



# Digital Literacy and Student Creativity Through E-Resources on the Quality of Learning in College

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## ABSTRAK

Keterampilan mahasiswa dan kualitas pembelajaran di perguruan tinggi ditentukan oleh aktivitas dan kreativitas dosen dalam memotivasi belajar mahasiswa. Dalam meningkatkan keterampilan siswa dalam bidang teknologi pembelajaran, siswa perlu meningkatkan keterampilannya. Tujuan dari penelitian ini adalah untuk meningkatkan kemampuan mahasiswa mengenai literasi digital dan kreativitas mahasiswa dalam memanfaatkan e-resources untuk meningkatkan kualitas pembelajaran mahasiswa. Dalam penelitian ini menggunakan metode penelitian deskriptif melalui pendekatan kuantitatif. Penentuan sampel menggunakan purposive sampling, pengambilan sampel dihitung dengan menggunakan rumus lameshow sehingga didapatkan 96 sampel penelitian. Kemudian pengumpulan data menggunakan kuesioner yang dibagikan melalui media sosial, serta data yang didukung hasil wawancara. Analisis data dalam penelitian ini menggunakan analisis data asosiatif yaitu regresi linier berganda dengan bantuan SPSS for windows v.25. Selanjutnya hasil analisis data diinterpretasikan ke dalam kalimat sebagai penjas. Hasil analisis dalam penelitian ini menunjukkan adanya pengaruh antara literasi digital dan kreativitas mahasiswa dalam memanfaatkan e-resources terhadap peningkatan kualitas pembelajaran di perguruan tinggi yang menunjukkan korelasi sedang. Korelasi tersebut ditunjukkan dengan adanya kegiatan belajar mandiri yang dilakukan oleh mahasiswa dalam menemukan bahan ajar yang digunakan dalam kegiatan belajar mengajar di perguruan tinggi.

## ABSTRACT

Student skills and the quality of learning in tertiary institutions are determined by the activities and creativity of lecturers in motivating student learning. In improving students' skills in the field of learning technology, students need to improve their skills. The purpose of this study is to improve students' ability regarding digital literacy and student creativity in utilizing e-resources to improve the quality of student learning. In this study using descriptive research method through quantitative approach. The determination of samples using purposive sampling, sampling is calculated using lameshow formula so as to get 96 research samples. Then the data collection using questionnaires that are shared through social media, as well as data supported by interview results. The data analysis in this study used associative data analysis, which is a multiple linear regression using the help of SPSS for windows v.25. Furthermore, the results of the data analysis are interpreted into sentences as explanatory. The results of the analysis in this study showed there is an influence between digital literacy and student creativity in utilizing e-resources to improve the quality of learning in universities indicating a moderate correlation. The correlation is shown by the existence of independent learning activities conducted by students in finding learning materials used in teaching and learning activities in universities.

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## 1. INTRODUCTION

The changing world is now entering the era of the industrial revolution 4.0, where information technology has become the focus of human life. This digital era makes many developments in various fields, such as in the field of technology and education (Devi et al., 2020; Kergroach, 2017). This rapid development of technology can make it easier for students to do learning activities. To support teaching and learning activities in this digital era that are heavily influenced by technological developments, students must understand digital literacy that plays a role in developing knowledge about certain problems that can encourage curiosity and creativity that students have (Falloon, 2020; Rinekso et al., 2021). In supporting online learning activities, knowledge and ability are needed to use or operate technology so that it can be accessed easily. Digital literacy as the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers (Koltay, 2011; Rinekso et al., 2021). Media literacy is generally defined as the ability to access the media, to understand and to critically evaluate different aspects of the media and media content and to create communications in a variety of contexts.

