THE RELATIONSHIP OF SELF-CONCEPT AND LOGICAL THINKING PATTERNS WITH DIGITAL LITERACY ABILITY

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ABSTRACT

This study discusses the relationship between self-concept, logical thinking patterns, and digital literacy ability. The research respondents were elementary school teacher education students at the Se University of West Java from initial to final levels without distinguishing gender. Respondents were selected randomly using the proportional random sampling technique. The research data was obtained through a questionnaire on a scale of 0-1 for logical thinking patterns and 1-5 for self-concept and digital literacy ability. The results of this study indicate: that first, there is a positive relationship between self-concept and digital literacy ability of 0.563. Second, a positive relationship exists between logical thinking patterns and digital literacy ability of 0.234. Third, a positive relationship exists between self-concept and logical thinking patterns and digital literacy ability of 0.595. This study put forward some suggestions as follows: (1) prospective teacher students can develop self-concept by focusing on themselves, loving themselves, being responsible, having goals, and being able to interact with the social environment to improve digital literacy ability, (2) student teacher candidates must have logical thinking patterns by continuing to train themselves through being able to think with logical rules, be able to determine valid conclusions, think systematically in digital literacy ability, (3) prospective teacher students must be able to control self-concept and logical thinking patterns to improve digital literacy ability as a support in the learning process and for improving academic achievement.

1. INTRODUCTION

The challenges of the industrial revolution 4.0, which is currently ongoing, require prospective teacher students to be literate in using various high-tech digital literacy tools and applications. Advances in information and communication technology cause digital literacy skills to be as crucial as other abilities in every human being. The conditions during the COVID-19 pandemic hugely impacted the world of education, especially in universities, which required the entire learning process to be run in a remote system (online) by utilizing digital media. This is so that the knowledge transfer process can continue to run well and by the targeted goals even though it is not done face-to-face. Consequently, student teacher candidates must also have good digital literacy skills to support the learning activities. Students are expected to develop independent and creative learning activities in the online learning process. Therefore, digital literacy skills can be a determinant of student learning success.

Digital literacy is the ability to use technology and information from digital devices effectively and efficiently in various contexts such as academics, careers, and everyday life (Gilster, 2007). This is in line with the concepts and dimensions of digital literacy, which are technologically, psychologically, and socially charged, so it can understand that digital literacy is a complex skill and involves new skills that humans must possess when dealing with today's digital environment. (Riel & Christian, 2012).

In subsequent developments, a new understanding of digital literacy was developed based on computer and information literacy concepts. The new concept builds a digital literacy conceptualization consisting of four main components, namely essential digital literacy ability (underpinning), background knowledge information (background knowledge), digital literacy main competencies (central competencies), and attitudes and information perspectives (attitudes and perspective) (Bawden, 2001).

Digital literacy involves a wide range of skills, including using software applications and other technologies to manage digital information and using search logic such as boolean search operators and truncation symbols to search databases and search engines (Alfonzo & Batson, 2014). From this statement, it is known that " basically digital literacy involves various skills including skills to use software and other technologies to manage digital information. The ability to use information search logic such as using boolean logic, truncation symbols to search through databases or machines. Searcher" Digital literacy is an individual's skill in applying functional skills on digital devices to find, select and sort information, think critically, be creative, collaborate, and communicate effectively. (Payton, 2010). Digital literacy is a life skill that involves the ability to use technology, information and communication tools, social skills, learning skills, and having attitudes, critical thinking, creativity, and inspiration as digital competencies (Febliza & Okatariani, 2020). Everyone can create, access, utilize and share information and knowledge, enabling individuals, communities, and people to achieve their full potential in promoting sustainable development and improving their quality of life (Byrne, 2018). Everyone can create, access, use, and share, or share information and knowledge, so everyone must be able to deal with and master information properly (Sukaesih & Rohman, 2013).

The formation of digital literacy skills for prospective teacher students is also influenced by factors in themselves, namely self-concept. In this condition, students have not been able to understand their character to be able to interact with their environment. Self-concept is an effort to understand oneself to produce a self-concept (Rahman, 2018). Students who have a good self-concept will respect themselves. He accepts his strengths and weaknesses. Therefore, he knows when to speak and when not to say and understands his capacity. If he masters the topic, he will appear confident, and if not very overpowered, will pay attention and listen to it as new knowledge for him and be optimistic about his life. See challenges as an opportunity, and do not give up easily. By opening up, the self-concept

becomes closer to reality. Suppose the self-concept is by experience. In that case, we will be more open to new experiences and ideas, are more likely to avoid being defensive, and look at ourselves and others more carefully (Effendi, 2006).

