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STUDENTS' READINESS TO MASTER 21ST-CENTURY SKILLS

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Abstract

The development of information technology, globalization, and the industrial revolution 4.0 requires the education system to prepare students with relevant 21st century skills. These skills are in line with the four pillars of UNESCO education, namely *learning to know*, *learning to do*, *learning to be*, and *learning to live together*, which includes critical thinking skills, problem solving, creativity, communication, collaboration, information literacy, and metacognition. This article aims to examine the readiness of students to master 21st century skills and the factors that influence them. The method used is a literature study by analyzing various relevant scientific sources. The results of the study show that students' readiness is influenced by four main factors: relevant curriculum, innovative learning strategies, integration of technology in the teaching and learning process, and a conducive learning environment. The achievement of 21st century skills can be realized through project- or problem-based learning, personalization of learning, strengthening collaboration and communication, empowerment of metacognition, and design of learning activities that are contextual and relevant to the real world. The main principle of 21st century learning emphasizes that learning must be *student-centered*, collaborative, contextual, and integrated with people's lives. These various skills need to be taught explicitly and planned. The role of teachers is crucial in implementing learning that is able to facilitate the development of these skills. In conclusion, educational institutions need to develop adaptive and innovative learning models so that students are able to face global challenges in the future and become competent, creative, and highly competitive individuals.

Keywords: 21st century skills, learner readiness, innovative learning, education

Abstrak

Perkembangan teknologi informasi, globalisasi, dan revolusi industri 4.0 menuntut sistem pendidikan untuk mempersiapkan peserta didik dengan keterampilan abad ke-21 yang relevan. Keterampilan-keterampilan tersebut sejalan dengan empat pilar pendidikan UNESCO, yaitu learning to know, learning to do, learning to be, dan learning to live together, yang mencakup kemampuan berpikir kritis, pemecahan masalah, kreativitas, komunikasi, kolaborasi, literasi informasi, serta metakognisi. Artikel ini bertujuan mengkaji kesiapan peserta didik dalam menguasai keterampilan abad ke-21 serta faktor-faktor yang mempengaruhinya. Metode yang digunakan adalah studi literatur dengan menganalisis berbagai sumber ilmiah yang relevan. Hasil kajian menunjukkan bahwa kesiapan peserta didik dipengaruhi oleh empat faktor utama: kurikulum yang relevan, strategi pembelajaran yang inovatif, integrasi teknologi dalam proses belajar mengajar, serta lingkungan belajar yang kondusif. Pencapaian

keterampilan abad ke-21 dapat diwujudkan melalui pembelajaran berbasis proyek atau masalah, personalisasi belajar, penguatan kolaborasi dan komunikasi, pemberdayaan metakognisi, serta desain aktivitas belajar yang kontekstual dan relevan dengan dunia nyata. Prinsip pokok pembelajaran abad ke-21 menegaskan bahwa pembelajaran harus berpusat pada siswa (student-centered), bersifat kolaboratif, kontekstual, dan terintegrasi dengan kehidupan masyarakat. Berbagai keterampilan ini perlu diajarkan secara eksplisit dan terencana. Peran guru sangat krusial dalam mengimplementasikan pembelajaran yang mampu memfasilitasi pengembangan keterampilan tersebut. Kesimpulannya, lembaga pendidikan perlu mengembangkan model pembelajaran yang adaptif dan inovatif agar peserta didik mampu menghadapi tantangan global di masa depan dan menjadi individu yang kompeten, kreatif, serta berdaya saing tinggi.
Kata kunci: *keterampilan abad ke-21, kesiapan peserta didik, pembelajaran inovatif, pendidikan*

INTRODUCTION

21st century skills have become a topic that has been discussed a lot lately. Everyone's response to this topic varies. Some people respond seriously, some people respond to mediocrity, and some do not. The absence of responses in the last group does not necessarily indicate a lack of care, but it is also likely due to a lack of understanding of 21st century skills. Which group do we belong to? Do we already know the background of the echo of 21st century skills? Do we already understand enough about the various skills of the 21st century? Do we already understand how appropriate learning is in order to prepare the generation to master 21st century skills? Do we know what to do according to our abilities and capacities as educators and prospective educators? Hopefully, the following article will give an idea of these things.

