

Transdisciplinarity: The Urgency Of Digital Literacy In The Era Of Society 5.0.

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ABSTRACT

UNESCO defines Transdisciplinarity as an effort to understand, define, and solve complex problems through the integration and transformation of multiple fields of knowledge from various perspectives. UNESCO's definition of transdisciplinarity indirectly confirms that humanity has been facing increasingly complex issues. This article attempts to explain digital literacy as part of the Transdisciplinary paradigm through a literature and library study approach with discourse and content analysis methods. Various literature, research reports, and related materials are discussed and analyzed to gain an understanding of the importance and position of digital literacy from a transdisciplinary perspective. The importance of digital literacy in the Society 5.0 era and how a transdisciplinary approach can enrich our understanding of digital literacy is something that students must realize and strive for. Digital literacy is not just about technology but also about critical, creative, and responsible abilities in dealing with the ever-growing complexity of the digital world.

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1. INTRODUCTION

In the implementation of the First Congress Of Transdisciplinary held in Arrabdiba, Portugal, from November 2nd to 7th, UNESCO affirmed the application of a transdisciplinary approach (Harahap & others, 2022). This moment marks the beginning of a new era for humanity in addressing complex issues in a holistic manner. UNESCO defines Transdisciplinarity as an effort to understand, define, and

solve complex problems through the integration and transformation of multiple fields of knowledge from various perspectives (UNESCO, 1998). The above definition of transdisciplinarity indirectly confirms that humanity has been facing increasingly complex issues.

The complexity of the problems that humans face is closely tied to the advancements of our time. For example, the effects of globalization, which bring forth anthropocentrism and secular humanism (Abdullah, 2022), subsequently lead humans towards moral crises, cultural crises, and spiritual crises (Surawadi & Awad, 2021). The accumulation of crises within each individual will significantly impact all systems, from political and social to economic, informational, and educational.

Education in the era of Society 5.0 aims to address the challenges and opportunities arising from technological developments and societal changes. Its goal is to prepare competent, adaptive, and contributing human resources in an increasingly interconnected and complex society.

Education, as the central source of knowledge in shaping human thinking, must be designed to tackle and resolve complex problems that are current and anticipated. Building a problem-solving paradigm in humans is essential, starting from the most basic educational institutions, in order to minimize and improve the complexity of issues that will arise in the future.

In the context of Society 5.0, which is characterized by technology, it is imperative for individuals at all levels of education to possess digital literacy. It is crucial to recognize that digital literacy will be highly beneficial for future life, given the increasingly integrated nature of real and virtual worlds, along with the complex problems that come with it in the future.

2. METHOD

His article aims to explain digital literacy as a part of the Transdisciplinary paradigm in facing the Society 5.0 era through a literature and library study approach

using discourse and content analysis methods. Various literature, research reports, and related materials are discussed and analyzed to gain an understanding of the importance and position of digital literacy within the Transdisciplinary paradigm in the context of Society 5.0.

3. RESULTS AND DISCUSSION

Era The era of the Fourth Industrial Revolution has created a vastly different atmosphere compared to previous eras. The grand design of the Fourth Industrial Revolution, which utilizes Internet of Things (IoT), the role of robots in daily life, Artificial Intelligence (AI), Big Data, and the development of Virtual Workers (Suherman et al., 2020), has allowed humans to control all work tools via the internet from a distance, making human activities more convenient and efficient. In the practice of education during the Fourth Industrial Revolution, technology plays a significant role in administration and the educational process.

On the other hand, the Fourth Industrial Revolution has also brought about negative effects. This is reflected in unwise use of technology and the information obtained from it. For example, unwise technology use, addiction to gaming leading to a loss of time, influence from non-educational content, including violent and pornographic material, as well as online gambling and cybercrime. One of the factors contributing to these issues is the lack of parental ability to educate their children about the benefits and dangers of technology in their lives. This phenomenon may be attributed to parents' lack of knowledge when entering this drastically different technological era from what they experienced before. Over time, awareness of the importance of educating children about technology's benefits and dangers will emerge within society.

Quoting Ihsan as cited in Nurwahyuni & Hudaidah (2021), Ali bin Abi Thalib said, "Educate your children according to their time." Ali bin Abi Thalib's statement clearly indicates that humans must adapt to the times, including the education

provided. The goal of education that aligns with the times is to enable learners to solve the problems they face by maximizing the available potential as a means of solving contemporary problems.

The continuation of the Fourth Industrial Revolution, with all its advantages and disadvantages, is soon followed by the era of Society 5.0. This new era began in Japan on January 21, 2019. The hallmark of this era is the integration of cyber technology with humanities. In other words, Society 5.0 positions humans at the center of problem-solving through a system integrated with technology, balancing progress and minimizing disparities in human life (Suherman et al., 2020). Society 5.0 is expected to be a solution to the negative effects caused by the previous era.

