Analysis Item of the Questionnaire Instrument Information Literacy in Digital Circuits to Improve the Competence of Electronics Engineering Universitas Negeri Surabaya

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ABSTRACT

This study aims to analyze the items of the information literacy questionnaire instrument on the competence of Digital Circuit Vocational School students. Analysis of questionnaire items includes: (1) questionnaire validity, and (2) questionnaire reliability. The validity of the questionnaire is used to determine the level of validity of the questionnaire items on the information literacy instrument by looking at the Cronbach alpha results in statistical analysis. The reliability of the questionnaire is used to determine the level of reliability of the questionnaire items against the information literacy instrument using the Cronbach alpha test. This type of research is descriptive research to obtain information on the level of validity and reliability of questionnaire items to measure information literacy skills in the Digital Circuit course. The questionnaire consists of 14 items which have been carried out on 756 respondents in March 2022. The respondents involved consisted of students of the Electrical Engineering Education study program in the Electronics Series course at Universitas Negeri Surabaya. This study resulted in the grain of the questionnaire being valid with a total value of 0.000 or sig. (2-tailed) > 0.05 and Pearson Correlation is positive. Cronbach alpha 0.8367 and each item has a value above 0.6 then from 15 items declared reliable.

Keywords: Item Questionnaire, Instrument, Validity, Pearson Correlation, Reliability.

1. INTRODUCTION

Online learning (e-learning) is a new way to evaluate the learning that is required by teachers and lecturers in the pandemic covid-19 [1]. This activity is one of the businesses to the implementation of learning during the pan. So in realizing that it is necessary to organize the learning that can be customized with the implementation of online learning [2].

Users of the internet increased this is evidenced by the results of the survey APJII from 2017 to 2019. Results survey 2017 that internet users by 143.26 million of the total population of 262 million people (54.68%), if based on the age of internet users aged 13-18 years of 16.68%, aged 19-34 years amounted to 49.52% aged 35-54 years several 29.55%, and age >54 years a several 4% [3]. Internet users in 2018, numbering several million of the total population 264.16 of million (64.8%). For interns consists based on the age of higher the age 15-19 years 91%, and

positions below the age of 20-24 years as much as 5% [4].

This study in data collection against the 756 respondents using the Google form to facilitate access to the respondents [5]. Using a Google form is used to facilitate the work on the questionnaire that is often used. Reasons to use a Google form due to may receive and summarize the responses in a large amount.

The ability of digital literacy is an instrument used to achieve the target achievement of ability of the student in education at the old in college [6]. The competence of Digital Circuits is a basic skill that has the competence about the basics of logic gates. Digital Circuits are the basis-the basis of the scientific development of the microprocessor, microcontroller, PLC, and VHDL [7-10]. The skills of the competencies required additional media relating to the internet network, namely information literacy. Information literacy is a medium of information that can be used to increase the ability to identify an information system,

the ability to organize an information system, and add the ability to create/make the system information. So information literacy can be useful to himself and useful to others.

In addition, in information literacy students can access needs to meet various purposes. In information literacy, students are expected to have the ability in identifying, organizing, and creating an information system. The Dearing Report [6] explained how simple it is to learn the necessary skills. These skills include the ability to communicate, perform calculations, using information technology systems in the conduct of learning describe [11, 12]. This expects maximum results, (1) How the level of validity of the questionnaire against the instruments of information literacy that serve as the instruments for the ability of students to vocational schools. (2) how the level of reliability item questionnaire on the instrument information literacy.

RQ1: how to analyze and synthesize the level of validity of the questionnaire on the instrument information literacy?

RQ2: how to analyze and synthesize the windows reliability of the questionnaire on the instrument information literacy?

2. METHODS

The type of this research is a descriptor obtaining information level of validity and reliability item questionnaire to measure the ability of information literacy in digital Circuits. The grain that is used consists of 15 items which have been done on the 756 respondents. Respondents involved consist of program expertise opinIon industrial Circuits, Audio Video Engineering, and Installation Engineering at a vocational school stupor dents residing in the East Java region. As for the questionnaire to the instrument literacy information on each indicator consists of sub-indicators including (1) ability to identify, (2) organize, and (3) ability to create/make system information as shown in the following table.

Table 1. Sub-indicators of the ability to identify system information

No	Sub Indicators
1	Determine the topic/subject
2	Identify the type of source of information that can be found
3	Identify keywords

No	Sub Indicators
4	Choose the relevant format for the final product
5	Plan a strategy search/ search
6	Determine and understand the listener

The indicators used to measure the ability in organizing the information systems are described in Table 2.

Measuring the ability to create or make the information system is clarified in Table 3 below.

Table 2. An indicator of the ability to organize information systems

No	Sub Indicators
1	Check the bias in sources
2	Distinguish between fact, opinion and fiction.
3	Sorting information
4	Uses visual compositions to compare the information obtained
5	Sort the information in a logical sequence

Table 3. Sub indicators of the ability to create/make system information.

