



# Investigating The Effect of Intrinsic Motivation to Digital Literacy Skills

Yeni Anistyasari<sup>1\*</sup>, Bambang Sujatmiko<sup>1</sup>, Ekohariadi Ekohariadi<sup>1</sup>, Shintami C Hidayati<sup>2</sup>

<sup>1</sup>Faculty of Engineering, Universitas Negeri Surabaya, Surabaya, Indonesia

<sup>2</sup>Department of Informatics, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

\*Email: [yenian@unesa.ac.id](mailto:yenian@unesa.ac.id)

## ABSTRACT

In today's digital age, all students are required to have Digital Literacy skills. To address this issue, Digital Literacy can be considered a required subject in higher education. Digital Literacy courses are closely related to computational reasoning at several universities abroad. In general, strategies for the development of computational thinking are closely related to motivational enhancement, which in turn improves academic performance. Therefore, the purpose of this study is to determine the relationship between non-engineering students' intrinsic motivation and digital literacy skills. Path analysis is utilized to analyse the relationships. According to the findings of the analysis, intrinsic motivation has a significant impact on digital literacy skills which consists of media literacy, information literacy, and technology information.

**Keywords:** *Digital Literacy Skills, Higher Education Student, Intrinsic Motivation, Path Analysis.*

## 1. INTRODUCTION

There was a rise in demand for online courses as the digitization process and the prevalence of digital technologies progressed. A great deal of attention has to be given to how people use digital technology, how they interact online, and the skills they have to do the duties related with digitalization, since this dependency is growing quickly [1]. Moreover, the need for labour credentials has shifted, with digital skills becoming an especially important prerequisite for the longevity of firms, the welfare of employees, and the expansion of economies. Thus, educational institutions play a facilitating role in equipping the next generation of workers with the necessary digital skills by means of creative pedagogical pathways.

In order to better prepare students for today's technology-driven industries, the education industry has developed and implemented a number of techniques throughout the years to enhance students' learning and digital abilities. The idealized picture of today's and tomorrow's workforce has been constructed using a variety of 21st-century educational frameworks and models. The OECD learning framework, the E-learning

model, the Partnership for 21st Century Skills (P21) framework, and many others are all examples of what are commonly referred to as 21st-century learning models or 21st-century learning frameworks. These models and frameworks serve as "signposts" for education in the twenty-first century by articulating the necessary skills and knowledge. Furthermore, the Substitution, Augmentation, Modification, and Redefinition (SAMR) and Technological Pedagogical Content Knowledge (TPACK) frameworks have played pivotal roles in enabling teachers to effectively incorporate technology into the classroom [2].

Recent studies have shown, however, that these and other models and frameworks have mostly been ineffectual, since high dropout rates continue to plague higher education. Students struggle to adapt to technology-enhanced education because they lack necessary digital skills and background knowledge. The result is that they either fail to make academic progress or abandon their education altogether [3].

High dropout rates in online courses may be reduced by teaching students to use digital tools effectively. Workplace performance and productivity are often higher for people who possess digital abilities as

compared to those who do not. The gap between current and required digital competences is not lost on businesses. To prepare their alumni for the digital future, several higher education institutions are providing them with digital workshops and courses. The Covid-19 epidemic also sparked the critical need for people, businesses, governments, and economies to overcome the digital skills gap. Apprenticeship programs, government "fast-track" measures to increase computer literacy, hiring temporary employees with computer skills, and contracting with independent contractors who work from home have all been unsuccessful [4].

With the constant development of new digital resources, the field of digital literacy has become impossible to pin down. Hence, further elaboration and agreement were required to comprehend the evolving nature of its functional and important aspects. Existing digital literacy frameworks and models (discussed above) offered the fundamental principles of digital literacy but did not give an explanation of the pedagogical models and learning theories that constituted the backbone of the pedagogical approaches.

Individuals are furthermore internally motivated by their own demands for discovery, novelty, challenge, and control; these are all examples of what psychologists' call [5] intrinsic motivation. Students with high levels of intrinsic motivation tend to outperform those with lower levels of intrinsic drive, according to research on the topic. Students that are intrinsically motivated are less likely to drop out of school and are more likely to be successful in the long run.

Students who are interested in learning for its own sake are more likely to ask questions and explore concepts at greater depth, regardless of their prior knowledge or age. Students with high levels of intrinsic motivation may not necessarily accomplish more in school or with technology, but they do tend to do different things. Students with high levels of intrinsic drive tend to be naturally inquisitive, and this trait leads to a more exploratory approach to studying, leading to the identification of solutions that may otherwise go overlooked.

