is normally distributed, thus that the assumptions or requirements for normality in the regression model have been met. This linearity test uses the help of the SPSS 19 for windows computer program. The results are summarized in table 5. Deviation from Linearity Sig. is 0.700 and the value is $0.700 > 0.05$, so there is a significant linear relationship between the independent variable and the dependent variable.

Table 5. ANOVA results

			Sum of Squares	df	Mean Square	F	Sig.
SMAW Welding Practices* Verbal-linguistic	Between Groups	(Combined)	570.588	16	35.662	.918	.555
		Linearity	120.740	1	120.740	3.108	.084
		Deviation from Linearity	449.848	15	29.990	.772	.700
Within Groups			1826.021	47	38.852		
Total			2396.609	63			

3. Result and Discussion

The results of filling in the verbal-linguistic intelligence questionnaire by the students were then carried out the recap, analysis, and calculations with the assistance using SPSS 19 for windows with the average percentage result of 72.01%. The results are summarized in table 6. The results of the SPSS output are then made in the form of a diagram as depicted in figure 1. It is showed that 1 student has low verbal-linguistic intelligence (1.6%), 33 students (51.6%) in medium category and 30 students (46.9%) in high category.

Table 6. Verbal-linguistic categories

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	1	1.6	1.6	1.6
	Medium	33	51.6	51.6	53.1
	High	30	46.9	46.9	100.0
	Total	64	100.0	100.0	

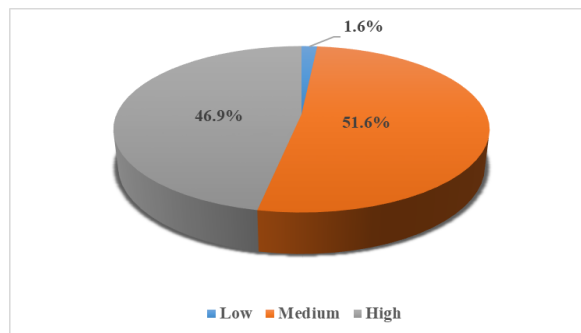


Figure 1. Verbal-linguistic category percentage diagram

Regression Coefficient Test

Testing the regression coefficient hypothesis uses the help of the SPSS 19 for windows computer program. The results are summarized in table 7 and 8. The simple linear regression equation is $Y = 56.603 - 0.255X$. This means that if there is no verbal-linguistic intelligence (X), then the consistent value of the learning outcomes of welding practice lectures (Y) is 56.603, while at every 1% addition the level of verbal-linguistic intelligence (X) will have an impact on increasing equal to 0.255 in the learning outcomes of welding practice lectures (Y).

Table 7. ANOVA^b results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.306	1	58.306	.579	.450 ^a
	Residual	6241.308	62	100.666		
	Total	6299.614	63			

a. Predictors: (Constant), Verbal-linguistic

b. Dependent Variable: SMAW Welding Practices

Table 8. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	56.603	8.766		6.457	.000
	Verbal Linguistik	-.255	.335	-.096	-.761	.450

a. Dependent Variable: SMAW Welding Practices

The significance value (Sig.) is 0.450 and greater than 0.05, so it can be concluded that H_a is rejected and H_0 is accepted in the absence of the influence of the verbal-linguistic intelligence regression that the students of Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University have on the learning outcomes of welding practice student of Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University.

Table 9. Model summary results

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.096 ^a	.009	-.007	10.03326

a. Predictors: (Constant), Verbal-linguistic

The model summary results are summarized in table 9. The value of R Square is 0.009, which means that the effect of verbal-linguistic intelligence on students (X) on the learning outcomes of students in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University (Y) is only 0.9% while 99.1% is influenced by other variables.

Verbal-linguistic intelligence is one part of multiple intelligences or multiple intelligences possessed by each student. This is by the concept of intelligence from expert Dr. Howard Gardner in 1983 who explained that a person's intelligence can be improved and developed throughout the person's life process.

Verbal-linguistic intelligence is a person's ability to use language in spoken or written form effectively and efficiently. The use of words in a sentence is one of the main ways to think and solve various problems at hand. Students with this intelligence tend to have excellent verbal receptive (input) and productive (output) skills [7]. Students with high verbal linguistic intelligence will be able to tell stories in front of their friends, ask questions, have opinions, have better writing skills than other students, and have better information than general. The components of verbal-linguistic intelligence that can develop include listening, speaking, reading and writing aspects.

A person with verbal-linguistic intelligence can be seen from various characteristics such as; 1) Able to communicate with correct language techniques; 2) Likes to make up imaginary stories; 3) To speak effectively with a variety of goals, thoughts, desires and opinions of a person; 4) Likes to write down experiences; 5) Likes to hear oral statements in the form of stories, radio reviews, voice books to respond to them; 6) Have a strong memory of other objects such as names, new terms, and other small things; 7) Read a lot, have an opinion, provide input and criticism to others; 8) Able to speak foreign languages; and i) Enjoys completing crossword puzzles [3].

Based on the results of the research above, the verbal-linguistic intelligence possessed by students has a good average percentage of 72.01%, which means that students have good abilities in terms of

listening, speaking, reading, and writing. This verbal-linguistic intelligence is divided into 3 categories, namely low, medium and high, the result is the low category is owned by 1 student (1.6%), the medium category is 33 students (51.6%) and the high category is 30 students (46.9 %). This explains that most of the students are already in a good position, because only 1 student is in the low category of intelligence, so it requires special tricks in handling these students in the lecture process to match the expected goals.

However, verbal-linguistic intelligence does not affect the results of learning outcomes for the welding practice of students of the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University, because the calculation is that the significance value (Sig.) Is 0.450 and is greater than 0.05, so it can be concluded that H_a is rejected and H_0 is accepted. The value of R Square obtained was only 0.009, which means that the effect of verbal-linguistic intelligence on students (X) on the learning outcomes of students in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University (Y) was only 0.9% while 99.1% influenced by other variables.

Based on the data above, it indicates that verbal-linguistic intelligence has very little effect on student learning outcomes of welding practice, and it is almost non-existent. The ability of students in the language is not in line with the technical skills needed in the practical lecture process. This is because, in the implementation of welding practice lectures, it is not the use of language that is required to support the implementation of welding practices, but what is maximally demanded from students is how the skills or abilities that support the implementation of the student's practice such as the ability to move limbs, body resistance, concentration, and other abilities.

4. Conclusion

Based on the results of the research and description above, it can be concluded that

- a. The verbal-linguistic intelligence possessed by students of the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University has a good percentage average of 72.01%. which means that students have good abilities in terms of listening, speaking, reading, and writing.
- b. The verbal-linguistic intelligence of Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University students are divided into 3 categories, namely the low category is owned by 1 student (1.6%), the medium category is 33 students (51.6%) and the high category is 30 students (46.9%). This explains that most of the students are already in a good position because only 1 student is in the low category of this intelligence.
- c. The significance value (Sig.) Is 0.450 and greater than 0.05, so it can be concluded that H_a is rejected, and H_0 is accepted. The value of R Square obtained was only 0.009, which means that the effect of verbal-linguistic intelligence on students (X) on the learning outcomes of students in the Undergraduate Program of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University (Y) was only 0.9% while 99.1% influenced by other variables.

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