THE URGENCY OF TECHNOLOGY-BASED EDUCATION FOR PRIMARY SCHOOL IN INDONESIA

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ABSTRACT

The rapid development of technology and the need for Primary School-age children in educational innovation to compete in the modern era provide a paradigm that needs to be studied more deeply on how urgent technology is in Primary School. Based on this, the researchers analyzed the urgency of technology-based education for Primary School in Indonesia. The method in this research is a literature review that examines the importance of the topics discussed and compares the results with findings in other studies on the same issue. Based on the research results, the urgency of technology-based education in Primary School is as follows. (1) The characteristics of Primary School-age children who like exciting things and like varied learning enable technology as a concrete solution, (2) Technology can facilitate educators in giving assignments to students in gathering information from various sources, including from the internet (3) Technology can minimize internal weaknesses, (4) Technology-based education can reach all learning areas anytime and anywhere so that the role of technology in learning in Primary School can facilitate the formation of collaborative relationships and build meaning in easier contexts. Technology-based education for Primary School has three main functions used in learning activities: (1) Technology functions as a tool. In this case, technology is used as a tool for educators to convey learning information in the form of knowledge to students to make it easier for them to understand the material. (2) Technology functions as science. In this case, technology is part of a scientific discipline that students must master. (3) Technology functions as materials and tools for learning (literacy). In this case, technology is interpreted as a learning material and a tool to master a computer-assisted competency. In this case, the position of technology is no different from that of a teacher who functions as a facilitator, motivator, transmitter, and evaluator.

Keywords: Education, Technology, Primary School

INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious and spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves and society.[1]. One of these educational institutions is an Primary School, the lowest level of

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[1] Abd Rahman Bp dkk., "PENGERTIAN PENDIDIKAN, ILMU PENDIDIKAN DAN UNSUR-UNSUR PENDIDIKAN" 2, no. 1 (2022): 1–8; Tiur Rajagukguk Sofia Sebayang, "PENGARUH PENDIDIKAN, PELATIHAN DAN MOTIVASI KERJA TERHADAP KINERJA GURU DI SD DAN SMP SWASTA BUDI MURNI 3 MEDAN," *Jurnal Ilmu Manajemen METHONOMIX* 2, no. 2 (2020); Muhammad Yamin dan Syahrir Syahrir, "PEMBANGUNAN PENDIDIKAN MERDEKA BELAJAR (TELAAH METODE

education in national education as referred to in the National Education System Law No. 20 of 2003. Primary education is organized to develop attitudes and abilities, skills and essential skills needed to live and prepare students to meet the entry requirements for secondary education.

When viewed from the development of science from time to time. The result of this science supports the creation of new technologies that mark the progress of the times. So far, the technology developed has entered the digital stage. In Indonesia, every field has started to utilize technology to advance work, including education. As an entity related to human culture and civilization, teaching throughout the world has undergone very fundamental changes in the 4.0 era[2].

Many scientific and technological advances can be enjoyed by mankind. Technology is the result of the development of science and takes place in the field of education. Therefore, education must also use technology to assist the implementation of learning. Digital technology has now begun to be used in educational institutions to support learning, either as an information tool (as a means of accessing information) or as a learning tool (namely, as a means of supporting learning activities and assignments).

PEMBELAJARAN)," *Jurnal Ilmiah Mandala Education* 6, no. 1 (2020), https://doi.org/10.36312/jime.v6i1.1121; MN Wahidah dkk., "Dinamika Pendidikan Dasar Islam Sabilal Muhtadin Banjarmasin (1986-2019)," *… Berkala Pendidikan …*, no. Query date: 2022-12-20 15:57:43 (2021), https://ppjp.ulm.ac.id/journals/index.php/pakis/article/view/3186; Fazli Rachman, T Heru Nurgiansyah, dan Maryatun Kabatiah, "Profilisasi Pendidikan Kewarganegaraan dalam Kurikulum Pendidikan Indonesia," *EDUKATIF : JURNAL ILMU PENDIDIKAN* 3, no. 5 (2021): 2970–84, https://doi.org/10.31004/edukatif.v3i5.1052; Artika mutiara saima, "PEMAKSIMALAN TEKNOLOGI INFORMASI UNTUK MENINGKATKAN KUALITAS PENDIDIKAN MELALUI SUPERVISI PENDIDIKAN," no. Query date: 2022-09-06 14:45:30 (2019), https://doi.org/10.31227/osf.io/q835z; Yusnimar Yusri dan Marzuenda Marzuenda, "MODEL PEMBELAJARAN VIRTUAL LEARNING PADA LEMBAGA PENDIDIKAN ISLAM," *Kreatifitas: Jurnal Ilmiah Pendidikan Islam* 10, no. 2 (2022): 111–25, https://doi.org/10.46781/kreatifitas.v10i2.421.