Research on how students feel about Digital Literacy education is mostly concentrated in computer science and STEAM departments at universities. Concerns have been raised about how to pique young minds' interest in Digital Literacy, and keeping students motivated to learn Digital Literacy is crucial for motivational learning models, which could serve as a pedagogical framework for providing positive educational experiences. Moreover, some students may be inspired by this ongoing drive to pursue long-term professional goals in the area of digital literacy [6].

Researchers, educators, specialists, and professionals responded to this need by developing a variety of models and frameworks for teaching and learning that were informed by their unique perspectives, experiences, disciplinary training, cultural context, and social milieu. Some of these concepts gained traction, and educators began using them to better use technology in the classroom. However, research shows that the problem of the digital skills gap is still imminent, as educators continue to face challenges from attrition and the work pace of businesses striving to continually upskill the digital abilities of their alumnae in response to the dynamic character of the modern workplace. This article's goal is to analyze the effect of intrinsic motivation to digital literacy gaps.

## 2. METHOD

### 2.1. *Participants and Procedures*

The undergraduates in the Faculty of Engineering and the Faculty of Languages at a certain institution provided the data for this empirical study. This empirical research included people who attended Digital Literacy classes during the COVID-19 epidemic and took part in associated theoretical and practical exercises. Specifically, a Google Form survey was used to obtain answers from participants, and data was collected using a straightforward sampling approach. The poll was administered in an online classroom environment because of the widespread COVID-19 infection. Google Forms was used to disseminate the online survey link. The questions were on a four-point Likert-type scale, with 1 representing "Strongly disagree" and 4 representing "Strongly agree," and they pertained to (1) Perceived Literacy Digital Skills and (2) Intrinsic Motivation. There was a total of 127 replies to the survey, 120 (or 94.48%) of which were considered to be full responses for the purposes of this study.

### 2.2. *Instruments*

To assess "Intrinsic motivation," we modified a tool originally developed by Jaramillo et al. (2007) ( $\alpha = 0.787$ ). Moreover, we adapted Reddy Framework for the Digital Literacy Skill Framework ( $\alpha = 0.801$ ).

1. I attribute my success to my own will to succeed.
2. I am self-motivated and choose to learn for its own sake.
3. I wish to better myself through improving my academic performance.
4. Even if I had unlimited resources, I would continue my education because I like the challenge it presents.

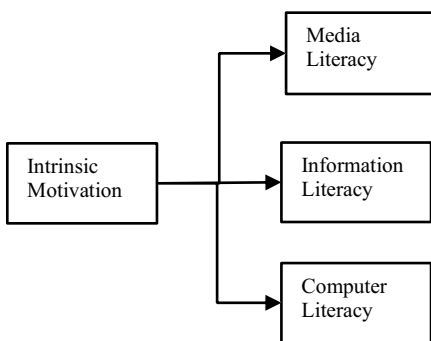
5. If I didn't have to retire eventually, I'd want to keep learning just for fun.
6. I like learning because it gives me the satisfaction of a job well done.

**2.3. Data analysis**

The data is obtained from the Google Form as an Excel-based dataset file, and then the file is converted to.xls format for analysis. STATA is used in the following phase of the data analysis process. Descriptive, correlative, and common method bias analyses are performed on the data.

**3. RESULTS AND DISCUSSION**

Based on the 120 total answers obtained, the descriptive findings of this empirical study revealed participant demographic information. The online poll included responses from 53.3% male students and 46.7% female students. The majority of the participants (78.3%) were between the ages of 18 and 20, with the remaining participants (21+) falling somewhere in between. The majority of respondents (51.4%) were enrolled in an engineering program, while almost half (48.5%) were language majors. Finally, owing to the COVID-19 pandemic, all of the survey's online respondents (100%) had to switch to an online learning environment.