Studies conducted by Trilling and Fadel (2009) show that high school graduates, diplomas and higher education are still less competent in terms of: (1) oral and written communication, (2) critical thinking and problem-solving, (3) work ethic and professionalism, (4) teamwork and collaboration, (5) working in different groups, (6) using technology, and (7) project management and leadership. The ASEAN Business Outlook Survey 2014 reported the results of the study and stated that Indonesia is considered a destination country for foreign investment and even one of the main destinations in the ASEAN region. The survey also indicates the fact that Indonesia has a low-skilled and low-skilled workforce. When compared to graduates from other countries who are more skilled and trained, for example the Philippines as the highest, the Indonesian nation will not be able to compete and will lose good job opportunities, if it is not supported by a program that produces high-skilled graduates. New jobs based on the production, analysis, distribution and consumption of information are emerging. Along with changes in human lifestyles due to the presence of technology, the workplace has become more computer-based and transformed. Compared to 20 or 30 years ago, Indonesian graduates now need more skills to succeed in facing the fierce competition of the 21st century. This is a challenge that must be addressed as well as possible.

What types of skills must graduates possess to be able to compete in the 21st century? Jobs in the 21st century are more international, multicultural and interconnected. In the last century, there has been a significant shift from manufacturing services to services that emphasize information and knowledge (Scott, 2015). Knowledge itself is growing and expanding exponentially. Information and communication technology has changed the way we learn, the nature of work that can be done, and the meaning of social relationships. Shared decision-making, information sharing, collaboration, innovation, and speed of work are very important aspects today. Students are no longer expected to focus on succeeding in doing manual jobs or routine machine-assisted jobs or jobs that rely on the cheap labor market. Today, indicators of success are based more on the ability to communicate, share, and use information to solve complex problems, be able to adapt and innovate in response to new demands and changing circumstances, and expand the power of technology to create new knowledge. New standards are needed for students to have the competencies needed in the 21st century. Schools are challenged to find ways in order to enable students to succeed in work and life through the mastery of creative thinking skills, flexible problem-solving, collaboration and innovation. Some sources such as Trilling and Fadel (2009), Ledward and Hirata (2011), Partnership for 21Century Learning; National Science Foundation, Educational Testing Services, NCREL, Metiri Group, Pacific Policy Research Center, and others demonstrate the importance of 21st century skills to achieve the necessary transformation.

METHODS

This study uses the Studi Literatur (Literature Review) which aims to comprehensively examine various concepts, theories, and research results related to students' readiness to master 21st century skills. Literature studies are carried out by collecting various relevant scientific sources, such as academic books, national and international journal articles, research reports, and education policy documents. These sources are then systematically analyzed to gain a deep understanding of the concept of 21st century skills and the factors that affect students' readiness. The stages in this research include:

1. Identify literature sources. Researchers identify a variety of literature sources relevant to the research topic through a database of journals, academic books, and educational policy documents.
2. Literature selection. The selected literature is a resource that has relevance to the concept of 21st century skills and the readiness of students to master it.
3. Literature analysis. Each literature is analyzed to find key concepts, research findings, as well as factors influencing 21st century skills development.
4. Synthesis of the study results. The results of the literature analysis are then synthesized to produce a comprehensive understanding of students' readiness to master 21st century skills.

This literature study method allows researchers to obtain a broad theoretical picture of the research topic as well as identify various approaches that can be used in the development of 21st century skills in education.

RESULTS AND DISCUSSION

21st Century Skills

Wagner (2010) and the Change Leadership Group from Harvard University identified the competencies and survival skills needed by students in dealing with life, work, and citizenship in the 21st century emphasized on the following seven (7) skills: (1) critical thinking and problem-solving skills, (2) collaboration and leadership, (3) agility and adaptability, (4) initiative and entrepreneurial spirit, (5) ability to communicate effectively both orally and in writing, (6) ability to access and analyze information, and (7) have curiosity and imagination.

US-based Apollo Education Group identified ten (10) skills needed by students to work in the 21st century, namely critical thinking, communication, leadership, collaboration, adaptability, productivity and accountability, innovation, global citizenship, entrepreneurial ability and spirit, and the ability to access, analyze, and synthesize information (Barry, 2012). Based on the results of research conducted by the OECD, three (3) dimensions of learning in the 21st century were described, namely information, communication, and ethics and social influence (Ananiadou and Claro, 2009). Creativity is also one of the important components to be successful in facing a complex world (IBM, 2010).

The US-based Partnership for 21st Century Skills (P21), identifies competencies needed in the 21st century namely "The 4Cs"- *communication*, *collaboration*, *critical thinking*, and *creativity*. These competencies are important to be taught to students in the context of core fields of study and 21st century themes. The Assessment and Teaching of 21st Century Skills (ATC21S) categorizes 21st century skills into 4 categories, namely way of thinking, way of working, tools for working and skills for living in the world (Griffin, McGaw and Care, 2012). *Way of thinking* encompasses creativity, innovation, critical thinking, problem-solving, and decision-making.