[2] MUHAMMAD LUQMAN HAKIM dkk., "WIND-TUNNEL EXPERIMENTS AND CFD SIMULATIONS TO STUDY THE INCREASE IN SHIP RESISTANCE COMPONENTS DUE TO ROUGHNESS," *JOURNAL OF SUSTAINABILITY SCIENCE AND MANAGEMENT* 16, no. 3 (2021): 144–63, https://doi.org/10.46754/jssm.2021.04.012; Ahmad Faiz Ghazali dkk., "Visual Decision Support System Model for Managing Unemployment by Hybrid Education," *Emerging Advances in Integrated Technology* 2, no. 2 (2021), https://doi.org/10.30880/emait.2021.02.02.003; Kadek Surya Mahedy, "IMPLEMENTASI SISTEM BACKUP DATA PADA SISTEM INFORMASI PERPUSTAKAAN UNIVERSITAS PENDIDIKAN GANESHA," *Jurnal Pendidikan Teknologi dan Kejuruan* 18, no. 2 (2021): 216–216, https://doi.org/10.23887/jptk-undiksha.v18i2.35597; Nurfarhana Uyub dkk., "Factors Contributing to Students' Attainment in Design and Technology Project Work," *Journal of Technical Education and Training* 13, no. 1 (2021), https://doi.org/10.30880/jtet.2021.13.01.007; Georg Spoettl dan Vidmantas Tūtlys, "Education and Training for the Fourth Industrial Revolution," *Jurnal Pendidikan Teknologi dan Kejuruan* 26, no. 1 (2020): 83–93, https://doi.org/10.21831/jptk.v26i1.29848; Ker Woon Choy dkk., "E-anatomy Kit: An Innovative and Hybrid Tool for Gross Anatomy of Respiratory System Digital Practical," *Education in Medicine Journal* 14, no. 3 (2022): 127–34, https://doi.org/10.21315/eimj2022.14.3.10.

If a school does not use information technology, the school will experience underdevelopment in teaching and learning. This century, especially in the highly sophisticated Information and Communication Technology (ICT) field. Due to the sophistication of ICT technology, information from various corners of the world can be accessed instantly and quickly by anyone and from anywhere. Communicationinterpersonal can be done quickly, inexpensively, anytime, and anywhere.

Information and Communication Technology or Information Communication and Technology in the 4.0 era is now a fundamental requirement in supporting the effectiveness and quality of the learning process to improve the quality of education. Issues in education in Indonesia, such as the quality and relevance of education, access, and equity in education, geographic range, education management, autonomy and accountability, efficiency and productivity, budget and sustainability, will not be able to be resolved without the help of ICT. ICT-based education is a means of interaction between education management and administration, which can be utilized by both educators and education staff as well as students in improving the quality, productivity, effectiveness, and access to education[3].

The rapid development of technology and the need for Primary School-age children in modern educational innovations provide a paradigm that needs to be studied more deeply on how urgent technology is in education in Primary School. Based on the background stated above, the researcher will analyze the urgency of technology-based education for Primary School in Indonesia.

RESEARCH METHODS

The method in this research is a literature review that examines the importance of the topics discussed and compares the results with findings in other studies on the same issue and, in the end, produces an idea.

