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Sustainability Level Analysis of the Application of 21st Century Skills By University Students

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ABSTRACT

In order to meet the challenge of 21st-century skills, every human resource must be prepared with complex problem-solving skills. Colleges, particularly state colleges in Pekanbaru City, have a vested interest in helping their students develop 21st-century skills. To overcome these problems, we need a 21st-century approach for college students, particularly Riau University students. No one has yet evaluated the long-term viability of the use of 21st-century talents at Riau University. As a result, the author is interested in doing research to develop a strategy to improve students' 21st-century abilities at the University of Riau. The study was conducted solely on Riau University students. The Simple Random Sampling Technique was used to choose the samples. Riau University has a total of 35.785 students spread across the faculty. Based on the necessary sample size chart, the number of samples necessary is 654, with a confidence rating of 99% and a margin of error of 5%. As the results of the analysis, it is possible to identify multidimensional sustainability status at a value of 74.88, where this value is in the range of 50,01–75,00, with a fairly sustainable category. This condition gives the idea that the updating of 21st-century skills by students at Riau University is only in a sufficient category, or, in a state of warning to stakeholders. Riau University can ensure that its students not only have strong academic knowledge but also have the relevant and necessary skills to cope with the complex dynamics of the 21st century by implementing robust strategies and involving all stakeholders.

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1. INTRODUCTION

Today, the world has entered the 21st century, and breakthroughs in science and technology demand that everyone possess a variety of talents, both cognitive and non-cognitive, to compete in the realms of life and work (Stehle & Burton, 2019; Olszewski et al., 2019; Borga, 2019). With the advent of the 21st century, students are also expected to develop essential skills such as teamwork, problem-solving, self-regulation, effective use of media and learning resources, and independence (Ilori &

Ajagunna, 2020; Lynch et al., 2018; Care, Scoular, & Griffin, 2016; Shear et al., 2010; Zimmerman, 2000). These competencies are critical for navigating the complexities of modern life and thriving in a rapidly evolving technological landscape. In conclusion, cultivating a diverse skill set in students is imperative for their success and adaptability in the 21st century.

The complexity of the information, attitudes, and skills required by humans to compete in the world of work in the twenty-first century by leveraging or employing fast-growing technological innovations is referred to as 21st-century skills (Bahng & Lee, 2017; Scott, 2015, p.8). Early scholars such as Wang et al. (2020), Pedersen et al. (2021), and Grewal et al. (2021) suggested that human life suffered significant changes from earlier life when human power was substituted by modern technology. Some of these definitions imply that there are numerous talents and competencies within this component of 21st-century talents that humans must learn throughout the course of the century's (Chalkiadaki, 2018). As a result, the talents of the twenty-first century are critical abilities that everyone must acquire in order to succeed in tackling the challenges, issues, lifestyles, and vocations of the twenty-first century (Mutohhari et al., 2021; Caena and Redecker, 2019).

In order to meet the challenge of 21st-century skills, every human resource must be prepared with complex problem-solving skills (Iniguez and Boeren, 2020). To that end, critical thinking abilities that are reinforced by students' capacity to cooperate and a strong knowledge of technology are required to prepare them for the world of work (Malik, 2018; Jalinus, 2021). Of course, the strategic role of colleges is needed to enhance the ability of students to live in the modern era and prepare them for the world of work after graduation. Furthermore, one will acquire better skills and expertise, which will enable him to get a more suitable job and a better position when mastering the skills of the 21st century.

Colleges, particularly state colleges in Pekanbaru City, have a vested interest in helping their students develop 21st-century skills. Of course, the student's problem-solving abilities focus on the problem as the key part of learning to solve it in a complicated and in-depth manner. Nurtanto et al. (2020) As a result, the government is creating a program to boost Pancasila's student profile through the Ministry of Education, Culture, Research, and Technology. Students' profiles are consistent with the Education and Culture Ministry's vision and mission, as stated in Regulations of the Minister of Education and Cultural No. 22 of the Year 2020 on the Strategic Plan of the Department of Educational and Cultural Affairs 2020-2024.

Education in general is directly linked to the civilization and evolution of the period (globalization), in which every student faces the task and demands of being attentive and sensitive to scientific and technological breakthroughs (Giesenbauer & Müller, 2020; Orazbayeva et al., 2016). To overcome these problems, we need a 21st-century approach for college students, particularly Riau University students. No one has yet evaluated the long-term viability of the use of 21st-century talents at Riau University. As a result, the author is interested in doing research to develop a strategy to improve students' 21st-century abilities at the University of Riau.

The skills of the 21st century are crucial. People must have the relevant capacity to meet the demands of the times amid rapid technological developments and changing global dynamics. One of the most important steps in assessing the extent to which 21st-century skills can be preserved and improved over time is to conduct research that analyzes the sustainability of such skills. The main focus is on skills such as critical thinking, creativity, problem-solving, and communication skills. This research also provides a better understanding of how mastering these skills can last long.