The use of technology as a tool and source of learning is a characteristic of education in Society 5.0. The development of technology and knowledge greatly affects various aspects of human life, including education (Sadiman, 2009). Internet technology, Virtual Works, and Big Data are currently widely used to access data or information. E-learning, Dapodik, Simpatika, smart libraries, classroom platforms, journals, information websites, and online research results are some examples of technology utilization in education. Technology in education has made it easier to access information about learning materials, learning outcomes, and the achievements of students and educators. Online-stored data facilitates access for anyone with an interest.

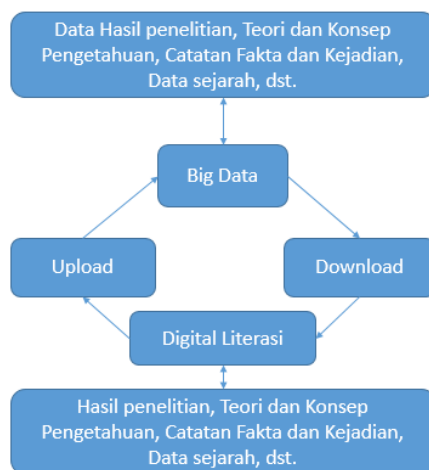
The development of science and technology has had a profound impact on education. Considering that development is dynamic and continuously follows changes, the skill of appropriate educational media is essential (Sadiman, 2009). The internet as a means of information technology has become an abundant source of digital information (Ahman et al., 2019). This phenomenon has led thinkers and educators to a new term known today as digital literacy.

a. Digital Literacy

Literacy is defined as the ability to read and write, as well as an individual's skill in processing information based on digital technology and knowledge for practical life. On the other hand, digital is something related to numbers for specific calculation systems (KBBI, 2008). In other words, digital literacy is a form of competence to access, understand, and utilize information from various sources in digital format (Naufal, 2021). In UNESCO's Information Paper No. 51, published in June 2018, digital literacy is defined as the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and effectively through digital technology for employability, decent work, and entrepreneurship. This includes competencies known as computer literacy, ICT literacy, information literacy, and media literacy (Law et al., 2018).

Digital literacy is considered a soft skill in utilizing digital media, ranging from accessing, managing, integrating, analyzing, and evaluating all available digital resources, and building new knowledge (Law et al., 2018). It can be said that digital literacy is the ability to use digital media effectively. To achieve this effectiveness, users of digital media should be equipped with the ability to filter all available information wisely and positively (Kamil, 2018).

Digital literacy is a combination of knowledge, skills, and technology. In its application, digital literacy plays a central role, as seen in Figure 1.1.



Paul Gilster (1997) identified that digital literacy is the ability to understand and use information in various formats from various sources when presented through a computer. Eshet-Alkalai (2004) stated that digital literacy involves more than just the ability to use software or operate digital devices; it includes a variety of complex cognitive, motor, sociological, and emotional skills needed for users to function effectively in the digital environment.

DigEuLit (2006) identified that digital literacy is the ability to succeed in facing the infrastructure and electronic tools that enable the creation of the twenty-first-century world. Digital literacy has become a major supporter in the field of education, as a result of several trends.

Digital literacy means the use of high technology in everyday life. A digitally literate person may use specific hardware such as computers, mobile phones, or other digital resources combined with communication software like the Internet to interact with the broader community, thus becoming a digital citizen or electronic citizen and enhancing their social and economic opportunities. In short, digital literacy means the ability to use digital technology, communication devices, and networks in the digital environment to lead an efficient life.

b. Digital Literacy in a Transdisciplinary Perspective

When digital literacy and a transdisciplinary approach are combined, a new paradigm emerges, where individuals can integrate their understanding of digital technology with various disciplines to address complex issues in an increasingly digitally connected world.

To address health problems and healthcare inequalities, the transdisciplinary paradigm has given rise to Digital Health technology. Digital health is the development of digital health applications that utilize digital, mobile, and wireless technologies to support health-related goals. It represents a new medium for

addressing societal health needs (Marpaung & Irwansyah, 2021). The integration of health, social, and technology approaches has led to solutions for service inequality and access to health information through digital health. When developing digital health applications, such as health tracking apps or wearable medical devices, transdisciplinary teams can consist of IT experts, healthcare professionals, user interface designers, and statisticians. This allows for the integration of technological, medical, and user experience understandings needed to create comprehensive solutions.

