



## **Analysis of ICT Literacy Skill of Fifth Grade Elementary School Students in Cirebon Border Area**

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### **Abstract**

The rapid development of Information and Communication Technology (ICT) in the 21<sup>st</sup> century has influenced various aspects of people's lives, one of which is in the educational field. ICT has a vital role in the development of learning systems. This study aims to analyze the elementary school students' ICT literacy skills in the border area of Cirebon Regency. The research method used was a survey method with a quantitative descriptive approach. Data collection techniques utilized a questionnaire. The research sample consisted of 157 grade V elementary school students in the Sedong Sub-district located on the border of Cirebon Regency, Indonesia. The results showed that 82% of students had ICT devices, such as laptops, smartphones, or tablets, with 61% of students accustomed to using ICT devices in their daily lives for between 2-6 hours per day. However, the students' ICT literacy level was still at level 1 out of 6 levels. Only 32% of students used ICT devices to find information as needed, and 27% of students utilized ICT devices for discussion about learning. Students used it more for entertainment, such as listening to music, watching videos, playing games, and joking with their friends on social media. In this case, students need guidance and direction in using ICT devices to be used as needed in daily life even though they are in the border area between regions. This study's benefit is to see the percentage of elementary school students' ICT literacy level as a preliminary study for other ongoing studies.

**Keywords:** ICT Literacy, Primary School, Border Area

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### Abstrak

Pesatnya perkembangan Teknologi Informasi dan Komunikasi (TIK) di abad 21 telah mempengaruhi berbagai aspek kehidupan masyarakat, salah satunya di bidang pendidikan. TIK memiliki peran penting dalam pengembangan sistem pembelajaran. Penelitian ini bertujuan untuk menganalisis keterampilan literasi TIK siswa sekolah dasar di wilayah perbatasan Kabupaten Cirebon. Metode penelitian yang digunakan adalah metode survei dengan pendekatan deskriptif kuantitatif. Teknik pengumpulan data menggunakan kuesioner. Sampel penelitian terdiri dari 157 siswa sekolah dasar kelas V di Kecamatan Sedong yang terletak di perbatasan Kabupaten Cirebon, Indonesia. Hasil penelitian menunjukkan bahwa 82% siswa memiliki perangkat TIK, seperti laptop, smartphome, atau tablet, dengan 61% siswa terbiasa menggunakan perangkat TIK dalam kehidupan sehari-hari antara 2-6 jam per hari. Namun tingkat literasi TIK siswa masih berada pada level 1 dari 6 level. Hanya 32% siswa yang menggunakan perangkat TIK untuk mencari informasi sesuai kebutuhan, dan 27% siswa menggunakan perangkat TIK untuk diskusi tentang pembelajaran. Siswa lebih banyak memanfaatkannya untuk hiburan, seperti mendengarkan musik, menonton video, bermain game, dan bercanda dengan teman-temannya di media sosial. Dalam hal ini siswa membutuhkan bimbingan dan arahan dalam menggunakan perangkat TIK agar dapat digunakan sesuai kebutuhan dalam kehidupan sehari-hari meskipun berada di daerah perbatasan antar daerah. Manfaat studi ini adalah untuk melihat persentase tingkat literasi TIK siswa sekolah dasar sebagai studi pendahuluan untuk studi lain yang sedang berlangsung.

**Kata Kunci:** Literasi TIK, Sekolah Dasar, Daerah Perbatasan

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## INTRODUCTION

The development of Information and Communication Technology (ICT) has made significant changes in various aspects of life. Currently, ICT has a crucial role in every human activity because ICT devices continue to develop rapidly, and their use has been utilized in almost all sectors. The more rapid development has allowed ICT devices to be part of student learning innovations by integrating this technology into the learning process and students' daily lives (Kirikkaya & Başgöl, 2019). Moreover, in the era of disruption 4.0., technological advances must also be used in the educational world, especially elementary education. If educators/teachers can master ICT skills, learning can be contextual and relevant to the era of disruption 4.0. (Astini, 2019). Various media platforms should be used in learning. However, Rahmawati (2018) found that ICT devices have not been maximally applied in every lesson in schools in Indonesia. Besides, ICT literacy must also receive specific attention from schools. Literacy skills in technology and information must be implemented in students. It is one way to protect students from technological progress's negative implications (Mulyono & Halim, 2015).