Self-concept is the basic concept of oneself, personal thoughts and opinions, awareness of what and who one is, how one compares oneself with others, and how idealism has been developed. Self-concept is an essential aspect of self because a person's personality and self-concept will affect all of that person's actions (Wirawan, 2008). Self-concept is closely related to the individual self. A healthy, physically and psychologically life is supported by a good and stable self-concept. Meanwhile, a poor self-concept will make it difficult to release our hidden talents and potential. On the other hand, a healthy self-image paves the way for success and happiness in life. In line with the above, teachers with a positive self-concept will expand their learning success, while those with a negative self-concept will have difficulty (Herawati, 2017).

Self-concept is the basis of individual behavior. Individuals with a positive self-concept can be more effective if supported by the ability to think. The thinking ability in question is the ability to think logically. The ability to think logically is a critical thinking process through reasoning to put forward reasons in support of a belief and to evaluate that belief as well as possible (Fisher, 2007). The ability to think logically needs to be possessed by someone because he can understand, criticize, assess, find alternative solutions, and evaluate the issues or problems being studied. Prospective teacher students who can think logically will be more careful in deciding something and not easily believe the news circulating before they witness and hear it themselves. Also, have their judgment of others and not only criticize but can provide solutions to a problem. Logical thinking is a mental operation used by individuals when facing specific problems (Incikabi et al., 2013). Logical thinking includes controlling variables, probabilistic reasoning, proportional reasoning, correlational reasoning, conservational reasoning, and combinatorial reasoning (Fah, 2009; Incikabi et al., 2013).

Logical thinking can be interpreted as an individual's ability to draw valid conclusions according to the rules of logic. It can prove the decision is accurate (good) by previously known knowledge (Siswono, 2008). Meanwhile, Rahayu Hertina Marbun (2014) revealed that logical thinking is the process of using reasoning consistently to conclude. This is in line with Hadi, who stated that logical thinking is a coherent, reasonable way of thinking based on specific objective facts (Hadi, 2004). According to them, logical thinking is thinking according to particular patterns or rules of logical inference or logical principles to obtain conclusions. Based on some of the definitions above, it can be concluded that logical thinking is closely related to reasoning, thinking quickly according to patterns or logical inference rules to complete.

Several other experts, such as Diana (2018), also proposed the notion of logical thinking. Logical thinking is an activity related to decision-making and complex problem-solving. The ability to think logically is using statements in the form of ideas described systematically. Individuals who suppose logically will express their thoughts and ideas in structured words so that the reasons put forward become actual arguments. The ability to think logically is a person's ability to solve problems based on existing procedures and has a strong foundation of truth from these procedures (Syawahid, 2015). Logical thinking assumes that children can perform basic analytical operations: generalization, analysis, comparison, and classification (Yunus, 2021). Rational thinking is a thinking process that uses reason consistently to follow applicable rules to conclude. Logical thinking refers to understanding, application, analytical, synthesis, and even evaluation abilities to form process skills (Julianto, 2021).

Based on the background of the problem and the descriptions described above, this study aims to determine the relationship between self-concept, logical thinking patterns, and digital literacy ability.

2. METHOD

The population in this study were undergraduate students in elementary school teacher education in the West Java region, totaling 12,714 students in the 2021/2022 academic year based on the university database. Using the Proportional Random Sampling technique, the sample is taken based on the proportion for each student in the West Java region, as much as 275. It is carried out randomly for all semester levels regardless of gender, with equal opportunities for each individual. In this study, the error rate used was 5%. The total population is 12,714 students with an error rate of 5%, so a sample of 275 students is obtained.

