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DIGITAL LITERACY LEVEL OF SENIOR HIGH SCHOOL STUDENTS IN BANDUNG

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ABSTRACT

In response to the rapid changes in society especially in education and technology areas, the need for 21st-century skills, such as digital literacy has also increased. For instance, digital literacy-based learning has been applied in geography for a long time through the use of electronic devices in the learning process. However, to use knowledge and skills related to technology effectively in the learning process, students are also required to have critical thinking skills and be proficient in evaluating information provided in digital media. This study aims to analyze digital literacy level of senior high students in Bandung. The research method used is quantitative approach by distributing multiple-choice questionnaire to 83 senior high school students. The results of the test showed the students have a high digital literacy in terms of ICT/digital/computer literacy, information literacy, communication and collaborations skills, and creativity. While in indicators such as media literacy, learning to learn skills, and citizenship still require improvement.

Keywords: *digital literacy, geography, learning*

INTRODUCTION

The global community is experiencing rapid and significant changes. This era is characterized by a knowledge-based economy, information technology, globalization, the industrial revolution 4.0 (Redhana, 2019). The citizens must be prepared to face fierce competition in various aspect of life, including education, the economy, communication, and information. Therefore, as a part of the global citizens, young generations or students need skills to adapt to these changes. According to The World Economic Forum, 21st-century skills can be categorized into 16 key competencies grouped into three major categories (World Economic Forum, 2016). The first category is

basic literacy, encompassing literacy, numeracy, and ICT literacy. This basic literacy is the focus of traditional education and demonstrates how students apply core skills to everyday tasks. The second category contains skills that help students approach complex challenges or problems. These competencies, often referred to as 4Cs (critical thinking and problem solving, creativity, communication skills, and ability to work collaboratively) (Jackson et al., 2012; van Laar et al., 2020).

Based on these opinions, one of the most important skills for individuals to possess in the computerization and technology era is digital literacy. Gilster (1997) defines digital literacy as the ability to understand and use of information in various formats when presented via a computer. Digital literacy is increasingly important because information and communication has become an integral part of daily life, from home and school to the workplace (Lee, 2014). Therefore, digital literacy should be utilized into learning in schools. As stated by Shopova (2014), students are often good at using social networks, email, skype, browsing the internet, active as gamers and participating in virtual communities. Moreover, Wahyuni et al. (2024) stated that technology, such as mobile apps and online platforms, equips students with essential skills for the future. However, their knowledge and competence for using new technologies effectively in the learning process is often shallow. That is why people are also required to have critical thinking skills and be good at evaluating information that is provided in digital media.

One of the examples is the use of digital media in geography learning in the classroom. It can be seen from how remote sensing, geography information systems (GIS), and digital photography are applied in geography learning (Favier & Van Der Schee, 2014). Studies conducted by Apriyanti & Purbojo (2023) and Pham et al. (2021) have shown that digital literacy-based geography learning positively affects student satisfaction, which leads to better cognitive learning outcomes. Digital literacy-based learning in geography enhances collaboration skills among students and making it easier for them to understand the material, particularly through audio, visuals, and videos during lessons. Furthermore, easier access to information related to learning contributes to optimal learning results.

This phenomenon also occurs in Bandung as the capital city of West Java Province. Majority of the students own electronic devices that can be used for learning process in schools. They were allowed to use smartphones or tablets during the lessons. The teachers also sometimes give extra class by online using zoom and google meet, or using google classroom to submit the student's works. Another example also shown when the teacher used video from television or YouTube to explain natural events such as earthquakes, volcanic eruptions, tsunami. Modern technology helps students to broaden their views about the world and its impact to their life. Therefore, this study examines the level of digital literacy of senior high school students in the city of Bandung, West Java.