**Figure 1** Research Model.

**Table 1.** Correlation Analysis Results

	Intrinsic Motivation
Intrinsic Motivation	1 (.832)
Media Literacy	0.821*
Information Literacy	0.766*
Computer Literacy	0.812*

**Table 2.** Direct Effect of Intrinsic Motivation

	Estimate	CI	p
Media Literacy	0.28	0.17	0.01
Information Literacy	0.18	0.16	0.00
Computer Literacy	0.19	0.24	0.00

The overall effects between the predictor or independent variable (i.e., intrinsic motivation) and the dependent variable (Media, Information, and Computer Literacy) are calculated (see Fig. 1). The findings show that "total effects" and "path estimate" of intrinsic motivation and media literacy both agree that the estimated values and degree of significance (Estimate = 0.28, p .01, CI: 0.17) support the hypothesis that intrinsic motivation has a significant relationship with media literacy. The relationship analysis between intrinsic motivation and information literacy shows that "total effects" and "path estimate" both agree that the estimated values and degree of significance (Estimate = 0.18, p .00, CI: 0.16) support the hypothesis that intrinsic motivation has a significant relationship with information literacy. Furthermore, the findings of intrinsic motivation and computer literacy show that "total effects" and "path estimate" of both agree that the estimate values and degree of significance (Estimate = 0.19, p .00, CI: 0.24) support the hypothesis that intrinsic motivation has a significant relationship with computer literacy.

Research into the ways in which technology-based education systems might aid learning processes, particularly in emergency situations, is scant. This is particularly true of the connection that exists between artificial intelligence, internal drive, and computational reasoning. Insight into the relationship between students' intrinsic desire for learning, computational thinking, and their own evaluations of their progress is provided by the data presented in this research.

The first hypotheses propose a connection between media literacy and intrinsic motivation. Our first hypothesis is supported by the path estimate, which confirms the significance of the measured interaction (Estimate = 0.28, p .01). Intrinsic motivation seems to have a strong and beneficial effect on student's media literacy skills. That is to say, as our understanding of intrinsic motivation grows, so do students' capacities for media literacy. Since some of the constructs (conceiving a problem, breaking it down into steps, establishing potential methods for a solution, etc.) are commonly occupied by both constructs, an increased understanding of how intrinsic motivation works can enable students to better conceptualize notions of media literacy.

The second hypothesis is supported by the data (Estimate = 0.18, p .00), which states, Intrinsic motivation has a significant relationship with information literacy. To determine the impact of intrinsic motivation on students' information literacy skills, internet-based chatbots are applied into their classroom. Students who use chatbots report much greater levels of intrinsic motivation than their peers who do not have access to information sources. They found substantial evidence of causality and association between the two variables. The

current paper adds to this line of thinking by showing that information literacy may serve as a teaching tool for students who take the time to learn about how it operates.

Moreover, the authors provide evidence of the connection between intrinsic motivation and computer literacy. The hypothesis has been tested and found to be true (Estimate = 0.28,  $p .01$ ). This is supported by the relevant body of literature because students are more willing to explore concepts and tap into their intrinsic motivation when they have greater agency in the use of technology and tools to solve problems. They retain their enthusiasm for studying for longer and delve deeper into topics connected to computational thinking as a consequence.

This research is in line with what has been written on the topic before. It shows intrinsic motivation may help create a system in higher education where knowledge gained in one area can inspire growth in another [7]. The significance of the link between digital literacy and intrinsic motivation was also highlighted in this research. This connection is discussed backwards and forwards in the literature, and conflicting findings have been suggested by various research. It may cause students to lose interest in studying and become more prone to "distractions," according to his research.

In a similar vein, discussion about the limitations of digital literacy in terms of its interaction capacities and how its deceptive learning conceptualization might lead to false predictions during the learning phase. These findings show that intrinsic motivation may provide subpar learning outcomes because of diminished motivation for learning and limited transferability to new ideas [8]. However, as this research shows, these limitations are not insurmountable, and have the potential to create a vibrant educational setting by catering to students' inherent motivations and facilitating their transition between intrinsic motivation and digital literacy.

The investigation shows how college students' use of motivating belief methods for digital learning relates to their overall level of digital literacy. It also looked at the structural connections between factors like technological self-efficacy, task-value beliefs, and goal orientation to determine how best to help college students develop the skills they need to be successful digital citizens and lifelong learners. This conclusion is consistent with the literature's contention that students who have a high level of self-efficacy are more willing to take risks, work harder, and endure longer in order to achieve their goals in online education.

Possessing a positive digital attitude is one way to improve computer skills. Therefore, pupils with a strong sense of self-efficacy are less likely to struggle with

digital learning. Students who rate themselves highly in their ability to use technology, for instance, are more likely to keep trying until they succeed. Successful students may see setbacks as opportunities to learn from their mistakes, get advice, and ultimately grow in their digital literacy skills [9]. This discovery has significant implications for teachers who want to foster students' sense of self-efficacy by imparting a variety of techniques. Self-talk and positive affirmations are a great technique to train the mind and boost self-efficacy. Academics have a role to play in providing the right environment for encouraging initiative.