RESULTS AND DISCUSSION
1. TECHNOLOGY-BASED EDUCATION

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[3] Muhammad Andi Setiawan dan Izha Suci Maghfirah, "Efektivitas Aplikasi Zoom Dalam Proses Pembelajaran Matematika," *Bitnet: Jurnal Pendidikan Teknologi Informasi* 6, no. 1 (2021): 33–37, https://doi.org/10.33084/bitnet.v6i1.2565; Asnita Hanif, M. Giatman, dan Ahmaddul Hadi, "EVALUASI TATA KELOLA TEKNOLOGI INFORMASI DI DINAS KOMUNIKASI DAN INFORMATIKA MENGGUNAKAN FRAMEWORK COBIT 5," *JST (Jurnal Sains dan Teknologi)* 9, no. 1 (2020): 5, https://doi.org/10.23887/jst-undiksha.v9i1.28401; Tejarukmi Mutiara dan Dianti Kusumawardhani, "Hubungan Intensitas Penggunaan Teknologi Informasi Dan Komunikasi Dengan Keterlibatan Belajar Mahasiswa Generasi Z," *Edcomtech Jurnal Kajian Teknologi Pendidikan* 5, no. 2 (2020): 192–201, https://doi.org/10.17977/um039v5i22020p192.

Education in Greek comes from the word pedagogic, which is the science of guiding children. The Romans saw education as educare, that is, issuing and guiding, the act of realizing the potential of the child brought about when he was born in the world. The Germans saw education as the Erziehung equivalent of Educare: awakening hidden forces or activating the power or potential of the child.[4].

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious and spiritual strength, self-control, personality, intelligence, noble character, and skills that they and society need.[5]. In studying and thinking about education, it is first necessary to know two terms that are almost the same in form and are often used in education: pedagogy and pedagogy. Pedagogy means "education," during academic means "science of education."

The pedagogical word, which initially meant service, turned into a noble job. Because the notion of pedagogy (from pedagogic) means a person whose job is to guide children in their growth to an independent and responsible area. Educational work includes many things, namely: everything related to human development. From physical development, health, skills, thoughts, feelings, will, and social to faith development. In a simple and general sense, the meaning of education is a human effort to grow and develop innate potentials, both physical and spiritual, in accordance with the values that exist in society and culture. Education and culture live together and promote each other. Education is a process of learning knowledge, skills, and habits of a group of people, which are passed down from one generation to the next through teaching, training, and research[6].

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[4] Irawati Irawati dan Mohd Winario, "Urgensi Pendidikan Multikultural, Pendidikan Segregasi dan Pendidikan Inklusi di Indonesia," *Instructional Development Journal* 3, no. 3 (2020): 177–177, https://doi.org/10.24014/idj.v3i3.11776; Rianda Usmi dan Samsuri Samsuri, "Urgensi Pendidikan Kewarganegaraan Global dalam Kurikulum Pendidikan Pancasila dan Kewarganegaraan di Abad 21," *Jurnal Ilmiah Pendidikan Pancasila dan Kewarganegaraan* 7, no. 1 (2022): 21, https://doi.org/10.17977/um019v7i1p149-160; Agus Riyan Oktori, "Urgensi Pendidikan Humanis Religius Pada Pendidikan Dasar Islam," *AR-RIAYAH : Jurnal Pendidikan Dasar* 3, no. 2 (2019): 179–179, https://doi.org/10.29240/jpd.v3i2.1216.

[5] Yusri dan Marzuenda, "MODEL PEMBELAJARAN VIRTUAL LEARNING PADA LEMBAGA PENDIDIKAN ISLAM"; saima, "PEMAKSIMALAN TEKNOLOGI INFORMASI UNTUK MENINGKATKAN KUALITAS PENDIDIKAN MELALUI SUPERVISI PENDIDIKAN"; Rachman, Nurgiansyah, dan Kabatiah, "Profilisasi Pendidikan Kewarganegaraan dalam Kurikulum Pendidikan Indonesia"; Wahidah dkk., "Dinamika Pendidikan Dasar Islam Sabilal Muhtadin Banjarmasin (1986-2019)"; Sofia Sebayang, "PENGARUH PENDIDIKAN, PELATIHAN DAN MOTIVASI KERJA TERHADAP KINERJA GURU DI SD DAN SMP SWASTA BUDI MURNI 3 MEDAN."