METHODS

This research took place in public and private schools of Bandung, West Java. The participants of this research were students with total 83 respondents from public and private school with composition of 43 female and 40 male students and age range of 14-19 years old. This study used quantitative approach and descriptive analysis research method. Data collection through surveys was carried out by distributing multiple-choice questionnaire to the respondents. The instrument in this survey is divided into eight parts based on the indicators of digital literacy. The indicators are: a) ICT/Digital/Computer literacy, b) Media Literacy (Visual and Audio and Video literacy), c) Information literacy, d) learning to learn, e) communication and collaboration skills, f) academic practice, g) creativity, and h) citizenship (Beetham et al., 2009). The data will be recorded with percentage statistics with description or explanation by making graphs and grouping. After that the author analyzes the results with relevant literature references from books, journals, and scientific papers related to each indicator.

RESULTS AND DISCUSSION

Table 1 shows that majority of the students have a very good abilities to work with ICT/Digital/Computer. They were able to do basic tasks such as saving file in the computer, connecting device with the Wi-Fi, and uploading files to internet. As for the ability to use Microsoft Words to create and edit text documents for their assignments, 89% of the respondents said they were able to do so while 11% were still not good.

Table 1. ICT/Digital/Computer Literacy

Abilities to work with ICT/Digital/Computer	Able	No
Saving file in the computer	**99%**	**1%**
Connecting device with Wi-Fi	**100%**	**0%**
Using Microsoft Words, etc.	**89%**	**11%**
Uploading files to internet	**99%**	**1%**

Literacy has shifted from classical literacy (reading and writing skills) to audiovisual literacy, which is related to digital literacy (Okela, 2024). The survey data shown in table 2 indicated that majority of students (95%) researched news sources when using information from internet to confirm the accuracy of the data provided. Most of respondents (96%) understand when using google maps or Waze, the blue line symbol on the map usually indicates recommended route to destinations. However, only half of students (53%) understand how digital literacy helps in interpreting images, symbols, and maps related to geography, as well as in comprehending ling texts and content.

Table 2. Media Literacy (Visual and audio and video Literacy)

Media Literacy	Yes	No
Research news sources to confirm the accuracy of the information provided	**95%**	**5%**
Understand how digital literacy helps in interpreting images, symbols, and maps related to geography, as well as in comprehending long texts and content related to geographic studies	**53%**	**47%**
Understand when using Google maps or Waze, the blue line symbol on the map usually indicates recommended route to destination	**96%**	**4%**

As for information in geography, the results presented in table 3 show that most of the students had understood the advantage if using digital technology for geography. Information related to geography can be accessed faster, easy, and updated in real-time. They were also used digital map applications to study geography in order to understand location and distance as well as providing travel routes and travel time. Moreover, majority of them (92%) also look for information from trusted sources such as scientific journals, government website, or educational institutions.

Table 3. Information Literacy

Information Literacy in Geography	Yes	No
The advantage of using digital technology to understand geography is that geographic information can be accessed quickly, easily, and updated in real-time.	**99%**	**1%**
Using digital map applications to study geography helps users understand location and distance between places, as well as providing travel routes and travel time data	**98%**	**2%**
When finding geographic information on the internet, the best way to ensure its accuracy is to look for information from trusted sources, such as scientific journals, government website, or educational institutions	**92%**	**8%**

Learning to learn is a competence when the students able to have self-evaluation, self-analysis, self-reflection, and organization of time while using digital media for learning (Beetham et al., 2009). Table 4 shows that majority of students able to see the advantage of using YouTube learning videos to explain difficult concept. Most of them also understood how to identify challenges in using digital platforms like TikTok for geography learning sometimes the information could be unverified and can be misleading to them. In addition, large number of them know to keep learning spirit high when using digital media is managing study time and taking regular breaks to prevent

boredom. However, only small portion of students who could determine the type of digital platform best suited for sharing infographics.

