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Digital literacy in physical education: A literature review

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DOI: https://doi.org/10.22271/kheljournal.2023.v10.i6d.3165

Abstract
The policy of the Society 5.0 revolution, which highlights the significance of new literacy, which includes data and technology literacy (digital literacy) and human literacy, which includes physical literacy, is in accordance with the requirement for digital skills in the field of sports education. Digital literacy is essential for maximizing the positive effects of technological advancements while making use of them. The purpose of this study is to present the findings of a review of the literature on digital literacy in physical education from earlier studies. The study's methodology is a literature review, which entails looking through the findings of earlier studies using the article keywords "Digital Literacy" AND "Physical Education" from publications that were released between 2020 and 2023.This study's conclusions about the value of digital literacy in physical education encompass not just ICT proficiency but also cognitive, motor, and social domains. In the current digital age, educators and learners must be equipped with tactics for enhancing digital literacy through the use of digital media that effectively runs virtual classrooms. It is anticipated that the study's findings will be able to discuss the significance of digital literacy abilities in a quality physical education program for both teachers and students in order to advance and enhance learning practices.

Keywords: Literasi digital, physical education, learning

1. Introduction
Digital literacy, often known as information technology literacy, is one of the key 21st-century competences. The policy of the Society 5.0 revolution, which highlights the significance of new literacy, which includes data and technology literacy (Digital literacy) and human literacy, which includes physical literacy, is in accordance with the requirement for digital skills in the field of sports education. Digital literacy is essential for maximizing the positive effects of modern technology advancements while making use of them. The phrase "digital literacy" refers to the digitalization, which is a key component of new media (Asari *et al*., 2019) [2]. The capacity to utilize computers and other technologies, create and process data, gather knowledge from technological tools, and actively participate in the process of creating the newest technology is known as digital literacy (Amalia, 2015) [1].
Since education is a necessity for humans to live increasingly sophisticated and evolved lives, the era education paradigm demands that education always change to reflect the times (Widiyono *et al*., 2021) [27]. The field of education was impacted by the Society 5.0 transformation as well. It is impossible to isolate the use of digital technology in the learning process, task fulfillment, and teacher competency enhancement from the ongoing advancements in information and technology. Teachers, who are on the front lines of education, must be flexible and adaptive in order to meet these challenges. The significance of digital literacy aligns with the views shared by Setyaningsih *et al*., (2019) [22] defines digital literacy as the capacity to use digital technology and communication channels to access, manage, analyze, evaluate, create, and interact with others while effectively participating in the creation of new information. A person with strong digital literacy abilities can modify or create an activity that highlights the attitudes and capabilities of people who use digital devices to interact and express themselves in social settings and accomplish their goals in a variety of life circumstances (Mardina, 2017) [17].

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Everybody benefits from this digital age as well. Having access to the most recent educational data is one of them (Puspito, 2017) [19].

It is simpler for teachers to fulfill their responsibilities as educators in the digital age when they are proficient with digital media and have access to quality technological resources. Digital literacy has many advantages, including making queries online, sharing student work to social media, and obtaining information more quickly and easily. One easy way for students to find information is by visiting the www.google.com website page. Additionally, a variety of programs like Google Classroom, Google Forms, and others can support educators and learners in their academic endeavors. In addition to printed materials like books, learning resources also include digital materials that are easier to use and more efficient, allowing teachers and students to access the internet at any time and from any location. In addition to incorporating technology into the learning process, digital literacy raises the standard of instruction (Sujana & Rachmatin, 2019) [25].

Based on justifications for the advancement of knowledge and technology as well as the significance of digital literacy for traditional classroom instruction. The author would want to investigate digital literacy in physical education through an atrocity of literary study. This study makes use of the Nvivo program, which will thereafter compile published papers that Scopus has indexed between 2020 and 2023. It is anticipated that the study's findings will be able to discuss the significance of digital literacy abilities in a quality physical education program for both teachers and students in order to advance and enhance learning practices.

2. Materials and Methods

Since researchers will be examining the findings of earlier studies, a literature study or review is the sort of research that will be used. The process of gathering information from sources about a topic is called a literature study (Sugiyono, 2019) [24]. Articles that cover digital literacy in physical education are the main focus of the literature search. Using a search database from Scopus and the article keywords "Digital Literacy" AND "Physical Education," appropriate papers were gathered for the literature review data collection in this study. Ten papers that have been culled from the Scopus database are obtained by researchers and will be examined in this investigation. Data capture or data retrieval utilizing the Nvivo 12 Plus's Capture feature is the first step in the data analysis process. The author then encoded the data after importing the gathered data into the Nvivo 12 Plus. Following encoding, the data is shown and analyzed in the form of a Word cloud, Crosstab Query, and other data that the author can present in this study.