On the other hand, the transdisciplinary paradigm also enables the birth of productive and contributory innovations. The use of technology in arts and creativity involves collaboration between artists and technology experts to create innovative works. Interactive art combines art with interactive technology like motion sensors or virtual reality (VR) (Santoso et al., 2022). Digital art encompasses various media such as digital painting, illustration, and computer graphics. Graphic software allows for image manipulation, color blending, and complex visual effects. Other transdisciplinary practices between technology, art, and other forms of creativity include animation technology, digital photography, electronic music, product design, and more.

In the field of education, digital literacy and its relationship with transdisciplinarity involve collaboration among educators, students, subject matter (disciplines), and technology. Disciplinary knowledge as teaching material allows for collaboration between different disciplines, enriching integration to achieve a broader understanding. In practice, digital literacy in education has two approaches. First: a conceptual approach, focusing on cognitive and socio-emotional development aspects. Second: an operational approach, aimed at improving technical skills in media usage (Setiawan, 2020).

The application of digital literacy skills in education can be interpreted as the utilization of technology as a source of knowledge and analytical skills to enhance students' insights, their ability to collaborate with other digital citizens (students) in developing knowledge, the ability to identify information, and ethical behavior in the digital realm. This application ultimately gives rise to the Digital Literacy Index 2022, which comprises digital skills, digital ethics, digital culture, and digital safety (Ameliah et al., 2022).

In essence, the use of digital literacy is not limited to health, arts, and education but extends to all disciplines that can be collaboratively combined with technology. The examples above demonstrate that digital literacy from a transdisciplinary perspective entails a deep understanding of digital technology, online communication, and information that involves various disciplines and perspectives. It does not confine itself to a single discipline but encompasses various aspects, including computer science, social sciences, ethics, psychology, economics, politics, and more.

c. The Position of Digital Literacy in Education in the Era of Society 5.0

Digital literacy plays a crucial role in education in the era of Society 5.0. Society 5.0 is a concept that describes the development of a society increasingly connected with technology, where artificial intelligence (AI), the Internet of Things (IoT), big data, and related technologies dominate everyday life. In this context, digital literacy becomes a crucial foundation for preparing individuals to actively and productively participate in an increasingly digital society.

The improvement of technology skills must start with improving the quality of the entire education system. Efforts to enhance the quality of education should primarily focus on educators. Educators should have a deep understanding of digital literacy to effectively utilize available technology for teaching (Ceha et al., 2016). The readiness of educators and supporting learning resources related to digital literacy

will help students develop the necessary technology skills. This includes understanding hardware and software, using applications, and solving technological problems.

After introducing students to hardware and application usage, educators should focus on electronic information. Electronic information refers to a collection of digital data stored and accessible through internet-based applications. This data is not limited to text but can also take various forms, such as sound, images, maps, designs, photos, electronic data interchange (EDI), email, telegram, telex, telecopy, or similar formats, including letters, symbols, numbers, access codes, symbols, or perforations that have been processed and can be understood by those capable of understanding them (Mardjianto et al., 2022).

Furthermore, educators are expected to instill a critical attitude in students when interpreting electronic information. Digital literacy helps students become critical information consumers. They should be able to differentiate between accurate and inaccurate information and understand how media bias and fake news can influence their perspectives.

Competence in digital literacy for both educators and students within the school environment is essential (Asari et al., 2019). Educators should also guide students in understanding how to use the internet safely and ethically. Guiding the importance of digital literacy, including knowledge of online privacy, protection against cyberattacks, and responsible use of social media, should be a priority.

The introduction of devices, applications, data sources, critical thinking, and digital security to students is the fundamental basis for developing their potential through digital literacy skills. The initial knowledge mentioned above should be followed by actions that promote creativity and innovation. In this context, creativity and innovation involve using technology to create useful content, solve problems, and develop new ideas, including global connectivity.

Global connectivity in the era of Society 5.0 allows collaboration with others who are also internet users. Digital literacy helps students communicate and collaborate with individuals from various cultures and backgrounds, expanding their horizons. Whether consciously or not, honing digital literacy skills is, in fact, preparation for future jobs. Many jobs in the future will require technology skills and digital literacy. Education that incorporates digital literacy helps students prepare for careers in an increasingly digitalized world.