Digital (computer) literacy is the new title for educated. Both teachers and students have no option to acquire a level of computer-literacy to catch up with the growing digital societies. Governments and higher education institutions (mHEIs) are making all out efforts by providing e-Learning environments to gain some levels of digital literacy of the masses at large and the university-constituents. Both developed and developing states are trying to figure out a required digital literacy curriculum for the training of teachers and the students (Nawaz & Ghulam, 2010; Ningsih et al., 2019). But with this convenience, there are still students who are constrained to have digital literacy skills. Students' creativity in this study can be seen through how students access and sort learning materials and assignment references into a new idea that they arrange from various sources. Unfortunately, until now students still copy learning resources directly without sorting them out first, so it could be the task or work created will be exposed to plagiarism.

The digitalization phenomenon has been trending upwards globally. This term has occupied all spheres of our lives, including education (Robandi et al., 2019; Samerkhanova & Imzharova, 2018). Currently, in the use of e-resources or accessing digital information sources is very easy to obtain, because e-resources have an open access system that can be loaded through various smart devices. The quality of learning is largely determined by educators, learning media, and learning resources used. Digitalization it self means the process of transition of a company methods based on information technology (Abrosimova et al., 2019; Thanh et al., 2021). In the information age, a person lacking these competences may be considered an illiterate. The ability of individuals to evaluate and use information effectively, efficiently, and wisely has become increasingly important. This is not only due to the fact that access to information has become relatively easy and inexpensive, but also because the ability to find reliable information is considered to be a vital competence.

In terms of education, good digital literacy also plays a role in developing people's knowledge of a particular topic by encouraging the curiosity and creativity that students have. Creativity here as the basis of students in finding learning resources and utilizing them as a reference to improve self-directing learning skills. Self Directing Learning is a skill where a person is able to determine for himself and choose the goals he wants to achieve, plan the strategy to be done, strive to solve problems, manage himself, and evaluate the thoughts and performance that have been done (M. F. dan F. D. A. Akbar, 2017; Ng, 2012). This is felt to increase the knowledge, expertise and achievements of individuals. For example, it has been argued that digital natives inherently possess digital skills, whereas digital immigrants may need to learn and obtain those skills, raising questions as to whether educational institutions—schools and universities—can educate or teach digital natives digital skills. Exposure to digital technologies and in particular to computers at the school has little if any effect on student achievement and computer literacy (Dewanti et al., 2021; Falck et al., 2018).

Quality has a definition as the level, quality, good level of bad things. While the definition of learning, namely the process or how to make someone to learn that serves to guide the learners. In an effort to improve the quality of student learning in college. Hague & Payton emphasizes that good digital literacy can also develop one's knowledge of specific learning materials by encouraging student curiosity and creativity. The types of publications that are very diverse, and the information obtained through the internet makes students less selective in choosing the source of information to be used (Andayani, 2014; Rodin & Nurrisqi, 2020). Development of informational and educational environment based on modern software and hardware systems; and only then will we be able to come to a qualitatively new education (Abdullina et al., 2019; Samerkhanova & Imzharova, 2018). The rarest digital skill is writing software using programming languages individually by themselves. Previous study state only about 1% of the country's population has mastered it (1.2% in 2017), and the plan is to make a competent digital population of 40% by 2024 (Mayevskaya, 2018).

The ease of sharing and accessing digital information through the internet causes a lot of information that is widely circulated in various digital publication media but there is no clarity on the source of the information. Although the internet provides a source of digital information that can be accessed by the public, such as electronic resources (e-resources) that are open accessible using personal computers, mainframes, or mobile devices remotely. It is occur via the internet or e-books, e-journals, full text databases, indexing and abstracting databases, e-images, e-audio, video and others (Shahroom & Hussin, 2018; Tomczyk, 2020). A few studies looked at the effects of a single mode of providing using digital learning objects, such as videos, tutorials and/or asynchronous online exercises. Electronic information resources include World Wide Web; WIFI; search engines; online indexes; video CDs VSAT based Internet connectivity; online Library catalogue; online databases; portals; E-journals and E-books (Choudhury, 2014; Jaakkola et al., 2022).