3. Results and Discussion

The purpose of this literature review is to investigate digital literacy in traditional physical education. Based on information gleaned from the Scopus database and the outcomes of a search analysis, it was discovered that the number of papers that looked at this issue started with three publications in 2020, followed by one in 2021, four in 2022, and two in 2023.
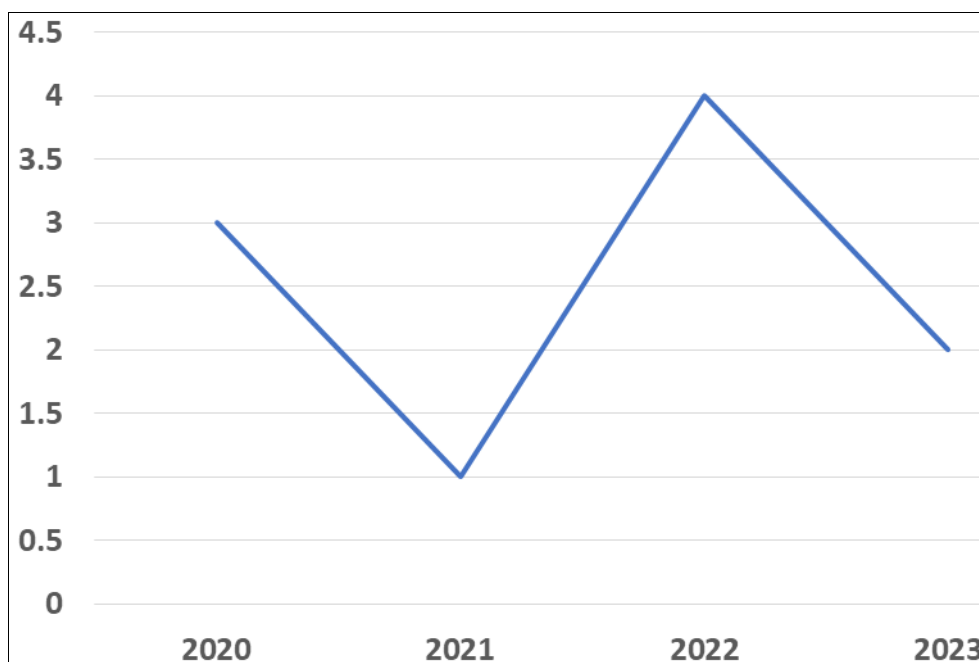

Fig 1: Analyzing by Year

It displays a graph of research trends using the keywords "Digital Literacy" AND "Physical Education" based on the findings of the picture analysis above. It is further noted that, with two articles, Germany is the nation that has conducted the most research on this subject. Then followed by Australia, Canada, Indonesia, Italy, Malaysia, Saudi Arabia, Spain, and Thailand with each published with 1 article.
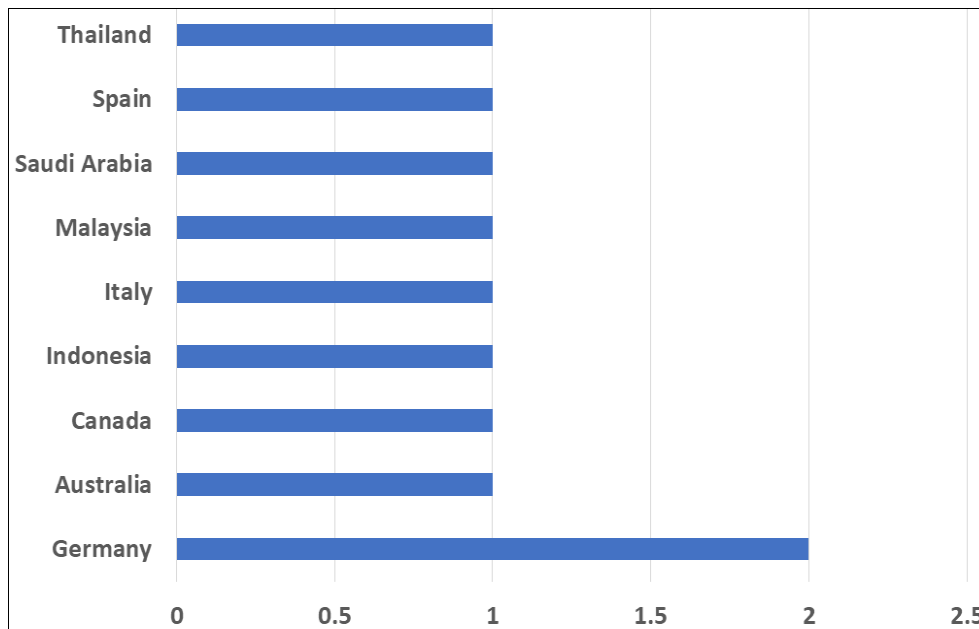
Fig 2: Analyzing by Country