Table 1 Sample Number of Elementary School Teacher Education Students in West Java

No	Collage	Population	Sample Calculation	Sample
1	Swadaya Gunung Jati University	194	194/12714x275 = 4	4
2	Sebelas April University	667	667/12714x275 = 14	14
3	President University	69	69/12714x275 = 1	1
4	Perjuangan Tasikmalaya University	513	513/12714x275 = 11	11
5	Pelita Bangsa University	148	148/12714x275 = 3	3
6	Pasundan University	725	725/12714x275 = 16	16
7	Pakuan University	878	878/12714x275 = 19	19
8	Nusa Putra University	213	213/12714x275 = 5	5
9	Nahdlatul Ulama Cirebon University	313	313/12714x275 = 7	7
10	Muhammadiyah University of Tasikmalaya	299	299/12714x275 = 6	6
11	Muhammadiyah University of Sukabumi	242	242/12714x275 = 5	5
12	Muhammadiyah University of Cirebon	688	688/12714x275 = 15	15
13	Mandiri University	463	463/12714x275 = 10	10
14	Majalengka University	685	685/12714x275 = 15	15
15	Langlang Buana University	265	265/12714x275 = 6	6
16	Kuningan University	687	687/12714x275 = 15	15
17	Al-Ihya Islamic Kuningan University	134	134/12714x275 = 3	3
18	Islamic 45 Bekasi University	454	454/12714x275 = 10	10
19	Halim Sanusi University	55	55/12714x275 = 1	1
20	Garut University	134	134/12714x275 = 3	3
21	Juanda University	648	648/12714x275 = 14	14
22	Buana Perjuangan Karawang University	614	614/12714x275 = 13	13
23	University of Education Indonesia Bandung	659	659/12714x275 = 14	14
24	University of Education Indonesia Cibiru	672	672/12714x275 = 15	15
25	University of Education Indonesia Tasikmalaya	787	787/12714x275 = 17	17
26	University of Education Indonesia Sumedang	836	836/12714x275 = 18	18
27	University of Education Indonesia Purwakarta	672	672/12714x275 = 15	15
	Total	**12714**	**275**	

(Source: University Odd Semester 2021 Database)

The data collection tool used in this study consisted of two types, namely (1) a questionnaire and (2) a test in the form of a question. Questionnaires are used to measure perceptions of digital literacy skills and self-concept, while tests are used to measure logical

thinking patterns. The answer choices for the questionnaire consist of 5 (five) answer choices, namely strongly agree, agree, hesitate, disagree, and strongly disagree. At the same time, the logical thinking instrument test is given in the form of questions. The questions designed for this research are multiple choice questions with 4 (four) answer choices. Instrument validation is done by calculating the correlation between each statement/indicator with the total score using the Product Moment(r) correlation. The instruments for each variable are 35 statements of digital literacy ability, 34 comments on self-concept, and 25 questions on logical thinking patterns. The collected data were analyzed using multiple correlation techniques with the help of SPSS software. The hypotheses of this research are H1: self-concept is related to digital literacy ability, H2: logical thinking pattern is connected to digital iteration ability, and H3: self-concept and logical thinking pattern are related to digital literacy ability.

3. RESULTS AND DISCUSSION

This research is a correlational study that examines the relationship between the independent variable and the dependent variable. The independent variables studied were self-concept and logical thinking patterns, while the dependent variable was digital literacy ability.

Table 2 Calculation Results of Correlations

		Digital Literacy Ability	self-concept	Thinking Logical Pattern
Pearson Correlation	Digital Literacy Ability	1,000	.563	.234
	self-concept	.563	1,000	.072
	Thinking Logical Pattern	.234	.072	1,000
Sig. (1-tailed)	Digital Literacy Ability	.	.000	.000
	self-concept	.000	.	.116
	Thinking Logical Pattern	.000	.116	.
N	Digital Literacy Ability	275	275	275
	self-concept	275	275	275
	Thinking Logical Pattern	275	275	275

3.1. Relationship between self-concept and digital literacy ability

The results of testing the first hypothesis state a positive relationship between self-concept and digital literacy ability. This is evidenced by the correlation coefficient value of 0.563. Where the significance value is 0.00, this means that if the value of sig < 0.05, there is a significant relationship between self-concept and digital literacy ability. This means that the higher the level of one's self-concept, the higher one's digital literacy ability tends to be. The magnitude of the correlation of 0.563 > 0.5 means that the level of correlation/relationship between self-concept and digital literacy ability has a "strong" correlation.

Self-concept turns out to correlate with digital literacy ability because self-concept is a perception of oneself about the skills possessed in terms of physical and non-physical based on knowledge, experience, interpretation, and interaction with the social environment both directly and digitally. This is in line with Thalib (2017) statement that self-concept is not a factor brought from birth but an element learned and formed from individual experiences in dealing with others. A person to have a self-concept is usually created by itself through interactions with other people or life experiences based on one's thoughts, feelings, and life goals.