No	Sub Indicators
1	Set up information in the form of words according to the way that can be understood.
2	Revise and edit your own or with friends.
3	The finalization of the format bibliography

Of the few indicators that are divided into each sub-indicator can be drawn by using the model structure. The model structure connects each of these indicators with sub-indicators. Indicator demonstrates rate the ability to identify, an indicator of M2 is the ability to organize, and indica M3 is the ability to create/make the system information. This structure is shown in Figure 1.
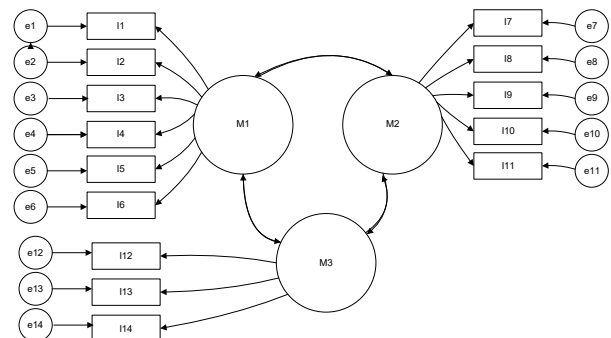

Figure 1. Structure of the indicators and sub-indicators

Measure the level of validity of the questionnaire was done by observing the number of respondents who answered a questionnaire that is provided via Google Forms several respondents. Then from the results obtained by observing the results of the validity of the gis. (2-tailed) > 0.05 and the Person Correlation is positive, thus every item on the questionnaire is said to be valid. If the magnitude of the resulting value is the significance that already meets the requirements, which is less than 0.05, but the Pearson correlation value is negative, then the item on the questionnaire is declared invalid. In addition, if the resulting value on the significance of the resulting test has a value of more than 0.005 then, the grains on the questionnaire are declared invalid.

In doing measurements on the reliability of the instrument information literacy that is used to test is using Cronbach alpha. This is done to determine the level reliability able or not reliable to be used as a refresher In the instrument is declared reliable if the value of the resulting Cronbach alpha obtained is worth more than 0.06. And vice versa if the resulting value on the Cronbach alpha is less than 0.06, the instrument used is not reliable.

3. RESULTS AND DISCUSSION

The results of measurements of the instrument of information literacy on the level of validity in item questionnaires are described in the following table. The results of validity concerning the item questionnaire, the value of r-count, the significance value, and observe the r-table. More details can be seen on the validity of test results in Table 4.
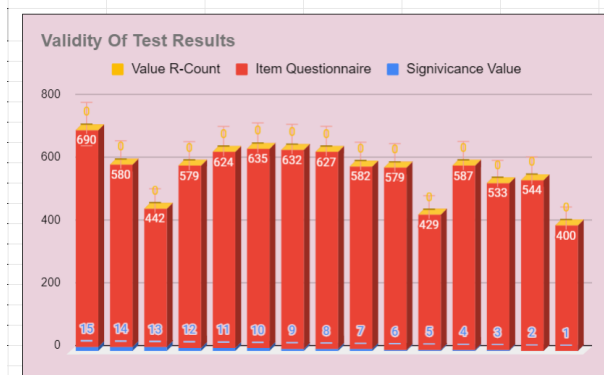

Figure 2. Validity of Test Results

To get the conclusion valid and invalid on an item questionnaire divided into two ways. Step one is to pay attention to the value of the Pearson correlation r-count

or r-table, if the value of the r-count result is greater than the r-table then the grain of the questionnaire can be declared invalid (r-count > r-table). Step two, a validity in item questionnaire can be obtained with attention to the joint between the value of the Pearson correlation and the significance of the obtained. If the value of the Pearson correlation of the results obtained is positive as well as obtained a significance value less than 0.05, then the item on the questionnaire is valid. But if the value of significance is less than 0.05 and the Pearson correlation value is negative, then the item on the questionnaire is declared invalid. If the significance value obtained is more than 0.05, then, the grains on the questionnaire are declared invalid. The results of the execution obtained item questionnaire in Table 5 are declared invalid because the significance value obtained is less than 0.05 and the Pearson correlation is positive.

As for deciding items on the questionnaire obtained including reliable or not reliable by observing the results obtained on the value of Cronbach alpha. The writing Wiratna Sujarweni, 2014 explained that reliability testing can be done jointly on all items or items of the statement in the questionnaire study [11][13][14][15][16]. From the test results obtained the value of Cronbach alpha is in Table 5.

Table 4. Test Results of Cronbach Alpha

Value Cronbach alpha	Number Item Inquiry
0.8367	15

As a basis for deciding on the reliability test Cronbach alpha consists of: (1) if the value of Cronbach alpha > 0,60 then the questionnaire can be declared reliable, and (2) if the value of Cronbach alpha < 0,60 then the questionnaire can be expressed as not reliable. The value of Cronbach alpha obtained in this study as in Table 5 with the number of items in questionnaire 15 is 0,8367 (Cronbach alpha > 0,60) then, it can be stated that the questionnaire is reliable. Based on the test results declared valid and reliable, the instrument obtained can be used as an instrument to measure information literacy in digital network courses in Electrical Engineering.

4. CONCLUSION

In this study, have been obtained conclusions, among others: (1) the instrument of information

literacy can be used as an instrument to measure the ability to identify, the ability to organize, and the ability to create/ make the system information. Thefts of the validity test conducted in the state that the item of the questionnaire is valid with a total value of 0.000 or sig. (2-tailed) > 0.05 and Person Correlation is positive. (2) the results of the test of Cronbach alpha has a value of 0.8367 and each item has a value above 0.6 then 15 items are declared reliable, so the instrument information literacy can be used to measure the ability to identify, organize, and the ability to create/make the system information on the competence of vocational school students. Based on the test results declared valid and reliable, the instrument obtained can be used as an instrument to measure information literacy in digital network courses in Electrical Engineering.

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