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The Digitalization of Teachers' Competencies towards Digital Skills Development at Indonesia High Schools and Vocational Schools

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Abstract

This paper briefly discusses the framework of digitalization of teachers' competence at Indonesian high schools and vocational schools. In order to generate digital skills for teachers as educators, it was important to improve an appropriate framework that would support the transformational digital competence of the teachers. Moreover, the digitalization in education this article reveals the conclusion that, first, the digitalization of teachers effectively enhances learning and stimulates students to achieve learning goals. Second, good didactic practices make students adaptive to technology in the appropriate way. Third, facilitate the development of students' digital competencies, like digital literature and other competencies.

Keywords: Digitalization, Teachers' Competencies, High School, Digital Skill.

INTRODUCTION

In this era of digitalization, 'digital skills' is significantly growing rapidly driven by very fast technological advances. This skill refers to the effective use of digital technology. Recently the development and concept initiated by UNICEF added to the skill set and became a globally separate component in the future. The digital Skills Framework emphasizes and highlights the growing importance of these skills for educators and students alike. Digital skills diverse and range from job-specific technical skills to using and managing technology safely and effectively. Almost all sectors must strive for the digitization process as a tool to be sustainable. It was also triggered by the Covid-19 pandemic which affected in all countries in the world, many teachers in develop countries are almost exhausted because they are too late to adapt to changes. The education system has undergone significant changes affecting all aspects: methodological, economic, regulatory, and technological. (Kensbock, 2016; Korshunov, 2019; Muharlisiani, 2019; Rodyukov, 2019). These changes, attributing the intensive pace of digitization, require environmental modification, competitive training approaches, productive ways to master skills professionally, and a global industrial environment. (Muharlisiani, 2020; Muharlisiani, 2017; Shugurov, 2019; Vikharev, 2018). Professional teacher digitization competence (TDC) in online learning as part of integration with informatics technology networks, both academic, non-academic administration, and teaching and learning processes that lead to

improving the quality of learning. This condition has given severe consequences and challenges to the world of education, namely redefining learning activities significantly into distance learning, and internet-based activities, so that the use of TDC technology becomes prioritized in education in the face of changes due to digitalization in several sectors during the Covid-19 pandemic. Digital competence education is the development of compulsory competencies of teachers in addition to the four basic competencies (pedagogical, personality, professional, and social), which affect the education system and a set of knowledge, skills and attitudes for the use of ICT, digital media that is critical, effective, creative and innovative to achieve successful learning. Digitalization of teacher competencies becomes a new idea that is required to understand the ability, expertise to adapt to new technologies and global challenges with increasing connectivity, interaction with the growth of digital, artificial, and virtual systems. (Karunaweera, 2021; Mcgarr, 2019; Muharlisiani, LT. 2019b, 2019a) involves the use, confident, critical and responsible engagement with digital technologies to train students to use digital technology (DT) as part of their daily lives (Gudmundsdottir, 2018; Hjukse, 2020; Muharlisiani, LT. 2022), and in solving the problems that exist in schools. However, in its implementation and development, not all aspects of digitalization can be realized. The use of Teacher Digitization Competence of technology (TDC) is a teacher framework that is prioritized in education to deal with changes due to digitalization in many sectors and professions.

Most teachers have gained knowledge of how to use digital media for learning both formally and non-formally, and synergize with the disruption of digitalization competencies, there are: educational competence (internet-based learning of things-basic skills); competence for technological commercialization (entrepreneurship attitude with technological innovation); competence in globalization (hybrid, advantages solving problems); competence in future strategies (joint-lecturer, joint-research, joint-resources, staff mobility and understanding direction); counselor competence, more related to psychological problems; competence in research; associated to develop the digital competence of teachers in a sustainable manner. TDC facilities in online learning as part of integration with informatics technology networks, both academic, non-academic administration, and teaching and learning processes. Activities to strengthen digitalization literacy can be carried out in the form of workshops and training by explaining the use of information and communication technology in helping to carry out tasks as a teacher, including the use of digital technology as an additional learning source, the use of digital technology-based learning media, accessing information quickly, school promotion, and publication of works and information, and required to understand abilities, expertise adapting to new technologies and global challenges with increased connectivity, interaction with the growth of digital, artificial, and virtual systems (Almenara, 2019; König, 2020; Muharlisiani, 2019) involves the use, confident, critical and responsible engagement with digital technologies to train students to use digital technology (DT) as part of their daily lives (Chorosova, 2020; Fernández, 2021; Fraile, 2018). In accordance with the objectives of the strategic framework of education and training of digital competencies of teachers (TDC) must be connected the competence of the digital age with its professional practice, along with its components to apply and transfer all knowledge, strategies, skills and attitudes about learning technology and knowledge (CTR) into the real and concrete situation of practical professionals: a) facilitate the learning and acquisition of digital competencies; b) carry out the process of improvement and innovation in teaching in accordance with the needs of the digital era; and c) contribute to professional development in accordance with the process of change that occurs in society (González-salamanca, 2020; INTEF, 2017; Muharlisiani, 2018). In fact, there are still many teachers who are resistant to technological developments even though they have transformed, so that only teachers who understand class dynamics and use technology