Way of working includes the skills of communication, collaboration and teamwork. *Tools for working* include awareness as a global and local citizen, life and career development, and a sense of personal and social responsibility. Meanwhile, *skills for living in the world* are skills based on information literacy, mastery of new information and communication technologies, and the ability to learn and work through digital social networks. Delors Report (1996) from the International Commission on Education for the Twenty-first Century, proposes four visions of learning, namely knowledge, understanding, competence for life, and competence to act. In addition to this vision, four principles known as the four pillars of education were also formulated, namely *learning to know*, *learning to do, learning to be* and *learning to live together*. This framework of thought is still relevant to the interests of education today and can be developed according to the

needs of the 21st century (Scott, 2015b). In the following section, a brief explanation of competencies and skills according to the four pillars of education contained in the Delors Report is explained.

Learning to Know

Learning to know is an activity to acquire, deepen and utilize knowledge material. Mastery of material is one of the important things for students in the 21st century. Students must also have the willingness to learn throughout their lives. This means that students must continuously assess their abilities about what they have known and continue to feel the need to strengthen their understanding for future life success. Students must be ready to always learn when facing new situations that require new skills. Learning in the 21st century should emphasize more on the theme of interdisciplinary learning. Four specific themes relevant to modern life are: 1) global awareness; 2) financial, economic, business, and entrepreneurial literacy; 3) civic literacy; and 4) health literacy. These themes need to be taught in schools to better prepare students for future life and work.(Zubaidah, 2016)

Learning to Do

In order to be able to adapt and adapt in a society that is developing very quickly, individuals need to learn to create. Students and adults alike need academic and applied knowledge, be able to connect knowledge and skills, be creative and adaptive, and be able to transform all these aspects into valuable skills.(Zubaidah, 2016)

1. Critical thinking skills. Critical thinking skills include the ability to access, analyze, synthesize information that can be learned, practiced and mastered. Critical thinking skills also describe other skills such as communication and information skills, as well as the ability to examine, analyze, interpret, and evaluate evidence. In the era of digital literacy where information flows are abundant, students need to have the ability to choose relevant sources and information, find quality sources and make assessments of sources from the aspects of objectivity, reliability, and quality.
2. Problem-solving skills. Problem-solving skills include other skills such as identification and the ability to search, select, evaluate, organize, and consider various alternatives and interpret information. A person must be able to find various solutions from different points of view, in solving complex problems. Problem solving requires teamwork, effective and creative collaboration from teachers and students to be able to involve technology, and handle a huge amount of information, be able to define and understand the elements contained in the subject matter, identify sources of information and strategies needed to solve problems. Problem solving cannot be separated from critical thinking skills because critical thinking skills are fundamental skills in solving problems. Students must also be able to apply the right tools and techniques effectively and efficiently to solve problems.
3. Communication and collaboration. Good communication skills are very valuable skills in the world of work and daily life. Communication skills include the ability

to convey thoughts clearly and persuasively orally and in writing, the ability to convey opinions in clear sentences, convey orders clearly, and be able to motivate others through the ability to speak. Collaboration and teamwork can be developed through experiences within school, between schools, and outside schools (P21, 2007a). Students can work together collaboratively on authentic project-based tasks and develop their skills through peer tutoring learning in groups. In the future world of work, collaborative skills must also be applied when dealing with colleagues who are located far apart. Effective communication and collaboration skills accompanied by skills in using technology and social media will allow collaboration with international groups.

4. Creativity and innovation. Achieving professional and personal success requires innovative skills and a spirit of creativity. Creativity and innovation will develop further if students have the opportunity to think divergently. Students must be stimulated to think outside the box, engage in new ways of thinking, have opportunities to present new ideas and solutions, ask unusual questions, and try to come up with hypothetical answers. Individual success will be achieved by students who have creative skills. Successful individuals will make the world a better place for everyone.
5. Information, media, and technology literacy. Information literacy, which includes the ability to access, evaluate, and use information, is very important to master at this time. Information literacy has a great influence on the acquisition of other skills needed in 21st century life. A person with media literacy skills is someone who is able to use process skills such as awareness, analysis, reflection, and action to understand the natural messages contained in the media. The media literacy framework consists of the ability to access, analyze, evaluate, and create messages in various forms of media, create an understanding of the role of the media in society, and build important skills from information from investigation and self-expression. Media literacy also includes the ability to convey messages from oneself and to provide influence and information to others.
6. Information, communication, and technology (ICT) literacy. ICT literacy skills include the ability to access, organize, integrate, evaluate, and create information through the use of digital communication technology. ICT literacy is centered on high-level thinking skills in considering information, media, and technology in the surrounding environment. Every country should broadly cultivate ICT skills in its society because otherwise, the country can lag behind the development and advancement of technology-based economic knowledge. There are several connections between the three forms of literacy which include information communication, media, and technology literacy. Mastery of these skills allows the mastery of other skills and competencies necessary for the success of life in the 21st century (Trilling and Fadel, 2009).

