



# A Preliminary Study: Analysis of the Digital Competence of Vocational Students on the Island of Lombok

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**Abstract.** Digital competence is needed to compete in the global labor market. This study aims to analyze the competition of vocational students on the island of Lombok. This study uses a survey method conducted at vocational schools on the island of Lombok. The population in the study amounted to 531 students. This study was not conducted entirely on the entire population but was carried out based on the number of samples. The research sample amounted to 228 students. The sampling technique used is proportional random sampling with the assumption that the population of SMK students is homogeneous. The data collection technique used a survey with a closed instrument. The instrument used is the Linkert scale answer choices. The data analysis technique used descriptive statistical analysis. The results showed that the digital competence of vocational students on the island of Lombok was still low in the Information Management aspect, Collaboration Communication And Sharing aspect, Creation Of Content & Knowledge aspect, Ethics & Responsibility aspect, Evaluation & Problem-Solving aspect, and Technical Operations aspect. Based on the results of this study, it can be concluded that efforts are needed to increase students' digital competence by various parties, especially schools to prepare graduates who have digital competence for industrial needs. Efforts that can be made in the form of increasing the involvement of digital technology in the learning process.

**Keywords:** digital competencies · students · vocational schools

## 1 Introduction

Lombok Island is one of the regions in the province of West Nusa Tenggara that has tourism potential and so many resources. But the number of unemployed on the island of Lombok is still high, which is 4.22% [1]. Efforts through education to reduce unemployment have not been successful enough. Vocational high school graduates became the graduates who contributed the most number of graduates, which was 9.70% [1]. The national education system law states that vocational schools are education that prepares their students to be ready for work [2]. But in reality, the island of Lombok became a contributor to the unemployment rate. The importance of vocational schools in preparing

their students to work must be followed by the conformity of the workforce needed by the industry. Vocational and industrial schools must be able to establish cooperation [3]. The fact that schools and industries are lacking in collaboration [4].

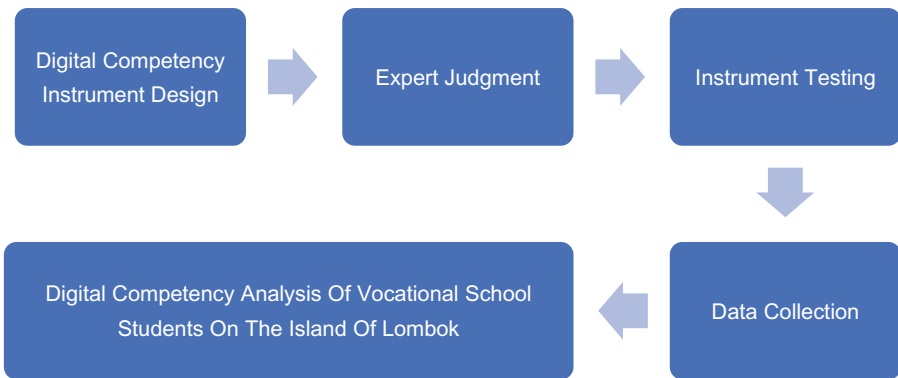
Today, the industry has proliferated with the industrial revolution 4.0, which is more efficient in production. 1) Industrial Revolution 1.0 occurred in the 18th century through the invention of steam engines, thus allowing goods to be mass-produced. 2) Industrial Revolution 2.0 occurred in the 19th-20th century through the use of electricity that made production costs cheap, 3) Industrial Revolution 3.0 occurred in the 1970s through the use of computerization, and 4) Industrial Revolution 4.0 itself occurred in the 2010s through engineering intelligence and internet of things as the backbone of the movement and connectivity of humans and machines [5]. Industrial Revolution 4.0 is the inter-intervention between manual systems into digitalization systems to make work easier to be effective [6]. In addition, the 4th Industrial Revolution involved technological advances that focused on a combination of technology, between the Internet of Things and artificial intelligence [7]. The Industrial Revolution 4.0 fundamentally resulted in a change in the way people think, live, and relate to one another. This era will disrupt various human activities in multiple fields, not only in technology but also in other areas such as economic, social, and political.