The development of ICT has also driven education reform in countries worldwide by integrating the application of ICT in learning (Wu et al., 2019). One of the innovations made in the field of education is the movement of 21st-century skills. It is an effort to equip students to face challenges and anticipate changes in the economic, social, and educational fields (Aesaert et al., 2014). One of the eight main competencies in 21st-century skills is ICT literacy. ICT literacy and the ability to use ICT devices are seen as the most important abilities for students to master in 21st-century skills because they are very much needed in the future (Ahonen & Kinnunen, 2014). In fact, the main reason for the emergence of 21st-century skills is an effort to prepare students to face increasingly sophisticated ICT developments.

In the sphere of urban society, technology is an essential part of everyday life, even as their basic needs. From early

childhood, the learning process, communication, and entertainment concepts are shaped within the framework of technological advancement (Arabacioglu & Unver, 2016). Elementary school-age students are already accustomed to using ICT devices, such as computers, smartphones, tablets, game consoles, and others (Santos et al., 2019). However, in Indonesia, having thousands of islands with geographic situations and heterogeneous populations socially, economically, culturally, and religiously has led to gaps between urban communities and people living in border areas between regions, one of which is the digital divide (Juditha, 2014).

Long distances from government centers, damaged road access, and limited information and communication networks also affect students' educational conditions in border areas. Schools in rural areas or border areas, in general, do not have digital learning environments, especially classrooms equipped with ICT devices (Wu et al., 2019). An example is a school in Sedong Sub-district on the border between Cirebon and Kuningan Regencies. Schools in these border areas had minimal facilities for ICT devices that could support the ICT-based learning process. Based on the observation results in November 2019, it was revealed that schools located on the border between Cirebon and Kuningan Regencies did not yet have ICT devices that students could use. Other devices, such as audio-visual equipment, were still limited in number and were not yet available in every class. Besides, all schools in these border areas did not have internet network facilities, causing learning resources to be limited to print media. In fact, schools should become facilitators for students in improving ICT literacy skills through ICT-based learning.

Even so, people in these border areas have already utilized ICT devices, such as smartphones, in their daily lives. Likewise, elementary school-age students are starting to get to know various ICT devices even though their use has not been utilized in supporting the learning process in the classroom. Based on this, this study aimed to analyze the elementary school students' ICT literacy skills in the border area of Cirebon Regency as a

parameter of student readiness in implementing ICT-based learning.

## METHODS

The method used in this research was a survey method with a quantitative descriptive approach (Cirus, 2014). The population used in this study was the grade V elementary school students in Sedong Sub-district, amounting to 678 students, while the sample used in this study was 157 students. The sampling technique was carried out using the purposive sampling technique by considering the school located on the border between Cirebon Regency and Kuningan Regency.

In this study, the data collection technique employed a questionnaire with the Guttman scale, which has two answer choices: "Yes" and "No". The presentation of data in the form of a questionnaire was to view and present data in the form of a percentage as a reference to see the high and low percentages of ICT skills objectively in elementary schools in the border area of Cirebon. The indicator measured was the grade V elementary school students' ICT literacy skill, consisting of three aspects: basic skills to operate ICT devices, the ability to explore information using ICT devices, and the ability to communicate using ICT devices (Cirus, 2014; Fisser & Thijs, 2015). Besides, measurements were also carried out on the ownership of ICT devices and the ICT devices' time of use by students as supporting data in measuring students' ICT literacy levels. The ICT devices that were variables in the questionnaire could be used to find information and communicate, namely laptops, smartphones, or tablets.

The model used to measure students' ICT literacy levels was the Personal Capability Maturity Model (P-CMM) from the Ministry of Communication and Information of the Republic of Indonesia as mentioned in *Kebijakan dan Perkembangan Tim Koordinasi Telematika Indonesia (TKPI) [Policy and Development of the Indonesian Telematics Coordination Team]*. The level of ICT literacy is divided into six levels, as shown in Table 1.

**Table 1.** Level of ICT Literacy

Level	ICT Literacy
0	If the individual does not know at all and does not care about the importance of ICT in life
1	If the individual has had one or two experiences where information is an essential component for achieving desires and problem-solving and has involved information technology to look for it
2	If an individual has repeatedly used technology to help with daily activities and has a pattern of repetition in its use
3	If an individual has a standard of mastery and understanding of information and technology that is needed, and consistently uses these standards as a reference for carrying out daily activities.
4	If the individual can significantly increase (it can be stated quantitatively) the performance of daily life activities through the use of information technology
5	If the individual perceives information and technology as inseparable parts of daily activities, which directly or indirectly affect his behavior and culture (part of the information society)

Following Sugiyono in *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D [Educational Research Methods: Quantitative, Qualitative, and R&D Approach]* the result will be analyze by using simple percentages quantitatively to draw a conclusion.