Learning to Be

In particular, the younger generation must be able to work and study together with diverse groups in different types of work and social environments, and be able to adapt to changing times.

1. Social and cross-cultural skills. Good social and cross-cultural skills are essential for achieving success in school and life. These skills enable individuals to interact effectively with others (e.g., knowing when to listen and speak, and how to treat themselves respectfully, professionally), work effectively in a diverse team (e.g., respecting cultural differences and collaborating with people from different social conditions and cultural backgrounds), being open-minded to different ideas and values, and using social and cultural differences to generate better ideas, innovations, and quality of work. Having good social skills can help students to make good decisions. Good social skills in children and adolescents can influence their academic performance, attitudes, social and family relationships, and involvement in extracurricular activities. Empathetic skills also include social skills that are expected to grow in 21st century life (National Research Council, 2012; P21, 2007a). Opportunities to develop emotional resilience and empathy should be explicitly designed (Leadbeater, 2008). Steedly (2008) expressed the belief that children in general acquire positive social skills through daily interactions with their adults and peers. However, teachers and parents should reinforce this learning by direct example.

2. Personal responsibility, self-regulation, and initiative. The high level of interaction and teamwork in the work environment in the 21st century is expected to be anticipated by improving students' personal qualities. Self-regulation skills are at the heart of 21st century learning. Independent students are responsible for their own learning process and are willing to improve their abilities throughout their careers. Herring (2012) argues that independent students are motivated from within. Independent students understand that a passion for learning is a basic skill that will make them successful in the workplace. Adaptability is the ability to respond to changing economic and market conditions and master new skills quickly. This ability is one of the three most needed competencies in the 21st century workforce. Another important thing is flexibility in a variety of work and social settings and demonstrates initiative, mental agility and curiosity, which can be realized with the wide range of web-based technologies available. Using technology resources as informal learning resources allows students to have high collaboration skills, easily share and exchange knowledge, and direct themselves to continue learning (Herring, 2012). Another useful ability is the ability to reflect on the strengths and strengths that exist in students and improve time management. Training to improve these skills can be held by schools to help students prepare themselves for the world of work and life in the 21st century.

3. Logical thinking skills. Today's young generation lives in a more challenging world, so they need to develop the ability to think logically towards complex and important global issues. They must be prepared to address a wide range of issues, including human conflict, climate change, poverty, the spread of disease and the energy crisis. Schools must provide a range of opportunities, guidance and support so that students understand their roles and responsibilities in the real world, as well as develop competencies that enable them to understand new situations and environments.

4. Metacognitive skills. Metakogny is defined as 'thinking about thinking'. A person who has metacognitive knowledge means being aware of how much they understand the topic of learning and the factors that affect their understanding. Metacognitive skills can improve students' learning and understanding. Some of the important steps to teaching metacognitive skills are as follows: (a) teach students that learning is unlimited and one's ability to learn can be changed, (b) teach how to set learning goals and plan for their achievements, and (c) give students plenty of opportunities to practice accurately monitoring their learning activities. Instill in students that these things are important and are a necessity for the student himself.

5. Entrepreneurial thinking skills. Creativity and entrepreneurial thinking are also essential skills in the 21st century. Rapid job growth and emerging industries require the creativity of workers, including the ability to think out of the box, think of conventional policies, imagine new scenarios and produce amazing work. Having an entrepreneurial mindset (the ability to recognize and take advantage of opportunities and the ability to take responsibility and take risks), allows one to create jobs for themselves and others. Therefore, students must be trained to answer questions and make decisions quickly. They must also be trained to think inventively, observing and evaluating new opportunities and ideas. Nevertheless, it is important to note that such ideas must be beneficial or positively impact the organization and community in which they live or work. Entrepreneurial activities in schools should be designed in such a way as to allow students to lead and foster greater autonomy.