It can be understood that active learning in college is learning that can make students learn actively or active learning. The learning focus of what lecturers should teach shifts to what students should do after participating in class learning. The quality of learning that can be operated and explained as the strength of the system and synergy between lecturers, students, courses, learning materials, media, facilities, and learning systems in producing optimal learning processes and outcomes in accordance with the curriculum (Eng et al., 2020; Supriatna, 2013). Technology is of increasing importance in people's everyday lives and that presence will most certainly increase in the coming years. No longer relegated to specialized workplace settings, information

and communication technologies have become increasingly common in community settings, at school, and at home (Arkorful et al., 2021; McLoughlin, 2011). Provision of usage statistics for online content, identification of free online articles in e-journals and improved user interfaces for accessing library-surfaced content constituted, building an index from a document collection to searchable data structure to enhance electronic information retrieval, developing an improved descriptive metadata to describe information that is in formats other than text (e.g. image, map, animation etc.)

Based on the description, this research is in the background with the lack of a maximum understanding of digital literacy as a must-have ability in the digital era, the lack of utilization of types of e-resources that students do not yet know in choosing a page to search for learning materials via the internet and the wide scope of e-resources, so that students can access it easily, but do not know the original source. Then the quality of learning depends on the learning resources provided by lecturers in the classroom so that student creativity that has not developed and is in line with the development of digital learning, the last is that the e-resources owned by universities have not been optimally utilized by students. The purpose of the study specifically is to be able to analyses the influence of the use of digital literacy and student creativity in utilizing e-resources on improving the quality of learning in higher education.

## 2. METHOD

This research uses quantitative descriptive research methods. This method is used to examine a particular population or sample, data collection using research instruments, statistical data analysis with the aim of testing established hypotheses (Purwanto, 2020; Sugiyono, 2019). Therefore, in this study researchers use descriptive research methods with quantitative approaches to produce a data in the form of numbers based on research conducted in the field, and then analyzed to answer the problem formulation and test the proposed hypothesis with statistical techniques. This research is expected to reveal the interrelationship of the influence of digital literacy and student creativity in utilizing e-resources on the quality of learning in universities. So that it can be a college evaluation material to improve the quality of learning used. The overview of the frame of mind carried out by the researcher which is presented and simplified through the Figure 1.

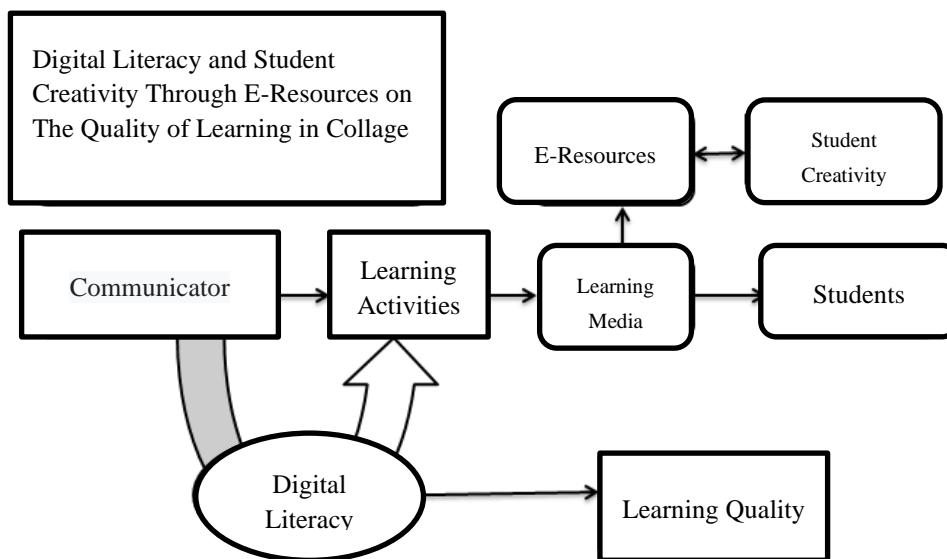


Figure 1. Research Thinking Framework

The variables used in this study are explained as follows, variable X is a free (independent) variable, is a variable that affects or becomes the cause of changes or emergence of dependent (bound) variables. The independent variables in this study are Digital Literacy (X1) and Student Creativity (X2). Variable Y is a bound variable (dependent), is a variable that is influenced by the relationship between an independent variable and a dependent variable. The dependent variable in this study is The Quality of Learning (Y). Variable Z is an intervening variable, wherein this variable theoretically affects the relationship between variable X and variable Y into a relationship that cannot be observed and measured directly. The intervening variable in this study is E-Resources (Z).