to educate students, can turn classrooms into creative, innovative and exciting learning spaces. (Karthikeyan, 2019; Muharlisiani, 2019b; Roll, 2021). However, digital technology cannot entirely take over the position of teachers, in shaping personality, mentality, character and behavior through the cultivation of noble cultural values that are tried with love, through example, tutorials, exercises, and habituation teaching students how to facilitate the development of digitalization as well as transferring knowledge and skills, tutorials, exercises, examples, habituation, affection and love holding conscience and his personality, mental and moral creation. So that the teacher has dual responsibilities; must be able to use technology for teaching purposes, should also contribute to developing pre-service professional digital competencies (Lim, 2021; Muharlisiani, 2019c; Roll, 2021).

The competence of digitalization of teachers in its implementation requires the support of digital technology in various ways and styles, (1) to improve learning and stimulate students to achieve learning goals; (2) mastery of teachers of systems, websites and tools, and can model didactic practices to learners how to use technology in the right way; (3) the existence of digitalization technology encourages active participation of teachers, especially in the learning aspects of transfer of knowledge, technology and skills. Over time, there is an increasing type of teaching that supports student capacity building which includes the capacity to exploit technology to develop critical thinking, problem solving and communication skills. Many schools have good access to the necessary computers and technological infrastructure, but despite access to such tools, the pedagogical use of instructional technology varies. The study of teacher competency digitization system is a special data system managing information that has spatial data, its narrow meaning, is a system that has the expertise to build, put, manage and show geographically related data, such as information identified for the learning level, in a database , demonstrates the needs of modern society and is ready to actively adapt to the conditions of modern digital socio-economic systems: professionally and geographically mobile, has a high level of ability to master professional competencies and to build professionally oriented cognitive trajectories according to, resource-intensive production and technological conditions. The experience of the use of technology obtained by teachers during education, both through its own use and by observing the use of educators, is an important factor for the development of professional digital competencies. The extent to which teachers choose to use technology in teaching practice directly gives students a disposition to integrate technology in the classroom. In addition, the analysis of curriculum documents for teacher education that digital competence and the use of technology are not effectively integrated into the curriculum either at the specific level of the subject or at the overall program level. The successful integration of technology in education has been an area of interest for researchers and educators for almost as long as technology has been available for educational purposes, but most research has focused on primary and secondary, not tertiary education.

DISCUSSION

Digital skills are crucial to accelerate the achievement of Indonesia's development goals and stimulate its drive towards sustainable digitalization. Indonesia's 2020- 2024 National Mid-Term Development Plan, Rencana Pembangunan Jangka Menengah (RPJMN), emphasizes the role of digital transformation in boosting economic productivity and efficiency, as well as generating more economic value. The development of digital skills is necessary to implement the country's digital transformation. Indonesia in order to development of digital skills has realized it has to begin by creating more opportunities for citizens to participate in the digitalized ecosystem, thereby aiding in achieving the goals. The SMERU Research Institute, in partnership with Digital Pathways at University of Oxford and United Nations Economic and Social Commission for Asia and the Pacific

(ESCAP) (2022) reveal that priority for the provision of equal access to digital infrastructure and devices is necessary to increase the proportion of internet users in Indonesia. Furthermore, promoting inclusive digital skills' development will pave the way to achieving Indonesia's 2045 Development Vision. Therefore, appropriate digital skills' development in Indonesia is believed will support digital inclusion and produce the competencies required to grow the digital economy.

Drivers of digitalization in the education sector include educational applications, digital content distribution, training strategies, national values and identities and digital teacher forums. Strengthening digital literacy can be done by explaining the use of digital information technology and communication in helping to carry out tasks as a teacher: a) as an additional learning resource; b) for digital technology-based learning media; c) for supervision of students; d) to access information quickly; e) for school promotion; and f) to publish works and information

The concept of assessment as a component of the teaching-learning process has a formative function, not only for teachers but also for students. Evaluation as a process of guiding students in learning and developing their learning capacity (Carless, 2007). On assessment, the teacher does it: in the classroom, school, and in the context of his professional development. Teaching task scenarios and competencies are put into action where they are evaluated (Cantabrana, 2019; Karsenti, 2020; Lázaro, 2015). TDC assessments are designed based on rubrics used twice: a) Final TDC assessment: Evaluation through tools, which measure students' knowledge based on TDC components. The reference criteria test (CRT) is used to assess the absolute status of students in the mastery of concepts (digital competence of teachers) and is useful for classifying students into one of the mutually exclusive categories as competent/incompetent, in relation to the point set out on the assessment of experts at TDC. Not based on the student's self-perception of his involvement, but rather objectively measuring the student's capacity in situations attached to the teaching profession; b) After completing the training process, and requiring students to participate in various activities oriented towards the development of TDC, the assessment process is not stuck, & The results obtained use evaluation tools used to collect data that corresponds to the final evaluation of the process, summative assessment.