6. Learning to learn and lifelong learning habits. Throughout one's life, a person will always come across new information that changes the knowledge he has. Bolstad (2011) argues that future-oriented schools should expand students' intellectual capacity and strengthen their willingness and ability to continue learning throughout life. Learning skills to learn, having openness and commitment to lifelong learning and learning more broadly are essential for students to adapt. Students' ability to learn takes precedence over knowledge accumulation.

Learning to Live Together

1. Respect for diversity. This skill involves respecting and appreciating the problems of others and cultures that are different from their culture, so that they will acquire

social and cross-cultural skills (Barrett 2014). It will also build awareness and knowledge of the differences that exist between individuals and communities. School environments should offer the possibility to design learning activities that can provide opportunities for young people to respect, get along well and coexist peacefully in a culturally diverse environment (this is a highly valued 21st century life skill). Therefore, there is an urgent need for teachers to design collaborative and real-life learning activities that can develop students' understanding, skills and values.

2. Teamwork and interconnectedness. Teamwork and interconnectedness skills must be the main concern of the world of education. These skills are very important both in people's lives and in the workplace. These skills allow a person to gain more value in the eyes of colleagues while developing in a collaborative work environment (Redecker 2011). Among the important competencies in the 21st century is the ability to help the development of interdisciplinary cooperation and the global exchange of ideas to counter potential discrimination due to ethnicity, gender or age (Leis, 2010).

3. Civic and digital citizenship. Civic literacy is an important skill, as students need to know the rights and obligations of citizens at the local, regional, and national levels; develop motivation, character and skills to participate in society; and understand the impact of societal issues locally and globally. In addition to this, another 21st century skill is digital citizenship – understanding how to participate productively and responsibly online. It is important to help students understand how to participate intelligently and ethically as responsible citizens in virtual communities. This involves learning how to access the reliability and quality of information found from the internet and use the information obtained responsibly (Davies, Fidler and Gorbis, 2011). Schools need to regulate how students learn and practice using technology responsibly (e.g. how to access data, protection of privacy, how to detect fraud, plagiarism, intellectual property rights and anonymity) and how to be good digital citizens.

4. Global competence. Students with global competence will be able to take action in many ways and tend to think of themselves as citizens of the world, rather than of citizens of a particular nation. They are able to use critical thinking skills to survey and think about problems that need to be prioritized, identify workable solutions, assess the solutions chosen and the action plans to be taken based on evidence, and consider the potential impacts and consequences that may arise from the actions to be taken. Students with global competence will be careful to consider some of the previous approaches and perspectives of others. They act ethically and collaboratively (in creative ways) to contribute to local, regional or global development. Students with global competence do not assume that they are capable of handling complex challenges alone, but are able to reflect on how much capacity

they have to complete the task at hand and look for opportunities to collaborate to join others who will complement their strengths (Mansilla and Jaskson, 2011).

5. Intercultural competence. The ability to understand and communicate with people who are cross-cultural or who have different cultures is a fundamental prerequisite in the world of work. All students need to acquire intercultural competencies that aim to develop and improve these skills, can contribute to maintaining peace and inclusive learning (Barrett 2014). Intercultural competence is not acquired automatically, but must be learned, practiced and nurtured throughout life. Teachers have a very important role in facilitating the development of intercultural competence among students. Mutual respect and tolerance are essential to ensure that the views of individuals of all cultural backgrounds are recognized and respected in a multicultural society. It is very important that students can learn to listen to others, show flexibility, and work closely with contributors in teams that come from different cultures and different clevers of science. This is a very important competency and should not be missed by 21st century societies (Barrett et al, 2014). Based on this, it is clear that education has a significant and even fundamental role in offering opportunities to 21st century students to develop competencies that enable them to live peacefully with diverse cultural conditions (Carneiro and Draxler, 2008).

Students' Readiness to Master 21st Century Skills

The readiness of students to master 21st century skills can be seen from their ability to think critically, solve problems, work together, and utilize technology in the learning process. According to Greenstein (2012), students who are ready to face the challenges of the 21st century are those who are able to learn independently, adapt to change, and be able to work together with others. In addition, the readiness of students is also related to their ability to develop higher order thinking skills (HOTS) which include analysis, evaluation, and creation. This ability is very important in dealing with various complex problems that arise in modern life.

Readiness Improvement Strategies include:

a. Project/Problem-Based Learning: Encourages students to actively solve real problems, not just accept material.
b. Student-Centered Learning: Students play an active role as learning centers, while teachers act as facilitators.
c. Technology Integration: The use of digital tools in the learning process to improve technology and information literacy.