The population in this study was students in the Cirebon City area, especially students at The Self-Help University of Gunung Jati Cirebon. The result of the minimum sample required in this study was 96.04 respondents or rounded to 96 respondents. In this study, the collection of samples that will be used in using purposive sampling techniques is a sample determination technique with The sample in this study needs to meet several criteria including active students in Cirebon and have been studying for 4 semesters, then the students are able to understand the use of the internet and e-resources by accessing through mobile devices, and they actively use the internet or online media in conducting learning to facilitate research on the use of technology in learning.

Data and information are obtained through filling out the questionnaire through google form where the page is disseminated through social media instagram and whatsapp group. Furthermore, the tabulation of the data is processed in order to obtain statistics and numbers that can be interpreted into descriptions to answer problems in research. By using the likert scale, the variables to be measured are described as indicators that will be used as a starting point for composing instrument items. For the purposes of quantitative analysis, the answer is given a score which is described in [Table 1](#).

**Table 1. Likert Scale Answer Selection and Score**

Explanation	Score
Verry Well	5
Well	4
Enough	3
Not Enough	2
Fail	1

While data analysis techniques, where the data that has been collected from the spread of questionnaires is then analyzed. Descriptive analysis, in this case used to answer problem formulation questions in this study, then the questionnaires that have been collected are analyzed using descriptive methods. The data analysis in this study used associative data analysis, which is a multiple linear regression using the help of SPSS for windows v.25. Furthermore, the results of the data analysis are interpreted into sentences as explanatory.

### 3. RESULT AND DISCUSSION

#### Result

Digitalization leads to a significant increase in the choice of courses and disciplines available for studying and international and interdisciplinary collaboration in science and research becomes easier. It also makes education more accessible and individual, and provides research freedom, and enhances autonomous learning. Autonomous learning leads to better acquisition of information and increasing of motivation to study. It looks like win-win situation. Digitalization implies automatization of all modern economic processes, starting with designing a product to its delivery to the consumer and following maintenance.

In our rapidly changing world, employers want a workforce ready to work with the latest and newest technologies. It is estimated that 85% of jobs of 2030 has not been invented yet. Hence the need for employees who do not have special skills is decreasing fast, and the only solution to this problem is a complete transformation of the educational process, and higher educational institutes in their current mode will need to undergo dramatic changes. From the research that has been done, researchers get the results of the dissemination of questionnaires to 96 respondents who are active students in the Cirebon region. This research aims to test the influence of digital literacy and student creativity in mandating e-resources on the quality of learning in universities. Recapitulation of research questionnaire is show in [Table 2](#).

**Table 2. Recapitulation of Research Questionnaire**

Aspect	Score (%)				
	SB	B	KB	TB	STB
Digital Literacy	24.2	64.3	11.2	0.3	0
Student Creativity	18.8	67.7	13.0	0.4	0.1
Utilizing E-Resources	39.9	56.3	3.5	0.3	0
The Quality of Learning	21.6	71.2	7.1	0.1	0

From the data processed in [Table 1](#), it is known that the majority of respondents answered Good (B) on all research variables. Then followed by a very good answer (SB). So, it can be concluded that students have a level of digital literacy and creativity skills and the use of e-resources with the quality of learning received by students is good. Path analysis test results is show in [Table 3](#).