Table 4. Learning to Learn

Learning to Learn	Understand	No
Determination of type of digital platform is best suited for sharing infographics.	**37%**	**63%**
Identifying challenges in using digital platforms like TikTok for geography learning is the information presented is sometimes unverified and can be misleading	**83%**	**17%**
Understanding of the advantage of using YouTube learning videos is that it can helps explain difficult concept	**99%**	**1%**
Knowing that one way to keep learning spirit high when using digital media is managing study time and taking regular breaks to prevent boredom	**80%**	**20%**

Through digital media, students are able to connect and having communication and collaboration with their classmates or their teachers. Table 5 shows more than half of the students exchange ideas about geography in group discussion via social media application such as WhatsApp or Telegram. Most of them have created posts in social media (Instagram, Facebook, or Twitter) to discuss about geography and used video conference (Zoom, google Meet). It can be seen majority of them understand the purpose of exchanging ideas about geography using digital media is to enrich the knowledge so they can get numerous sources and point of views.

Table 5. Communication and Collaboration Skills

Communication and Collaboration Skills	Yes	No
Exchange ideas about geography in group discussion through WhatsApp or Telegram	**73%**	**63%**
Create posts in social media (Instagram, Facebook, or Twitter) to discuss geography concepts and invite friends to comment	**80%**	**17%**
Using video conference applications (Zoom or Google Meet)	**78%**	**1%**
Understand the purpose of exchanging ideas about geography via digital media is to enrich the knowledge from various sources and point of view	**82%**	**20%**

According to Beetham et al. (2009) Academic practice in digital literacy is a skill where the learners competent in organizing academic ideas using digital tools, apprehend and presenting academic ideas using variety of

media. Table 6 shows in geography learning, most of the students understand the function of electronic devices (mobile phones and tablets) to help them open e-book or can be used as interactive media. They also agree that variety of media can be used to understand geographical conditions such as temperature, weather, and wind condition. They are also able to contrasting the function of video and paragraph in explaining hydrological cycle. On the other hand, only more than a half of the pupils can utilize photos to give visual information about landscape and map

Table 6. Academic Practice (Study Skills)

Skills for Academic Practice (Study Skills)	Yes	No
Understand how mobile phones or tablets are effective learning tools because of the accessibility to open e-book and using interactive applications	**82%**	**18%**
Using AccuWeather, Info BMKG, and The Weather Channel to understand geographical conditions such as temperature, weather, and wind condition	**79%**	**21%**
Utilize photos to give visual information about landscape and map	**69%**	**31%**
Contrasting the function of video and paragraph in explaining hydrological cycle	**78%**	**22%**

When the students received the information from various sources and forms, the next step is how will they process the ideas and transform it into a product or output. Table 7 indicates the skill which the students must create a new form of creations as the result of their learning through digital media. More than half of them were able to create geography assignments in many designs. For instances photos, infographics, and articles. Large number of the students (79%) could operate Ms. Office (word, excel, power point, etc.) to help them in geography class. In addition, most of them responsibly producing original works, recycle, or remix into new creations using variety of sources from digital world.

Table 7. Creativity

Skills for Creativity	Yes	No
Create infographics, photos, and articles for geography assignments	**68%**	**32%**
Operate Ms. Office (Word, Excel, Power point, etc.) in geography class	**79%**	**21%**
Produce original works, recycle, or remix into new creations using various sources from digital world responsibly	**79%**	**21%**

Digital citizenship refers to digital rights and privacy (Jæger, 2021) and respect for self and other people (Öztürk, 2021). Table 8 shows most of the students have applied good digital etiquette and responsibility in digital world. As users they were aware the needs to always ensure the source of information should be from trustworthy institutions and they must compare with reliable internet sources for data accuracy. Moreover, majority of them are agree that as a citizen of digital world, they need to protects people's rights by avoiding plagiarism, respecting other and maintain etiquette when using digital technology.