Tabel 1. *Frameworks & Models by Esteve (2015) & Lazaro (2015)*

Framework Model	Institution	References	Areas/ Dimensions of TDC
ICT standard for IFD	Ministry of Education	Enlaces (2008)	Pedagogics, technical, school management, social, ethical and legal aspects of development
NETS-T	ISTE	ISTE (2008)	Student learning and creativity, learning and experience, employment, citizenship and professional growth
Teachers ICT competence standard	UNESCO	Unesco (2008)	Policy and vision, curriculum and evaluation, pedagogy, ICT, organization and administration, professional teacher training
Teachers ICT competencies	Ministry of Education Chile	Enlaces (2011)	Pedagogic, technical, management, social, ethical and legal and professional development
DigiLit Leicester	Leicester City Council	Fraser, Atkins & Richard (2013)	Search, evaluation and organization, creation and sharing, evaluation and feedback, communication, collaboration and participation, security, identity, development
ICT competences for professional teacher	Ministry of Education, Government of Spain	Ministerio Edu cacion Nacional	Technology, communicative, pedagogical, management and research

development		(2013)	
Common Framework for TDC	Ministry of Education, Colombia	Ministerio Edu Cacion Nacional (2013)	Information, communication. Content creation, security, problem solving
TDC Rubric	ARGET, Universitat Roviral Virgili	Lazaro & Gisbert (2015)	Didactics, Curricular and methodological, planning, organization and resource management
TDC Definition	Generalitat de Catalunya	Departement d'Ensenyament (2016)	Design, planning and implementation of didactics, management of digital technology space and resources; communication and collaboration; ethics and digital citizenship; professional development
DIGCOMP-EDU	European Commission	Redecker & Punie (2017)	Social and professional commitment; digital resources; digital pedagogy; evaluation and feedback; empowerment of students; facilitate students' digital competence

The framework explanation referes the table above, which is used as a guide for making TDC tests, has an evaluation rubric that contains the right indicators and levels of development in order to design questions to measure knowledge levels. (Cantabrana et al, 2019), (Carless, Joughin, & Mok 2006).

Establishing objective assessment instruments of TDC knowledge on teachers is based on rubrics. The construction of new tools as part of a comprehensive mixed method process (both qualitative and quantitative) that considers all stakeholders for the study of TDC. Competence involves conceptual actions of knowledge, procedural knowledge and attitudes to be able to resolve a particular situation. (Cantabrana et al., 2019; Fernández et al, 2021; OCDE, 2005, 2011). Thus, we are aware that competency assessment is a complex process and must be approached from a broad perspective and through the use of different assessment techniques and instruments. (Cantabrana et al., 2019). With this in mind, it has addressed the limitations of using a single assessment tool to measure the capacity associated with complex competencies such as TDC. The system of digitizing teacher competencies is a system of managing data that has spatial information. The narrow meaning, is a computer system that has the ability to build, store, manage and display geographically related information, such as data identified by the level of education, in a database. First, teachers can use digital technology to enhance learning and to stimulate students to achieve learning goals. Second, it can model good didactic practices by teaching students how to use technology in an appropriate way. Third, teach students how to facilitate the development of students' digital competencies. This is the basis of the concept of "second-order teachers", which means that educators must prepare students for professional practice not only rich in technology, but also thematically modeled teaching and educational justifications behind it. In addition, digitalization requires innovation expertise, ability and willingness to develop professionally.

Related with digital competences in Digital Literacy, SEMERU report (2022) also stated that the current low levels of digital literacy in Indonesia should be addressed systematically, particularly through formal education from the primary school level. The strategy to improve digital literacy aims to improve young people's use of the internet and other digital technologies. Similarly, it is important to ensure citizens are equipped with the necessary skills to navigate the digital world without endangering themselves. For example, the public must be able to select credible information online and avoid harmful content, including hoaxes and cyberbullying. This is achieved by improving people's basic literacy in order to increase reading performance, including understanding and memorizing a text and summarizing information.

CONCLUSION

Digitization of competencies helps teachers carry out their duties quickly and easily if they have the ability to utilize technological sophistication, so teachers are required to create new innovations in order to compete in learning and the challenges of creating an education system that suits their needs in the future, especially created easier, fun, and effective and efficient learning and predicted. Will give rise to new innovations in the emergence of digitalization era systems, digital learning can provide a more diverse, creative, participatory, and comprehensive experience. In addition, it can support the effectiveness and efficiency of education, and demands to quickly adapt in order to meet the needs of human resources in the future. Digitalization of the education system is a form of educational response, demanding teachers have digital competencies. Digital literacy for teachers is the ability to use information and communication technology to read, understand, utilize, assess, create, and disseminate new knowledge in carrying out teacher tasks effectively and efficiently. The development of digitalization of teacher competencies is integrated with technology, supports the development of education, in order to increase the professional competitiveness of high school and vocational teachers. Strengthening digital literacy of digital information technology and communication is helping to improve the teachers' competence.

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