## RESULTS AND DISCUSSION

### Respondents' Profile

Data collection was carried out by distributing questionnaires to 157 Grade V students in six elementary schools in Sedong Sub-district, whose schools were located on the border between Cirebon and Kuningan Regencies. Details of the number of respondents based on gender are presented in Table 2.

**Table 2.** Details of the Number of Respondents

School	Respondent		Total
	Male	Female	
SDN 1 KWN	11	8	19
SDN 1 WH	19	12	31
SDN 1 WJ	18	14	32
SDN 2 WH	6	11	17
SDN 2 WJ	19	16	35
SDN 2 SK	7	16	23
<b>Total</b>	<b>80</b>	<b>77</b>	<b>157</b>

The number of students in schools located on the border was relatively smaller than those in schools near the center of the sub-district government. It was recorded that only 23% of the total number of students in the Sedong Sub-district attended schools in border areas. It was because schools located on the border were only devoted to people living in the border area, who had a relatively smaller population than residents around the center of the subdistrict government. Besides, damaged and challenging road access was also one reason students' parents preferred schools close to the sub-district government even though the distance was further.

#### Analysis of Student Ownership of ICT Device Data

The first data analysis was carried out on the ownership of ICT devices by students. Ownership of ICT devices data was intended to measure the extent to which students were familiar with and used ICT devices in their daily lives. The ICT device variables used in this study were laptops, smartphones, and tablets. It was because these three devices were included in the ICT devices easily accessible even by people living in border areas. The data analysis results on the ownership of ICT devices by students are displayed in Table 3.

The data analysis results of students' ownership of ICT devices in Table 3 show that most students already have had at least one type of ICT device used in their daily lives. Only 18% of students did not have any type of ICT device in their daily lives. A smartphone is an ICT device that almost all students had. This data indicates that students living in border areas are familiar with and use ICT devices daily.

**Table 3.** Data Analysis Results of Student Ownership of ICT Devices

Types of ICT Devices	Score	Percentage (%)
Laptop	5	3
Gadget/Smartphone	129	82
Smart Tablet	42	27
Have more than one ICT device	37	24
Do not have an ICT device	28	18

#### Analysis of the ICT Devices' Time of Use by Students

In addition to the ownership of ICT devices, analysis was also conducted on the ICT devices' time of use in students' daily lives. It was done to measure how often students used their ICT devices. The analysis results of the ICT devices' time of use per day by students are depicted in Table 4.

**Table 4.** Analysis Results of the ICT Devices' Time of Use per Day by Students

Time	Category	Score	Percentage
0 Hours	Never	28	18
0-2 Hours	Rarely	33	21
2-4 Hours	Sometimes	39	25
4-6 Hours	Often	44	28
> 6 Hours	Very often	13	8

The analysis results of the ICT devices' time of use per day by students in Table 4 reveal that 53% of students used their ICT devices between 2–6 hours per day, and 8% of students utilized them more than 6 hours per day. These results indicated that 61% of students were accustomed to using ICT devices in their daily lives, even 36% of students often used them in their daily lives.

#### Analysis of Students' ICT Literacy Skill Data

Data on students' ICT literacy skills were divided into three aspects that measured students' abilities in operating and utilizing ICT devices according to their needs. The aspects measured included the basic ability to

operate ICT devices, the ability to explore information using ICT devices, and the ability to communicate using ICT devices with indicators adjusted to grade V elementary school students' level. The data analysis results on students' ICT literacy skills are exhibited in Table 5.

**Table 5.** Data Analysis Results of Students' ICT Literacy Skills

No	Aspect	Indicator	(%)
1	Basic Skills to Operate ICT Devices	Enabling and disabling ICT devices (Laptop/ Smartphone/ Tablet)	100
		Saving and opening document files on ICT devices	38
		Saving and opening media files on ICT devices	83
		Transferring files between ICT devices	59
		Keeping ICT devices safe	41
2	Ability to Explore Information Using ICT Devices	Connecting ICT devices to the Internet	85
		Searching for information using a web browser from an ICT device	50
		Downloading files to ICT devices	22
		Using information from the internet as needed	32
3	Communicating Using ICT Devices	Having e-mail	13
		Having a social media account (WhatsApp/Facebook/Twitter/Instagram, etc.)	66
		Using ICT devices to send and receive messages (SMS/e-mail)	45
		Using social media to communicate with other people	59
		Using social media to send and receive files	59
		Conducting learning discussions through social media with other people	27

In Table 5, the data analysis results on students' ICT literacy skills disclose that 64% of students have already had basic skills in operating ICT devices on average even though their uses were still limited to smartphones and tablets, while students did not commonly use laptops. On average, 47% of students could explore information using ICT devices. Students who already have ICT devices have already used internet services for their devices, although their uses were still limited by the weak internet network in border areas and the internet network cost that students have not reached. Therefore, only 32% of students used ICT devices to find information as needed; these results were still relatively low.