Table 8. Citizenship

Citizenship	Yes	No
Ensure the source of geographic information is from trustworthy institutions or research organizations	**95%**	**5%**
Comparing information with various reliable internet sources for data accuracy	**77%**	**23%**
Respect others and maintain etiquette related to interacting on social media	**90%**	**10%**
Avoid plagiarism when citing information from internet	**86%**	**14%**

Based on descriptions about each indicator, figure 1 shows the overall results for digital literacy level of senior high school students in Bandung. Majority of students have digital skills needed for learning process in the era of technology. Mastering digital skills not only related to only know how to operate the electronic devices, on top of that the students also expected to be a good citizen of digital world who responsible with their actions and critical with every information they obtained through digital media.

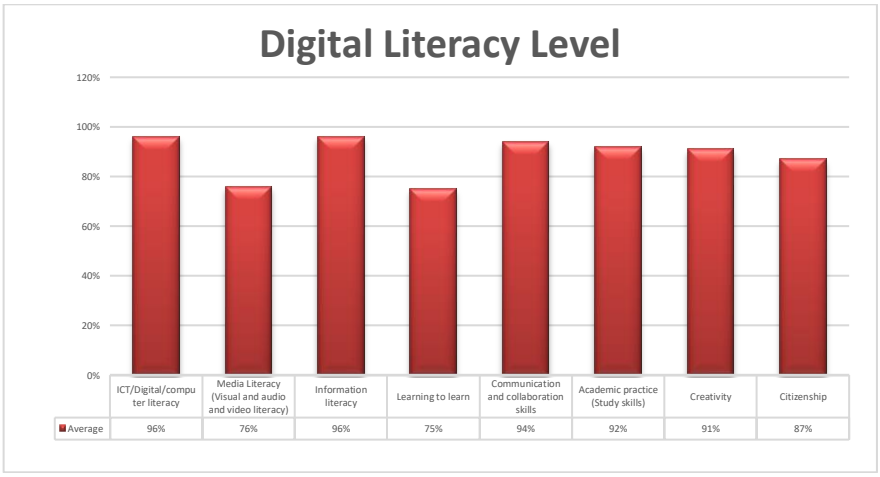

Figure 1. Digital Literacy Level of Senior High School Students in Bandung

ICT/digital/computer literacy is means being able to select and operate hardware (devices), software (applications), and services (such as web platform) (Jisc, 2024). As a basic competence the students need to master this skill with the aim of positive influence in 21st century teaching and learning (Pellegrino, 2014). Digital literacy revolves around and is in connection with the concept of media literacy (Tinmaz et al., 2022). Media literacy encompasses the way the users engage to information in digital media, including visual, audio, and video). When learning about geography, the students will be exposed with numerous symbols, pictures, maps, infographics, etc. For this reason, the pupils need to improve this skill to help them understand events related to geography.

In digital world, countless data available to find. Hence, the students must excel in filtering the information and able to monitoring and reflecting on how well they learn through digital platforms. Using devices during lessons offers teachers and students the advantages of convenience and instant communication (Spires et al., 2012). Therefore, they will have a good academic or study skills (reading, writing, organization, and problem-solving).

Lastly, the students must produce new products as an outcome of the knowledge that the students obtained from digital media. It is also necessary to be respectful and responsible to use digital platform as part of global citizen. Spires et al. (2018) cited digital citizenship as part of digital literacy is highly important in our globalized, virtual world. It means education institution need to include it in digital literacy education.

CONCLUSIONS AND RECOMMENDATIONS

In general, senior high school students in Bandung are familiar with digital platforms and have achieved high scores in most indicators of digital literacy, including ICT/digital/computer literacy, information literacy, communication and collaboration skills, academic practice (study skills), and creativity. At the same time, in term of media literacy (visual, audio, and video literacy), learning to learn skills, and citizenship, the students need further practice. Improvement in digital literacy level of the students is a vital factor in achieving better academic results in the learning process. Future research can focus on the influence of digital literacy to learning outcomes of the students such as in geography subject.

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