The characteristics of 2nd Century Ready Students, such as:

a. Adaptive and has high resilience.
b. Have initiative and leadership skills.
c. High digital literacy to search for information.

Factors Affecting Student Readiness

a. Supportive Curriculum

An adaptively designed curriculum can help students develop critical thinking skills, creativity, and problem-solving skills

b. Innovative Learning Strategies

Learning models such as *project-based learning*, *problem-based learning*, and *collaborative learning* can encourage students to be more active in the learning process.

c. Integration of Technology in Learning

The use of information technology can help students develop digital literacy and increase access to various sources of knowledge.

d. The Role of the Teacher

Teachers have a critical role to play in creating learning environments that support 21st century skills development through innovative and interactive learning methods.

e. Learning Environment

A conducive learning environment, both at school and at home, can increase students' motivation to learn and encourage them to develop the skills needed in the 21st century.

Challenges: Students' learning readiness varies, influenced by their respective backgrounds and characteristics, so teachers need to apply a differentiated approach. The application of these skills requires a paradigm shift in education, where students are not only required to know (*knowledge*), but what they can do with that knowledge (*skills*). Motivation is a psychological energy that moves, directs, and maintains students' learning behavior. Conceptually, motivation is divided into two main dimensions, namely internal motivation (intrinsic) and external motivation (extrinsic). Intrinsic motivation comes from within the individual, such as interest, curiosity, and satisfaction in understanding the material. On the other hand, extrinsic motivation is influenced by external factors such as appreciation, values, competition, and social drive (Ryan & Deci, 2000).

In learning practice, the integration of these two types of motivation is key. Learning that only relies on extrinsic motivation tends to result in temporary engagement, while intrinsic motivation encourages deeper and more sustainable learning. Therefore, teachers need to design meaningful learning experiences, for example through active learning models, the use of interactive media, and the provision of constructive feedback. Furthermore, motivation also acts as a mediator between learning methods and learning outcomes. This means that the effectiveness of a learning model will be more optimal if it is able to stimulate students' motivation simultaneously, both from within and outside themselves. Thus, learning is not only oriented towards knowledge transfer, but also the transformation of students' attitudes and learning interests.

The family is the first educational environment that has a significant influence on the academic and non-academic development of students. Family support is not only material, such as the provision of learning facilities, but also includes emotional and psychological aspects, such as attention, supervision, and motivation. The involvement

of parents in the educational process has been proven to increase students' learning discipline, confidence, and academic achievement. This happens because children feel that they get legitimacy and support for their learning activities. In addition, positive interactions between parents and children also form a conducive learning culture in the home environment (Epstein, 2011). In the context of modern learning, collaboration between schools and families is increasingly important. Teachers can build intensive communication with parents through various media, such as regular meetings, learning progress reports, and digital platforms. This synergy creates continuity between the school and home environments, so that the learning process becomes more holistic and sustainable. Thus, family support does not only function as a complement, but as a foundation that strengthens the successful implementation of learning in schools.

Access to Technology for Students from Underprivileged Families

Access to technology is a fundamental prerequisite for digital-based learning. However, reality shows that there is a significant inequality of access among students, especially those from low economic backgrounds. This phenomenon is known as the *digital divide*, which includes not only device limitations, but also internet access and digital literacy. In this context, the government has structural responsibilities through affirmative policies such as the provision of internet quota assistance, the distribution of learning devices, and the development of network infrastructure that is evenly distributed to remote areas (Ministry of Education and Culture, 2021).

At the school level, concrete efforts can be realized through the provision of ICT facilities such as computer laboratories, device lending programs, and scheduling the use of facilities on a rotating basis to be inclusive. Meanwhile, teachers are required to have pedagogical sensitivity by designing adaptive learning. Strategies such as the use of offline-based learning media, print modules, or *blended learning* approaches are alternatives to accommodate students' limitations. Thus, access equity is not only the responsibility of macro policies, but also micro-practices in the classroom (Selwyn, 2016).

CONCLUSION

21st century skills are an important competency that students must have to face global challenges in the modern era. Students' readiness to master these skills is influenced by various factors, such as relevant curriculum, innovative learning strategies, integration of technology in learning, and learning environment support. Therefore, educational institutions need to develop learning approaches that are able to encourage the development of critical thinking, creativity, communication, and collaboration skills so that students can become adaptive and competitive individuals in the future.

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