Learning how to motivate oneself to study is an essential ability that may be greatly aided by academic instruction. Instead of just dumping information and expertise on students, educators should find ways to connect the material being taught to something their pupils really care about. Students' interest and drive might be sparked in this way [2]. Once it becomes routine, this will encourage students to give serious consideration to how they learn and to actively seek ways to enhance their approach to study. For students to learn well, retain information, and assess their own progress, they must have access to a variety of motivational tools. Academics may also enhance students' interest by picking materials that are likely to pique their students' curiosity and keep their motivation high.

Mastery, extrinsic motivation, and a focus on one's relative abilities are all important components of any goal-oriented approach to teaching digital literacy. It's probable that this is due, in part, to the fact that college students have a natural tendency to compete with one another when it comes to academic achievement. Several academic studies find that goal orientation tactics are helpful in improving digital literacy [10], therefore our findings are in line with the literature. This discovery has potential for informing the development of game-based education in the classroom.

The use of game-based learning activities may boost students' goal orientation towards accomplishing a learning target, hence this will also indirectly assist greater self-directed learning. Game-based pedagogy's competitive progress indicators increased student engagement and had a positive impact on both participation and learning. Challenges, fiction and/or fantasy, obstacles to overcome, and secret information are just a few examples of how incorporating elements of fantasy or game-like elements into classroom exercises. However, educational pursuits shouldn't divert attention away from the desired outcomes. Academics, like everyone else, need to know how to tell the difference between fun and learning [11]. Because of this, teachers may promote healthy rivalry among kids in the classroom by using a gaming approach. Motivated students will

have a more positive learning experience and improve their digital task performance, leading to higher levels of digital literacy.

Good digital literacy skills will give protection and lessen existing online crime, and they may also provide guidance as one explores and uses the internet. Digital literacy has been defined as "the 'literacy' ability to find, evaluate, use, share, and apply information technology and the internet." When the Covid-19 epidemic hits, it is extremely important for Indonesia to create digital literacy programs that make use of online resources and other forms of educational technology. However, parents must also play a role, especially if they were among the many who closely followed their kids during the Covid-19 era. In addition, for digital literacy to be successful and have a beneficial impact on students, teamwork between educators and parents is essential [12].

Students that are more tech savvy tend to be more disciplined. Previous research has shown that children's digital literacy influences their ability to exercise self-control, and this study lends credence to that theory. Children with low levels of digital literacy have poor impulse control, are more likely to be the victims of cybercrime, and are more likely to be the perpetrators of criminal conduct themselves. One possible explanation for this finding is that self-control is a key aspect in helping kids access, analyse, and apply information they obtain on the internet [13-15] This is consistent with the increased rate of inadequate information dissemination that occurred in Indonesia during the Covid-19 epidemic. Kids use social media and talk to strangers without thinking about the consequences. Cyberbullying and cyber abduction are serious problems that affect children. This discovery serves as a springboard for stakeholders to realize the significance of digital literacy and self-control abilities in children's online conduct.

This is crucial since, with the rapid progress of technology, kids may go online wherever and anywhere they choose. If nothing is done, kids will grow up to be internet addicts who are vulnerable to predators and bullies online. The parental mediation technique is one way in which children, parents, and educators in Indonesia may help one another during the current Covid-19 epidemic. This discovery serves as a springboard for stakeholders to realize the significance of digital literacy and self-control abilities in children's online conduct.

#### 4. CONCLUSIONS

All of the theories put out in the research were shown to be correct. To rephrase, there is a strong correlation between intrinsic motivation and media, information, and technology literacy, therefore combining the teaching of digital literacy with the promotion of motivation can only

benefit today's and tomorrow's educational institutions and their students. Inspiring students to learn for its own sake might improve teaching and learning in the present and future. Limitations exist in this research, as they do in all investigations. For instance, the statistics only represent a particular national context. Future research may avoid this problem by pooling data from several sources. Future research might also benefit from examining how to develop AI-based programs and curricula by focusing on intrinsic motivation for digital literacy abilities. It will aid pupils in making quicker and more significant intellectual progress.

This research includes the small size and diverse nature of the study's sample. Future evaluations of digital literacy and intrinsic motivation should include a more diverse set of participants, including students at varying educational levels, workers, and members of the general public. In addition, because digital literacy is self-assessed, the test may be enhanced by replacing the self-assessed questions with "skills test questions" at the early stage of the assessment, or even by include a hybrid questionnaire. Emotional, psychological, and societal/economic contexts are also important considerations.

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