Ten journal articles that Scopus has indexed serve as the study's data source. This study is a survey of the literature containing journal data and documents with authors, years, titles, and methodologies; the results are shown in Table 1 below:

Table 1: Results of Document Collection of Scientific Publication Articles

Author / Year	Title	Method	Conclusion
Emily S. Kingsland, Marcela Y. Isuster (2020) [11]	A Different Ball Game: Physical Education Students' Experiences in Librarian-led Wikipedia Assignments	Kuantitatif survei	Pupils have either no experience editing Wikipedia or very little. Most people have used the library sometimes, but during projects, usage rises, and students value their interactions with the librarian in the classroom.
Benjamin Gleason and Stefania Manca (2019) [28]	Curriculum and instruction: pedagogical approaches to teaching and learning with Twitter in higher education	Case Study	Research has indicated that the utilization of Twitter enhances student engagement, aids in conceptual comprehension, cultivates students' "social presence," and boosts communication with "real world Experts." For instance, Twitter offered a means of participation for students in a big lecture course, with about 90% of students using it for that purpose.
Narumon Rodniam (2020) [20]	Digital Literacy Assessment of Undergraduate Students from Physical Education Program of Thailand National Sports University	Kuantitatif	The degree of digital literacy among students in the TNSU Physical Education Program is moderate. Therefore, it is recommended to employ tactics aimed at enhancing the students' operational skills.
Omar Trabelsi, Mustapha Bouchiba, Mohamed Abdelkader Souissi, Adnene Gharbi, Nourhen Mezghanni, Mohamed Moncef Kammoun, Liwa Masmoudi & Maher Mrayeh (2021) [26]	Technology-mediated Physical Education teaching practices in Tunisian public schools: a national teacher survey	Kuantitatif survei	Concerned about the detrimental effects of ICT integration on moral and disciplinary norms in the physical education setting are Tunisian PE teachers.
Francisco Javier Gil-Espinosa, Adriana Nielsen-Rodríguez, Ramón Romance, Rafael Burgueño (2021) [29]	Smartphone applications for physical activity promotion from physical education	Systematic	Applications can help educators integrate secondary sports curricula and successfully encourage physical activity in teenagers.
Moritz Mödinger, Alexander Woll, Ingo Wagner (2021) [18]	Video-based visual feedback to enhance motor learning in physical education—a systematic review	Systematic	Perhaps as a result of enhanced visualization, distinct information, and error detection, visual feedback techniques appear to be more successful than verbal feedback in physical education.
Fathin Nurul Ezzati Irwahand, Siti Musliha MatRasid, Jeffrey Low Fook Lee, Gunathevan Elumalai, Mohd Izwan Shahril, Mohamad Azri Ismail Ahmad (2022) [10]	Perceived barriers to adopting information and communication technology in physical education	Kuantitatif	Understanding these obstacles has ramifications for curriculum development, teacher preparation, physical education, and teenage involvement in the classroom.
F. Kurniawan, S. Nugroho, R. Hidayat, A.S. Hidayat, N.Z. Rohmansyah (2022) [14]	Development of Web-Based Learning Media in the Era of Pandemic	Research and development	Students at Universitas Singaperbangsa Karawang are able to employ physical education's digital literacy as an efficient website-based learning medium.
Celeste Fletcher, Cassandra Iannucci & Dylan Scanlon (2023) [7]	A teacher's self-study of digitally-enabled assessment practices to support	Self-study	Digital technology-enabled centralization of literacy assessment in the PETE program can train future educators, provide purposeful pedagogy (including assessment

	enhancements in assessment literacy in primary physical education		methods), and enhance student learning in classroom settings.
Moritz Mödinger, Olivia Wohlfart, Alexander Woll, Ingo Wagner (2023) [30]	Digitale Kompetenzen Angehender Sportlehrkräfte	Kuantitatif survei	Generally speaking, pedagogy training (PK) and related content (CK) are excellent; in contrast to theoretical knowledge, movement skills are more prominent.