Some experts reveal that an individual's self-concept shows how he thinks about himself and consists of self-confidence, self-awareness, self-efficacy, and self-esteem. Individuals with a positive self-concept tend to have high learning motivation, leading to better learning achievement. Several researchers confirm that students with self-concept show

healthy development and positive psychological functioning (Chase et al., 2014; Jin Bang et al., 2011; Kozan et al., 2014; Madill et al., 2014).

Achieving a positive self-concept is the desired goal by individuals in education and broader socio-cultural settings. Conversely, a low self-concept will affect various important attributes in psychology (Tentama & Abdillah, 2019). People with negative self-perceptions believe they are incapable and powerless (Stuart & Sundeen, 2016). Individuals judge themselves as never good enough so that whatever is obtained will be valued lower than what is accepted by others (J.F. Calhoun & J.R. Acocella, 2004). Individuals also tend to be jealous of what other people have, are less able to control emotions, and underestimate themselves so that individuals lack confidence or are hesitant to try new things (Hadley et al., 2008). Some researchers identify that individuals with low self-concept tend to evaluate their physical condition negatively. With this condition, they believe they will be unable to fulfill their expectations and goals, so individuals do not value everything they have and do not carry out social roles in their environment (Berzonsky, 2001; Tentama & Abdillah, 2019).

3.2. Relationship between logical thinking patterns and digital literacy ability

The results of the second hypothesis state a positive relationship between logical thinking patterns and digital literacy ability. This is evidenced by the correlation coefficient value of 0.234. Where the significance value is 0.00, this means that if the value of sig < 0.05, there is a significant relationship between logical thinking patterns and digital literacy ability. This means that the higher one's logical thinking pattern level, the higher one's digital literacy ability tends to be. The magnitude of the correlation of 0.234 > 0.5 means that the correlation/relationship between logical thinking patterns and digital literacy ability is "Very Weak."

Logical thinking patterns also have a mutually interwoven correlation with digital literacy ability. Student teacher candidates with a high logical thinking pattern will be able to think straight, precise, deep, and directed in determining conclusions and decisions in acting by legal norms, rules, and rules that are by correct logic. Because, with a logical thinking pattern, you can filter, examine various information received, and be used as material to determine a decision to act, especially in today's technological era where all forms of communication and information can be obtained easily and quickly. This is in line with Manfaat (2010) logical thinking pattern, which is to carry out the basic assumptions we believe as references and references in responding to and interpreting various situations. These circumstances form the basis for our attitudes, decisions, and actions according to a specific pattern or logic.

Logical thinking patterns enable teacher candidate students to think using common sense or, in other words, through the reasoning they use to correctly examine, select, and selectively use information and communication technology tools. Carried out systematically with correct considerations, and encourages to form of logic and can produce a better, more accurate understanding of a particular problem, especially in the learning process and social interaction. Albrecht (Putra & Suyatno, 2013) explains that the main thing in logical thinking is to think sequentially or sequentially. The thinking process involves taking essential ideas, facts, and conclusions in a problem and organizing them into something meaningful to a person, by logical thinking means that a person must think in stages.

3.3. The Relationship between self-concept and logical thinking patterns together with Digital Literacy Ability

Table 2 Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	,595 [a]	,354	,350	14.374	,354	74.609	2	272	,000

a. Predictors: (Constant), Thinking Pattern Logical, Concept Self

Based on the model summary table above, it can be concluded that the results of testing the third hypothesis state that there is a positive relationship between self-concept and logical thinking patterns together with digital literacy ability. The value of sig evidence this positive relationship. F Change 0.000 < 0.05. Moreover, with the value of R or the value of the correlation coefficient of 0.595, it can be concluded that the relationship between self-concept and logical thinking patterns and digital literacy ability has a "Medium" relationship.

The life and behavior of an individual are said to be successful in carrying out his life. It can be seen that he organizes his self-concept in facing challenges. The pressures of life are influenced by his perceptions, concepts, and evaluations. The perceived image of himself from others becomes a personality judged by the experience of interacting with the environment. Alternatively, in other words, life, individual behavior in life is strongly influenced and determined by self-concept. In this case, it shows that self-concept plays a significant role in human behavior. Changes in self-concept result in changes in behavior. The self-concept possessed by prospective teacher students will direct themselves to know and assess themselves as to what character, behavior, and how they feel satisfied to fully accept themselves as a result of interacting and socializing with the environment directly and digitally. In addition, with a good self-concept, prospective teacher students can also evaluate themselves through social interactions or other social activities with the values they adhere to.