[6] Sofia Sebayang, "PENGARUH PENDIDIKAN, PELATIHAN DAN MOTIVASI KERJA TERHADAP KINERJA GURU DI SD DAN SMP SWASTA BUDI MURNI 3 MEDAN."

Based on the above understanding, education is a process of learning knowledge, skills, faith, and human habits that can grow and develop human potential.

Etymologically, the word technology comes from the Greek word techne, which means art, craft, or skill, and logia which means observation, study, or body of knowledge. In terminology, technology is the knowledge of making something.[7] Technology is all the means to provide goods needed for continuity and facilitate human life. Technology is often understood as something in the form of a machine or things related to machinery. Still, technology has a broader meaning because technology is a combination of human elements, devices, ideas, procedures, and management. So that the essence of technology is the application of science or other organized knowledge to practical tasks[8].

Technology-based education, or so-called educational technology, has various definitions. Educational Technology as an academic field can be considered a science of design or an object of research that deals with teaching, learning, and social organization. As a practice, educational technology refers to the use of technology in learning activities. Some of these definitions include: (1) According to the International Technology Education Association, Educational Technology is teaching using tools to improve learning. (2) According to AECT in 1980, educational technology is a complex and integrated process involving people, ideas, and organizations to analyze problems, plan, implement, evaluate, and manage solutions to these problems. (3) Educational technology refers to procedures, tools, strategies, and processes to enhance learning experiences in formal and informal educational settings. The use of educational technology began with the use of simple tools, which then developed rapidly to date. (4) According to Hackbarth, educational technology is a multidimensional concept that includes a systematic process involving the application of various knowledge to find solutions to teaching and learning problems. (5) According to AECT 2008, cited by Yohanes Vianey Sayangan, the definition of educational technology is a study and ethical practice to facilitate learning and improve

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[7] UH Salsabila, RR Wati, dan ..., "Peran Teknologi Pendidikan Dalam Internalisasi Nilai-Nilai Pendidikan Islam Di Masa Pandemi," *Jurnal Pendidikan ...*, no. Query date: 2022-12-20 16:41:39 (2021), http://japendi.publikasiindonesia.id/index.php/japendi/article/view/71.

[8] Euis Anih, "MODERNISASI PEMBELAJARAN DI PERGURUAN TINGGI BERBASIS TEKNOLOGI INFORMASI DAN KOMUNIKASI MEMASUKI ABAD 21," *JUDIKA (JURNAL PENDIDIKAN UNSIKA)* 4, no. 2 (7 November 2016), https://doi.org/10.35706/judika.v4i2.391.

performance by creating, using, and managing technological processes appropriately and resources[9].

Based on the above understanding, technology-based education is a learning process using technology to facilitate the delivery of information in the form of knowledge so that it is well received and easy to process in ongoing education.

2. PRIMARY SCHOOL

Primary School is the lowest educational level of national education, as referred to in the National Education System Law No. 20 of 2003. Primary education is organized to develop attitudes and abilities, skills, and basic skills needed to live and prepare students to meet the requirements for entering the education medium. Primary School is the basic level for students in pursuing education. Education in Primary School has a contribution to building the knowledge base of students for use in further education. Therefore the implementation of learning in Primary School must run optimally[10].

Students at the Primary School level have cognitive abilities, according to Jean Piaget, who are already in the concrete operational phase (7-11 years), where in this phase, students can carry out various kinds of concrete tasks by developing three types of thinking namely recognizing something, denying something, and looking for interrelationships between things[11].

Based on the explanation above, Primary School is the lowest level of education organized to develop attitudes and abilities, skills, and essential skills needed to prepare students to meet the entry requirements for secondary education, so that in this phase, students get bored quickly and tend to like exciting things in the learning process.