On average, 45% of students could communicate using ICT devices, either using SMS services or social media. Even though they lived in the border area, students were considered to be actively communicating, especially using WhatsApp social media. Internet services in their ICT devices were mainly used to update social media, such as uploading or sending media to friends around them. Even 100% of female students who became respondents had the same answer regarding their social media experiences. However, on average, students communicated using ICT devices for entertainment, as seen from only 27% of students who discussed learning through social media.

Based on these results, when referring to P-CMM regarding the ICT literacy level, grade V students in Sedong Sub-district, which is between Cirebon Regency and Kuningan Regency, were at level 1 out of 6 levels. It denoted that students had one or two experiences involving information technology to find the information needed in problem-solving. However, students have not routinely used technology in solving problems in their daily lives.

### Discussion

The concept of lifelong learning and relevant education as ICT development is an interesting topic for education observers and practitioners. The fact that ICT has occupied a position in every area of life has created a need to provide education to students to adapt to ICT developments in their lives (Alan et al., 2019). Education must continue to adapt to the

development of science and technology by developing student skills in accordance with the demands of the times. The development of increasingly sophisticated ICT is also the main reason why 21st-century skills are different from previous centuries (Chalkiadaki, 2018). It also applies to students who study in border areas.

This results of this study indicated that students in regional border areas could follow the development of ICT, although they still had limitations in internet networks or the availability of ICT devices compared to students in urban areas due to social and economic disparities. It is also part of government effort (Dhahir, 2019). Even so, the people in Sedong Sub-district located in the border area were technology literate and directed their children to adapt to ICT developments from elementary school age. It could be seen from 82% of grade V students who already have had ICT devices, with 61% of students having the time of use of 2–6 hours per day; it suggested that students were accustomed to using ICT devices in their daily lives.

However, the habit of using ICT was not followed by its use in everyday life as needed. Even though students already have a basic in operating ICT devices, their use in everyday life was still just for entertainment, such as listening to music, watching videos, and playing games so that students saw ICT devices such as laptops, smartphones, or tablets as "playing devices". Likewise, with means of communication such as social media, students tended to use it as entertainment with their friends. Indeed, it has become one of the negative impacts of social media for students; if they play it without guidance, they will more often use social media for entertainment than educational means (Amaruddin et al., 2019). Therefore, even though students already had good basic skills in operating ICT devices, the students' ICT literacy level was still at level 1 or still low.

In fact, both ICT devices to seek information or communication will be beneficial if used in learning. Some benefits obtained from ICT in learning include increasing interest and motivation to learn, developing creativity and can be a learning resource that helps increase student

understanding. Currently, students are more interested and motivated to see learning in the form of PowerPoint presentations or watching learning videos displayed on a projector, listening to music from smartphones, and others (Islami et al., 2019). Besides, ICT-supported learning effectively improves various skills, such as creative thinking skills or communication skills (Das, 2019; Nurahman et al., 2019). Therefore, students should also use ICT devices with guidance, both from parents and teachers, so that they are not only accustomed to using ICT devices but can also use these ICT devices according to their needs in their daily life, even though they are in the border areas between regions (Ginting, 2019). In times of the COVID-19 pandemic like this, digital literacy is needed as a medium or platform to teach students online. During this pandemic, several benefits of digital literacy include saving time, being fast, cost-effective, actual, and keeping students connected to the learning system (Irhandayaningsih, 2020; Sumiati & Wijonarko, 2020).

## CONCLUSION

Based on the study's results, it could be concluded that 82% of students already had ICT devices, such as laptops, smartphones, or tablets, with 61% of students already accustomed to using ICT devices in their daily lives for between 2–6 hours per day. On average, 64% of students already had basic skills in operating ICT devices even though their use was still limited to smartphones and tablets. Besides, 47% of students could explore information using ICT devices, and 45% of students could communicate using ICT devices, either using SMS services or social media. However, the students' ICT literacy level was still at level 1 out of 6 levels. Only 32% of students utilized ICT devices to find information as needed, and 27% of students used ICT devices for discussions about learning. Students used it more for entertainment, such as listening to music, watching videos, playing games, and joking with their friends on social media. Therefore, students need guidance and direction in using ICT tools to use them according to their daily

needs even though they are in the border area between regions.

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