Self-concept plays a vital role in determining one's attitude to learning and capital for prospective teacher students to use and utilize advances in information and communication technology in the learning process and everyday life. Future teacher students who have a high self-concept will be aware of themselves. They can measure their ability to act consciously and strive to take care of themselves by using information and communication technology and interacting with their environment to avoid things that can harm them. Furthermore, other people can easily and quickly access materials and learning resources to complete coursework assignments, achieve high learning achievement, and maintain a self-image with complete awareness to become good person.

Self-concept is an attempt to understand ourselves, then produce our concept of ourselves, commonly referred to as self-concept or self-concept. According to Garn et al. (2020), self-concept is a mental representation of how people view themselves, which consists of various aspects. It is associated with psychological functioning and well-being throughout life (Platow et al., 2013). Therefore, it is essential to understand how and when different aspects of self-concept can stabilize and whether they remain stable throughout childhood, adolescence, and early adulthood (Putnick et al., 2020).

Branden (2011) defines self-concept as a person's thoughts, beliefs, and impressions about the nature and characteristics of himself, his limitations and capabilities, and his obligations and assets (Rahman, 2018). According to J.F. Calhoun & J.R. Acocella (2004), the development of self-concept is divided into positive and negative. This means that: (1) Positive self-concept is more about self-acceptance, not a great pride in oneself. However, individuals with a positive self-concept know very well about themselves and can understand and accept several facts about themselves. Individuals with a positive self-concept will usually design goals that are by reality. High probability of being achieved, face life in front of them. Assume life is a process of discovery; (2) Negative self-concept, which is divided into two types: the

individual's view of himself is entirely irregular, and the individual does not know his strengths and weaknesses or what is valued in his life. His view of himself is too stable. And regular. This can happen because individuals are educated very hard, thus creating a disciplined self-image according to laws and regulations.

Likewise, logical thinking patterns have an essential role in digital literacy ability. Because with a rational thinking pattern, one can connect one's thoughts, map out logical and systematic lines of thinking, and always observe and analyze reality to produce a conclusion based on the knowledge. It is undeniable that at this time, the progress of information and communication technology is growing very fast and rapidly. Students are sometimes faced with problems regarding lecture assignments or issues related to the current digital world, so it is essential to have a logical thinking pattern to filter what is accepted by thinking sensibly and logically, and can see from various points of view. The higher the logical thinking pattern of prospective teacher students, the easier it will be to find solutions to the problems.

The logical thinking pattern possessed by prospective teacher students is significant; by having a logical thinking pattern, students will be easy to reason in making decisions, solving problems, generating creative ideas, and being able to put the correct conclusions. In other words, logical thinking is the ability or skill of an individual to master a skill by connecting the existing information mathematically and consistently by using sequential and consistent reasoning to produce a conclusion. In other words, logical thinking is a process in which a person consistently uses reason to conclude. Saragih (2006) reveals that logical thinking is different from memorizing. This is because memorizing refers to memory ability, whereas logical thinking refers more to understanding (can understand) and the ability to evaluate to form skills (a process).

Increasingly aware that self-concept and logical thinking patterns are essential for each individual to support their success and happiness at work, in relationships, and in family life. A high self-concept and thinking pattern will help us be practical when faced with a problem in ourselves and others in the environment of social interaction amid society, both natural and digital. In other words, to improve the digital literacy ability of prospective teacher students, an educator/lecturer must further enhance self-concept and students' logical thinking patterns by providing intensive guidance and making habits. Such as asking various questions and using methods by approaching through cognitive strategies, which emphasizes the thought process, not the final result of a lesson.

4. CONCLUSION

Based on the results and discussion, it is concluded that self-concept is positively related to the digital literacy ability of prospective teacher students because having a high self-concept means that digital literacy ability tends to be increased as well. The pattern of logical thinking is positively related to the digital literacy ability of prospective teacher students; this shows that the higher the logical thinking pattern of future teacher students, the higher the digital literacy ability. There is a positive relationship between self-concept and logical thinking patterns and digital literacy ability; this shows that the higher the self-concept is accompanied, the higher the logical thinking pattern, and the higher the digital literacy ability of prospective teacher students. The contribution of self-concept and positive logical thinking patterns impact the digital literacy ability of prospective teacher students. Having a high self-concept and logical thinking patterns will help to achieve digital literacy in the learning process and as a medium for social interaction with the environment and support to become a professional teacher.

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