Society 5.0 is an era where technology serves as a tool for human life. In this era, technology is also used to enhance efficiency in education. This includes the use of online learning platforms, data-driven learning, and student progress monitoring with the help of technology. Digital literacy provides students with the tools to become more independent in seeking and utilizing educational resources online. They can access supplementary learning materials, participate in discussion forums, and expand their knowledge independently. Therefore, digital literacy holds a vital position in education in the era of Society 5.0 because it helps students develop the skills and understanding needed to address various challenges while contributing to a society that is increasingly interconnected and digitalized.

d. The Urgency of Digital Literacy for Students

Literasi Digital literacy plays a crucial role for students in today's digital era. For students, digital literacy provides them with the ability to interact with the increasingly dominant digital world, access educational resources, and develop skills relevant to their future. Digital literacy is an indicator in education and culture to create critical and creative thinking among students (Laela, 2022). There are at least 10 points that a student will possess through digital literacy skills, which include:

1. **Information Access:** Digital literacy enables students to easily access information through the internet. They can search for references, learning materials, and educational resources online.

2. **Information Evaluation:** Students with good digital literacy can evaluate the information they encounter on the internet. They can distinguish between reliable and unreliable information and assess the credibility of information sources.
3. **Communication and Collaboration:** Digital literacy helps students communicate and collaborate effectively. Communication and collaboration can be done through various online platforms such as email, social media, and virtual collaboration tools. This is important for group projects and cooperation in an educational context.
4. **Technical Skills Development:** Through digital literacy, students can develop technical skills such as using software, programming, and graphic design, all of which can be beneficial in their future careers.
5. **Digital Security:** Digital literacy also includes an understanding of online security. Students learn how to protect their personal information and avoid threats such as malware and phishing.
6. **Responsible Use:** Students are taught about digital ethics and responsibility in using technology. They learn about copyright, privacy, and good online behavior.
7. **Problem-Solving Skills:** Digital literacy develops students' ability to solve technology-related problems. They can address issues that may arise when using software or hardware.
8. **Creativity:** With digital literacy, students can become more creative in expressing their ideas through digital media such as blogs, videos, and digital art.
9. **Increased Productivity:** Students can use digital tools to manage their time, take notes, and organize their tasks more efficiently, enhancing their learning productivity.

10. Preparation for the Workforce: Digital literacy is a crucial skill required in almost every job today. Students with good digital literacy will be better prepared to enter the workforce.

e. Elements of Digital Literacy Skills

Digital literacy skills are highly important in everyday life and in workplaces that are increasingly dependent on digital technology. Mastering the elements of digital literacy can help students become smarter, more critical, and responsible users in the complex digital world. Digital literacy skills encompass various elements that function effectively in the digital world. Here are some important elements of digital literacy skills (Piatip, Huapan et al., 2015):

1. **Access:** The ability to identify data sources, including the ability to obtain and collect data and use it for recurring purposes.
2. **Manage:** The ability to use resources correctly and easily assess their credibility.
3. **Integrate:** The ability to connect with all other constituents. For digital literacy, this also includes the ability to infer and interpret the meaning of information through ICT tools.
4. **Evaluate:** The ability to assess the timeliness and usefulness of information.
5. **Create:** The ability to understand and apply the advantages offered by appropriate media creation tools.
6. **Communicate:** The ability to connect and interact with other individuals in the digital environment.
7. **Analysis:** The ability to understand the processes, logic, and purposes of media created. This includes the ability to examine differences in interpretations of beliefs and behaviors among individuals.
8. **Synthesize:** The ability to combine information to generate new knowledge.

These elements of digital literacy are essential not only for students but also for individuals in the workforce. They enable individuals to navigate the digital landscape effectively, critically evaluate information, communicate and collaborate online, and adapt to the rapidly evolving digital world.

4. CONCLUSION

The importance of digital literacy in addressing the complexity of issues in an increasingly digitally connected society cannot be overstated. Digital literacy helps individuals access, understand, and effectively use information through digital technology. Transdisciplinarity and Digital Literacy showcase how digital literacy can be viewed from a transdisciplinary perspective, where learners can integrate their understanding of digital technology with various disciplines to tackle complex problems. Digital literacy in the Education Era of Society 5.0 plays a central role in helping students develop skills relevant to an increasingly technology-connected world. It also enables global collaboration and prepares students for careers in an increasingly digitalized future.

The elements of digital literacy skills, including access, management, integration, evaluation, creation, communication, analysis, and synthesis, are crucial skills that students must possess to function effectively in the digital world. Digital literacy helps students become more discerning of the information they encounter on the internet. They are taught to assess the reliability of information sources, utilize information effectively, and innovate. Digital literacy is recognized as a necessary skill in nearly every job today. Preparing students with strong digital literacy skills helps them enter an increasingly digitalized workforce.

The importance of digital literacy in the Society 5.0 Era and how a transdisciplinary approach can enrich understanding of digital literacy is something that students should be aware of and actively strive for. Digital literacy is not just

about technology; it is also about critical, creative, and responsible abilities when navigating the increasingly complex digital world.

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