3. THE URGENCY OF TECHNOLOGY-BASED EDUCATION IN PRIMARY SCHOOL

Education is a process of learning knowledge, skills, faith, and human habits that can grow and develop human potential. Technology is all means to facilitate human life. Based on the above understanding, technology-based education is a learning process using

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[9] Imroatul Ajizah, "Urgensi teknologi pendidikan: analisis kelebihan dan kekurangan teknologi pendidikan di era revolusi industri 4.0," *... : Jurnal Pendidikan Dan ...*, no. Query date: 2022-12-20 16:41:39 (2021), https://e-journal.stit-islamic-village.ac.id/istighna/article/view/93.

[10] Kukuh Andri Aka, "Model Quantum Teaching Dengan Pendekatan Cooperative Learning Untuk Meningkatkan Kualitas Pembelajaran PKn:," *Pedagogia : Jurnal Pendidikan* 5, no. 1 (29 Februari 2016): 35–46, https://doi.org/10.21070/pedagogia.v5i1.87.

[11] J Jumriani dkk., "Telaah Literatur; Komponen Kurikulum IPS Di Sekolah Dasar pada Kurikulum 2013," *Jurnal Basicedu*, no. Query date: 2022-12-20 16:43:14 (2021), http://jbasic.org/index.php/basicedu/article/view/1111.

technology to facilitate the delivery of information in the form of knowledge so that it is well received and easy to process in ongoing education.

Primary School is the lowest level of education organized to develop attitudes and abilities, skills, and basic skills needed to prepare students to meet the entry requirements for secondary education. In this phase, students get bored quickly and tend to like exciting things. Learning.

The role of technology in learning in Primary School is to facilitate the formation of collaborative relationships and build meaning in contexts that are easier to understand. In detail, technology can be directed to (1) Build collaborative communication networks between teachers, students, and learning resources. Some online applications that can be used for telecommunication are skype, yahoo messenger, Facebook, zoom, google meet, and other networks used. (2) Provide a variety of complex, realistic, and safe problem-solving environments. Technologies that can be used to provide a comfortable environment are hypermedia & software that can be used to create projects. (3) Actively building and shaping meaning via the internet to search for the latest research, photos, and videos. This can help students not only enjoy browsing but can learn and understand and know what they are learning[12].

Technology-based education for Primary School has three main functions used in learning activities[13]: (1) Technology functions as a tool. In this case, technology is used as a tool for educators to convey learning information in the form of science to students to make it easier for them to understand the material. (2) Technology functions as science. In

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[12] N Agustian dan UH Salsabila, "Peran Teknologi Pendidikan dalam Pembelajaran," *Islamika*, no. Query date: 2022-12-20 16:41:39 (2021), https://ejournal.stitpn.ac.id/index.php/islamika/article/view/1047.

[13] Imroatul Ajizah, "Urgensi teknologi pendidikan: analisis kelebihan dan kekurangan teknologi pendidikan di era revolusi industri 4.0," 0; GA Nugraha, B Baidi, dan S Bakri, "Transformasi manajemen fasilitas pendidikan pada era disrupsi teknologi," *Jurnal Ilmiah Ekonomi Islam*, no. Query date: 2022-12-20 16:41:39 (2021), http://jurnal.stie-aas.ac.id/index.php/jei/article/view/2621; P Novianti dkk., "Teknologi pendidikan dan transformasi digital di masa pandemi covid-19," *Jurnal ICT: Information ...*, no. Query date: 2022-12-20 16:41:39 (2021): 19, https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-1646215; M Mahlopi, "Supervisi Pendidikan Era Teknologi 5.0," *ADIBA: Journal of Education*, no. Query date: 2022-12-20 16:41:39 (2022): 0, https://adisampublisher.org/index.php/adiba/article/view/79; M Aspi dan S Syahrani, "Profesional Guru Dalam Menghadapi Tantangan Perkembangan Teknologi Pendidikan," *Adiba: Journal of Education*, no. Query date: 2022-12-20 16:41:39 (2022), https://adisampublisher.org/index.php/adiba/article/view/57; I Millati, "Peran Teknologi Pendidikan dalam Perspektif Merdeka Belajar di Era 4.0," *Journal of Education and Teaching (JET)*, no. Query date: 2022-12-20 16:41:39 (2021): 0, https://jet.or.id/index.php/jet/article/view/63; Agustian dan Salsabila, "Peran Teknologi Pendidikan dalam Pembelajaran"; Salsabila, Wati, dan ..., "Peran Teknologi Pendidikan Dalam Internalisasi Nilai-Nilai Pendidikan Islam Di Masa Pandemi"; A Maritsa dkk., "Pengaruh Teknologi Dalam Dunia Pendidikan," *... Jurnal Penelitian Dan ...*, no. Query date: 2022-12-20 16:41:39 (2021), https://ojs.diniyah.ac.id/index.php/Al-Mutharahah/article/view/303.