Along with the 4.0 industrial revolution and digital technology, business competition and development that initially relied on natural resources will shift to the mastery of information technology and workforce competencies. Human resource investment is substantial and can match the needs of the industry in the digital era [8]. Investing in the human resources sector is vital to compete on a regional and global level. Digital technology has become part of various private and government-owned organizations [9]. Different production industry sectors use many robotic technologies combined with artificial intelligence, thus impacting the reduced number of workers. With the industrial revolution 4.0 using more digital technology, the workforce's needs in the industry have also changed, prioritizing workers who have digital competencies. Thus vocational schools as educational institutions that aim to produce graduates ready for work must meet the workforce's needs to the conditions of the industry. Vocational education must respond to progress in the industrial sector through education policies that focus on curriculum development, teacher training, and highly skilled workers in response to the 4.0 industrial revolution [7]. If it is not done, then the implementation of vocational education will be in vain because the graduates are not by the industry's integrity. In addition, the means of the need to renew practical facilities in vocational schools, many tools and machines found in practical learning in Indonesia are still conventional machines [10].

Related to the problems that occur on the island of Lombok, research on the digital competence of vocational school students on the island of Lombok has never been done while seeing the development of the industrial revolution 4.0. It is essential to analyze digital competence. So later, it can be done mapping that can be used as a consideration for the development of competence of vocational school students on the island of Lombok. The digital competency framework required in the 21st century is as follows [11] (Fig. 1).

Information management	• Identify, locate, access, retrieve, store and organise information
Collaboration	• Link with others, participate in online networks & communities, interact constructively
Communication and sharing	• Communicate through online tools, taking into account privacy, safety and netiquette
Creation of content & knowledge	• Integrate and re-elaborate previous knowledge and content, construct new knowledge
Ethics & responsibility	• Behave in an ethical and responsible way, aware of legal frames
Evaluation & problem-solving	• Identify digital needs, solve problems through digital means, assess the information retrieved
Technical operations	• Use technology and media, perform tasks through digital tools

**Fig. 1.** Digital Competence Framework



**Fig. 2.** Research Procedure

## 2 Method

The survey was conducted at a vocational school that became a reference on the island of Lombok. The population in the study amounted to 531 students; this study was not run entirely on the entire population but was conducted based on the number of samples. The study sample numbered 228 students. The sampling technique used is proportional random sampling assuming homogeneity of the vocational student population. Data collection techniques use surveys with closed-door instruments. The instrument used uses the Linkert scale answer option, and Data analysis techniques use descriptive statistic analysis. The research procedure is presented in Fig. 2.

In this data collection technique, respondents only choose the most appropriate answer based on four alternative explanations. Here are four alternative answer scores for Linkert type data collection (Table 1).

**Table 1.** Alternative Answer Score

Alternative Answers	Score
Strongly Agree/Always	4
Agree/Often	3
Disagree/Rarely	2
Strongly Disagree/Never	1

### 3 Results and Discussion

Table 2 shows the results of construct validation by experts. Both experts stated that the instrument was valid and viable for use in the study, with an average of 3,495.

Based on construct validation by experts, the instruments compiled are feasible and valid for use in research, while reliability indicates the reliability of items and personally presented in Table 3.

The frequency distribution of data can be seen by creating intervals. The criteria category of existing variables are divided into 4 (four) categories with the following norms:

- $X \geq \bar{X} + 1,5 (SBx) = \text{very high}$
- $\bar{X} < X \leq \bar{X} + 1,5 (SBx) = \text{high}$
- $\bar{X} - 1,5 (SBx) < X \leq \bar{X} = \text{low}$
- $X \leq \bar{X} - 1,5 (SBx) = \text{very low}$

The research results on aspects of Information Management, Collaboration, Communication And Sharing, Creation Of Content & Knowledge, Ethics & Responsibility, Evaluation & Problem-Solving, Technical Operations contained in digital competence are shown in Table 4.