**Table 3.** Path Analysis Test Results Stage 2.2

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.903	1.579		0.572	0.569
	Digital Literacy	0.211	0.042	0.519	5.085	0.000
	Student Creativity	-0.007	0.046	-0.016	-0.149	0.882
	The Quality of Learning	0.101	0.041	0.230	2.484	0.015

Based on the Regression output in Table 2, it can be known that the Significance value of the two variables is Digital Literacy (X1) = 0.000, Student Creativity (X2) = 0.882 and Learning Quality (Y) = 0.15. For variables X1 and Y have a value smaller than the significance value (Sig.) which is 0.05 while for variables X2 get a result greater than the value of significance (Sig.) which is 0.05. This result concludes that the regression of model 1, namely variables X1 and Y has a significant effect on variable Z. While variable X2 does not have a significant influence on variable Z. The magnitude of the value of R<sup>2</sup> or R Square contained in the Summary model is 0.411, this indicates that the contribution or contribution of the influence of X1, X2 and Y through Z is 41.1% while the remaining 58.9% is a contribution from other variables that are not included in the research.

Analysis of the Influence of Student Creativity (X2) through E-Resources (Z) on Learning Quality (Y). From the presentation of the table above, it is known that the direct influence given by Student Creativity (X2) through E-Resources (Z) amounted to -0.016. Meanwhile, the indirect influence of Student Creativity (X2) on The Quality of Learning (Y) through E-Resources (Z) is the multiplication between the beta value of Student Creativity (X2) on the Quality of Learning (Y) and the beta value of Learning Quality (Y) through E-Resources (Z), which is  $0.331 \times 0.230 = 0.076$ . Then the total influence given by Student Creativity (X2) through E-Resources (Z) is a direct influence with indirect influence is  $-0.016 + 0.076 = 0.06$ . Based on the results of previous calculations, it is known that, the value of direct influence, which is -0.016 and the value of indirect influence, which is 0.076, which means that the value of indirect influence is greater than the value of direct influence, the results show that indirectly Student Creativity (X2) through E-Resources (Z) has a significant influence on Learning Quality (Y).

## Discussion

Digital literacy is the ability to understand and use information in various forms from a wide variety of sources accessed through computer devices. The results of an interview with one of the Respondents, digital literacy, which is the ability of a person to find information about knowledge or about technology and such can be accessed anywhere, anytime, and by anyone without any constraints, because it is done online, so it can be done at any time without any time restrictions (Parvathamma & Pattar, 2013; Sulianta et al., 2019). It can be concluded that digital literacy is an ability that can be honed and trained by every individual. Define digital literacy as the "ability to use ICT tools and internet access, manage, integrate, evaluate, create and communicate information to function in a knowledge society". Use the definition by the European Framework for Digital Literacy described by the awareness, attitude and ability of individuals to appropriately (Mutohhari et al., 2021; Radovanović et al., 2015). Use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process (Martin & Grudziecki, 2006; Spante et al., 2018).

Therefore, the quality and number research publications of academic researcher reflect their research productiveness. Opine that research activities of academic researchers in academic institutions is determined by the number and quality of articles published by the affiliated faculty. With high digital literacy skills can make it easier for students to follow each learning process by using a variety of platforms (Irhandyaningsih, 2020; Sulo et al., 2012). Literacy also plays a role in effectively interacting and communication during the learning process to optimize collaboration using various software. Digitalization involves enhancing digital literacy and digital skills. Digital literacy is the possession of modern information technologies for work, life and the ability to search and evaluate and assess the information received; digital skill is a person's competence in the application of I.T (Gilmanova, 2018; Masitoh, 2018).

The results of this study show that student creativity has a direct and significant influence on the quality of learning in college. This illustrates that the higher the creativity of students, the higher the quality of learning in college. This results are in accordance where in his research showed learning outcomes through Active Learning in Higher Education (ALIHE) in pgsd fip department UNJ can improve learning skills related to lecturer behavior and have a positive impact on student learning in improving learning outcomes (Supriatna, 2013). Furthermore, other study conducted, found that the achievement and improvement of creative thinking of

students who get the murder learning model (Mood, Understanding, Recall, Detect, Elaborate, and Review) has better results with improved interpretation in moderate categories (Sumartini, 2019). Both studies suggest creativity has a significant effect on the quality of learning. Since that time, media effects researchers have published thousands of studies, which generally show that any media exposure is likely to generate a considerable degree of variation across people in terms of how they process meaning and how they react to those exposures (Anhusadar, 2016; Potter, 2018).