The author's name, the year, the title, the methodology, and the research findings of the study that was published on digital literacy in physical education are shown in table 1 above. By fusing physical and mental activity, information and communication technology (ICT) in physical education (PE) brings sports science to life. Physical education teachers' favorable views and attitudes toward ICT as a teaching tool might help students become more digitally literate and raise their level of digital literacy (Irwahand *et al*., 2022) [10]. In addition to fostering the development of students' attitudes, knowledge, and behaviors for a more physically active existence, digital technologies can facilitate more diverse learning methodologies in sports (Gil-Espinosa *et al*., 2022) [9]. In order to help pupils become "digitally literate" citizens, physical education teachers are now urged to include digital technology into their lessons (Fraillon *et al*., 2020) [8]. In traditional classroom settings, digital technology can be a potent learning aid that revolutionizes instruction, because it allows for the assessment of instruction via a range of lenses and takes a constructivist approach to learning (Casey *et al*., 2016) [3]. A teacher's independent learning of digitally supported assessment practices to support improved assessment literacy in basic physical education (Fletcher *et al*., 2023) [7].

Information and communication technology (ICT) has altered our daily life as a result of the rise of digitalization. In the past several years, TIK has also grown in significance within the field of education and affected the way that teachers teach and learn (Lorenz *et al*., 2022) [15]. Nevertheless, even while society is already able to discuss the post-digital era, where digital is now a part of daily existence (Cramer, 2014; Demantowsky *et al*., 2020) [4, 5]. Teachers face difficulties in adapting to the ongoing changes in the education system. because there are difficulties in integrating digital media (Eickelmann *et al*., 2019; Schmid *et al*., 2017) [6, 21]. The results of this study imply that Tunisian physical education instructors' usage of ICTs may be regarded as a schmi uncommon practice. For instance, digital tools like laptops, iPads, and video projectors have never been utilized in Tunisia's physical education classrooms (Trabelsi *et al*., 2021) [26]. The results align with earlier studies (Kretschmann, 2015) [12], which indicate that a group of physical education instructors assigned to a German secondary school have lower rates of integrating ICT into their lesson plans. Kretschmann (2015) [12] suggests that the poor degree of digital literacy (particularly in kindergarten) among participating PE teachers is the cause of their dislike of ICTs.

Methods that need to be used to raise students' level of operational abilities and digital literacy. The utilization of diverse digital technologies should empower students to take on roles as creative creators and/or innovators through learning management. Students should use digital media collaboratively, and the classroom environment should be designed to support this (Rodniam, 2020) [20]. Since digital literacy is a fairly broad medium in physical education, the media challenge we currently face is limited to learning media. Media presence will also have a big impact on how well a learning process goes (Kurniawan *et al*., 2022) [14]. Consequently, it is evident that digital literacy encompasses not only ICT capabilities but also other skill sets, such as: 1) cognitive skills, which call for knowledge and comprehension; 2) motor skills, which are necessary for carrying out both directly and indirectly connected technological tasks; 3) social skills, which direct moral behavior like being a decent citizen and constantly considering how actions will affect the community and society at large (Simpson & Obdalova, 2014) [23]. Digital technology has so become increasingly important in teaching. To help students study better in a digital world and run digital classrooms more easily and effectively, educators of the younger generation as well as students in education programs should develop their digital literacy abilities and competencies (Krumsvik, 2008; Maderick *et al*., 2016) [13, 16]. A multitude of student abilities are encouraged to be developed by this active and collaborative teaching method, including writing, critical digital literacy, media literacy, information literacy, critical thinking, and teamwork (Kingsland & Isuster, 2020) [11].

Fig 3: Word Cloud (Sumber: Author Using Nvivo 12 Plus, 2023)

According to the above Word Cloud picture, the words "education," "technology," "physical," "learning," "students," "assessment," and "literacy" appear to be in order of dominance. This demonstrates the concept of education's domination, with technology, physical learning, students, evaluation, and literacy serving as the key components. Technology and education are strongly related since digital innovation is applied in learning, necessitating the need for digital literacy abilities. The physical component highlights how important it is to include physical education and exercise in the curriculum. The primary emphasis is on learning and students, emphasizing the importance of the teaching-learning process and student involvement. Assessment provides an analysis of the growth and performance of students. A key component is literacy, which includes digital literacy as well as a wide understanding. In general, the Word Cloud illustrates the intricacy and interdependence of fundamental ideas within the field of literature review on digital literacy in traditional classroom settings.

4. Conclusions

Physical education (PE) benefits from the integration of cognitive and motor skills through the use of Information and Communication Technology (ICT). Positive ICT attitudes can help PE teachers become more digitally literate, which will open up new avenues for using a variety of teaching approaches. In addition to ICT proficiency, digital literacy in physical education also encompasses cognitive, motor, and social domains. In the age of digitalization, educators and learners must be equipped with tactics to raise digital literacy levels through the use of digital media that can effectively run online learning environments. For the younger generation to be ready for the difficulties of an increasingly digitally linked society within the framework of physical education, digital literacy is essential.

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