Information management is the ability to organize, store and retrieve data, information, and content in a digital environment [14]. To manage and process it in a structured environment. Results in the information management aspect obtained with a percentage of 46.3% in the low category showed that information management ability by vocational school students on the island of Lombok was still lacking. Lack of ability to manage data literacy puts individuals in a position of digital lag [15]. In some countries, the improvement of competencies needed in the 21st century is made thoroughly to catch up [16].

Collaboration in digital competence is the ability to use digital tools and technologies in collaborative processes to create resources and knowledge. Collaboration aspects obtained by vocational school students on the island of Lombok, which is a percentage of 52.3% with the category deficient, show that students' ability to collaborate in cooperation and collaboration through digital technology is still low. Enhanced collaboration capabilities can be done by transforming the learning process through strategies and tools dedicated to strengthening experiences, generating commitment, unifying tasks, and being fun and persuasive will result in changes in the specific needs of the educational

**Table 2.** Result Validation

Expert 1	Expert 2	Score Mean	Interpretation
3.41	3.58	3.495	Valid

**Table 3.** Result Reliabilities Test

Reliabilities	Value	Interpretation
Item	0.62	Reliable
Personal	0.74	Reliable

**Table 4.** Result of research

Competence Areas	Very High	High	Low	Very Low
Information Management	0	14.5	46.3	39.2
Collaboration	0	6.0	41.7	52.3
Communication And Sharing	0	19.4	42.2	38.4
Creation Of Content & Knowledge	2.9	32.1	52.3	12.7
Ethics & Responsibility	0	3.3	39.4	57.3
Evaluation & Problem-Solving	0	21.6	40.6	37.8
Technical Operations	2.9	29.4	58.0	9.7

context [17]. But of course, teachers must also have the ability of digital competence to do collaborative digital learning.

Communication and Sharing are the ability to share through digital technology to share data, information, and digital content with others through appropriate digital technology [14]. The research results on communication and information sharing skills in vocational school students on the island of Lombok showed the most significant percentage obtained by 42.2% with a low category. Indicates that the ability of students to share information through digital communication is still lacking. Communication skills, in this case, are not only through mobile phones but sharing information through other media.

Creation of Content & Knowledge is the ability to develop digital content, create and edit digital content in different formats and express themselves through digital means [14]. Results on the ability to create digital content in various forms in vocational school students in Lombok showed that the most significant percentage was 52.3%, with a low category. The results are similar to research conducted by Rizal [18]. Those who obtained similar results in high school students mentioned that the ability of students in high school on the aspect of power to produce digital content creations is still low.

Results on the ethics & responsibility aspect of vocational school students on the island of Lombok showed a percentage of 57.3 with shallow categories. The results show that student ethics in using digital technology is still very low. Therefore intensive assistance is needed for students to improve their ethics in using digital technology.

Evaluation & Problem-Solving obtained the most significant percentage of 40.6% with the low category. Demonstrate that students' ability to evaluate the use of digital technology is still lacking. Of course, this is very necessary to improve the ability of students to prepare students for global challenges.

Technical Operations aspect obtained the most significant percentage of 58% with low category. The ability to use digital technology is still low due to limited facilities and facilities in the school environment. There are still many practice facilities in vocational schools that do not use the latest technology.

These results showed that the percentage in every aspect of digital competence owned by students is still classified as a low category. The education sector influences digital competence because education has a fundamental role in acquiring digital competencies today [12]. Teachers as educational actors in schools have a vital role in mastering digital competence. So that the consideration of teachers must have digital competence as the leading competence must be considered [12]. Not only at the secondary education level, in higher education, teachers must also have digital competencies [13].

## 4 Conclusion

The digital competence of vocational school students on the island of Lombok in all aspects is still relatively low, so it can be concluded that it is necessary to increase the digital competence of students covering all aspects of digital competence. Vocational schools have not been able to equip students with good digital competencies. This points to the importance of students having digital competencies. So that the school can respond to the results of this research to conduct strategic policies to produce graduates to the needs of the industry. In addition, similar research is needed on teachers' digital competence at vocational schools on the island of Lombok.

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