The results of this study show that there is a significant influence on Digital Literacy (X1) on the utilization of E-Resources (Z), then directly there is no significant influence of Student Creativity (X2) on E-Resources (Z) and subsequent results show that there is no significant influence on Learning Quality (Y) on E-Resources (Z). This illustrates that the utilization of e-resources has an influence on the digital literacy capabilities of students, but the utilization of e-resources does not have a significant influence on student creativity variables and also on the quality variables of learning in college (Kivunja, 2015; Potter & Thai, 2019). The results of this study are the same as the research conducted namely the results of the study showed that, the basic ability of digital literacy has a significant relationship with the quality of e-resources use with the category of very high correlation, meaning digital literacy becomes a factor that determines the high quality of e-resources use (Nurjanah et al., 2017) Furthermore, has the results of data analysis that, shows a significant relationship between digital literacy and self directing learning in thesis students at the Faculty of Psychology, University of North Sumatra (M. F. dan F. D. A. Akbar, 2017).

The results of this study show that, there is a significant influence of Digital Literacy (X1) and Student Creativity (X2) in the utilization of E-Resources (Z) on Learning Quality (Y). The results of this study are the same as the research conducted by previous study that found some aspects of digital literacy that do not intersect directly with the thesis completion process (Febriani & Ratu, 2018). However, in research conducted it is known that, the results of different levels of creativity of students in the learning process are based on the understanding of these students. Other research states that, the use of digital technology has not been a key factor in the learning process. It is emphasized that digital literacy is knowing the purpose and way of using digital devices, not how often to use digital devices (M. F. Akbar & Anggaraeni, 2017).

This study revealed that improvement and innovation for effective access and retrieval of e-library resources are needed in information literacy training for academic researchers, search engines to index sources, comprehensive indexing of impact factor local journal. This study also create description of digitals content development of wider institutional repositories, development of metrics for evaluating impact factor contents for local publications, development of online user guideline for accessing e-resources. Bring provision of usage statistics for online content, identification of free online articles in e-journals and improved user interfaces for accessing library-surfaced content constituted. And building an index from a document collection to searchable data structure to enhance electronic information retrieval, developing an improved descriptive metadata to describe information that is in formats other than text (e.g. image, map, animation etc.)

The implication of this research in the long term is to improve students' ability to use digital literacy and students' creativity in utilizing e-resources to improve the quality of student learning. This research was conducted at several universities in the Cirebon area to determine its effect in overcoming existing problems. One of them is by raising studies on the influence of digital literacy and creativity that students have in utilizing e-resources on the quality of learning in tertiary institutions. The results of this study can later be used to examine the impact of the influence of the use of technology on the quality of learning in tertiary institutions. The limitation of this research is the very limited research scope. Therefore, it is hoped that future research will be able to further deepen and broaden the scope of research related to student digital literacy.

#### 4. CONCLUSION

Based on data obtained in the use of electronic resources (e-resources) has an indirect influence on digital literacy and student creativity on the quality of learning. Student creativity has an indirect influence in utilizing E-resources there is a direct and significant influence between digital literacy skills and student creativity on the quality of learning in college. It can be stated that, students in Cirebon city colleges have a good level of digital literacy skills in the use or utilization of e-resources in learning activities. Then, the level of student creativity owned by students in the Cirebon region also showed good results, although the level of student creativity has a moderate category on the use of e-resources, this is influenced by some aspects that do not directly intersect with student creativity in the use of e-resources to the quality of learning in college. In addition, respondents are dominated by technological developments where students must have proficiency in digital media.

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