this case, technology is part of a scientific discipline that students must master. (3) Technology functions as materials and tools for learning (literacy). In this case, technology is interpreted as a learning material and a tool to master a computer-assisted competency. In this case, the computer has been programmed so that students are guided in stages using the principle of complete learning to master competence. In this case, the position of technology is no different from that of a teacher who functions as a facilitator, motivator, transmitter, and evaluator.

Based on the explanation above, the urgency of technology-based education in Primary School is as follows. [14]. (1) As an effort to improve the quality of education through technology by (a) assisting teachers in allocating time better, (b) advancing the stages of learning, (c) reducing the teacher's burden in lecturing so that teachers can facilitate discussions and develop the learning process for students. (2) Providing the view that education can be more individual, such as providing opportunities for students to develop individual potential and minimizing supervision from teachers. (3) Providing a more scientific basis for learning by: (a) systemized program planning, (b) developing teaching materials based on scientific principles. (4) Maximizing teacher competence by expanding the reach of more concrete teaching.

In addition, the urgency of technology-based education in Primary School is as follows. (1) Characteristics of Primary School-age children who like interesting things and learning is not monotonous, (2) Technology can facilitate educators in giving assignments to students in collecting information from various sources, including from the internet, (3) Technology can minimize internal weaknesses, (4) Technology-based education can reach all learning areas anytime and anywhere.

The explanation above shows that technology-based education is crucial, so technology content must meet the following criteria. (1) Content must facilitate students' interest in completing their learning, (2) Content must be appropriate to the cognitive level of learners, (3) The structure of the content must be simple and straightforward, (4) Content is well designed according to visual conditions, and (5) Navigation on the layout

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[14] Millati, "Peran Teknologi Pendidikan dalam Perspektif Merdeka Belajar di Era 4.0," 0.

of learning resources must be straightforward so that it makes it easier for students to use and access these learning resources [15].

CONCLUSION

Based on the discussion, technology is a means to facilitate human life, especially in the educational process. Based on this understanding, technology-based education is a learning process using technology to facilitate the delivery of information in the form of knowledge so that it is well received and easy to manage ongoing education. The role of technology in learning in Primary School is to facilitate the formation of collaborative relationships and build meaning in contexts that are easier to understand. Technology-based education for Primary School has three main functions used in learning activities: (1) Technology functions as a tool. In this case, technology is used as a tool for educators to convey learning information in the form of knowledge to students to make it easier for them to understand the material. (2) Technology functions as science. In this case, technology is part of a scientific discipline that students must master. (3) Technology functions as materials and tools for learning (literacy). In this case, technology is interpreted as a learning material and a tool to master a computer-assisted competency. In this case, the computer has been programmed so that students are guided in stages using the principle of complete learning to master competence. In this case, the position of technology is no different from that of a teacher who functions as a facilitator, motivator, transmitter, and evaluator. So the urgency of technology-based education in Primary School is as follows. (1) Characteristics of Primary School-age children who like interesting things and learning is not monotonous, (2) Technology can facilitate educators in giving assignments to students in collecting information from various sources, including from the internet, (3) Technology can minimize internal weaknesses, (4) Technology-based education can reach all learning areas anytime and anywhere.

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[15] EM ZAM, "Peran Literasi Teknologi Informasi Dan Komunikasi Pada Pembelajaran Jarak Jauh Di Masa Pandemi Covid-19," *… : Jurnal Inovasi Pendidikan Berbantuan Teknologi*, no. Query date: 2022-12-20 16:41:39 (2021): 19, https://jurnalp4i.com/index.php/edutech/article/view/176.

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