This research is novel due to its incorporation of sustainability aspects in the method of analysis. While the importance of understanding 21st-century skills is acknowledged, certain analytical errors need to be addressed to better comprehend the existing dynamics and challenges. One major weakness in the analysis is the insufficient understanding of the components that influence the long-term mastery of skills in the modern era. This study aims to improve our understanding of how prepared colleges and universities are to equip students with the skills necessary for the workforce by examining the index and sustainability status of skill application in this contemporary context. Moreover, the findings of this research are expected to contribute significantly to the formulation of future education policies.

2. METHODS

This study is classified as descriptive research. According to Ramdhan (2021), descriptive research aims to provide a systematic, factual, and accurate portrayal of the facts and characteristics of a specific population or region. The study focused exclusively on students from Riau University. A Simple Random Sampling technique was employed to select the samples. Riau University has a total student population of 35,785 across various faculties. Based on the necessary sample size chart, 654 samples were required, ensuring a 99% confidence level and a 5% margin of error. Data for this study was collected using a methodology that focuses on four markers of 21st-century skills, as detailed in Table 1.

Table 1. 21st Century Skills Indicators

Variable	Indicators	Parameters
21st Century Skills	Critical Thinking	Evaluate Effectiveness of Action
		Open
	Communication	Listening to other people's explanations
		Looking at other people's explanations
		Respect the explanations of others
	Creative Thinking	Maximize Ability and Knowledge
		Creating a novel perspective on a situation that differs from the norm in general
	Collaboration	Actively Contribute
		Work Productively
		Flexibility and compromise
		Responsibility

Data is descriptively evaluated to identify the competencies of Riau University's 21st-century students. Following that, a sustainability study of each indicator is performed to determine the value of the index and the sustainability of each indicator. This dual approach not only provides a clear snapshot of the current skill levels among students but also assesses the long-term viability of these skills. The results aim to inform university policy and curriculum development, ensuring that the educational programs are aligned with the demands of the modern workforce and sustainable development goals.

To analyze the index and sustainability status of the 21st Century Skills publication, Riau University students used the Multidimensional Scaling (MDS) analysis approach with the help of RapSkills software (modified Rapfish). This RapSkills analysis is carried out through several stages, among others: (1) determination of sustainable attributes of learning management; (2) giving a bad-good assessment to each attribute in the ordinal scale based on the sustainability criteria of each dimension; (3) inserting the value or score of the assessment results of each attribute into the RapSkill software and running Rap Skills; (4) compiling indexes and sustainability status.

3. FINDINGS AND DISCUSSION

3.1. Analysis 21st Century Skills Students of Riau University

Assessment of 21st Century Skills The findings of the questionnaire distribution with the Likert scale technique, consisting of four categories, namely Very Good, Good, Sufficiently Good, and Bad, were collected from Riau University students. Table 2 reveals that on the critical thinking indicator, the ability of students to assess the success of the action was in the number of 534, with this result coming from a good category plus a very good category. The results from 635 research samples show that they are highly good at listening to other people's explanations. However, on the indication of creative thinking, 396 people were able to develop a fresh way of understanding events that was distinct from

the customary manner in general. This indication is lower than the previous two. In contrast, 584 participants in the sample on the cooperation indicator reported being able to actively engage inside the learning group. Table 2 has further results.

Table 2. 21st Century Skills Students of Riau University

No	Statement	Answer (N)			
		Very good	Good	Adequate	Not Good
Critical Thinking					
1	I was able to assess the efficacy of the action I took.	113	421	97	23
2	I can be receptive to other people's ideas.	211	383	44	16
Communication					
3	I can listen to other people's explanations.	391	244	19	0
4	I can think about other people's explanations.	147	288	172	47
5	I can accept other people's reasons.	219	406	29	0
Creative Thinking					
6	I'm able to make the most of my abilities and expertise.	176	291	171	16
7	I can generate a fresh way of viewing events that differs from the norm in general.	112	284	206	52
Collaboration					
8	I was able to actively participate in the learning group.	327	257	52	18
9	I'm able to work efficiently.	219	341	66	28
10	I am adaptable and willing to make concessions.	159	327	140	28

3.2. Index Values and Sustainability Status Publisher 21st Century Skills Students of Riau University

Analysis of the Value of 21st Century Skills Application Sustainability Riau University students were evaluated using four indications, including (1) indicator critical thinking, (2) indicator communication, (3) indicator creative thinking, and (4) indicator collaboration. For each indication, more analytical findings will be shown.

3.2.1. Critical Thinking Indicators

Based on the study results, it is feasible to determine the sustainability status of Riau University students' use of the 21st Century Skills Report on the critical thinking indication shown in Figure 1.

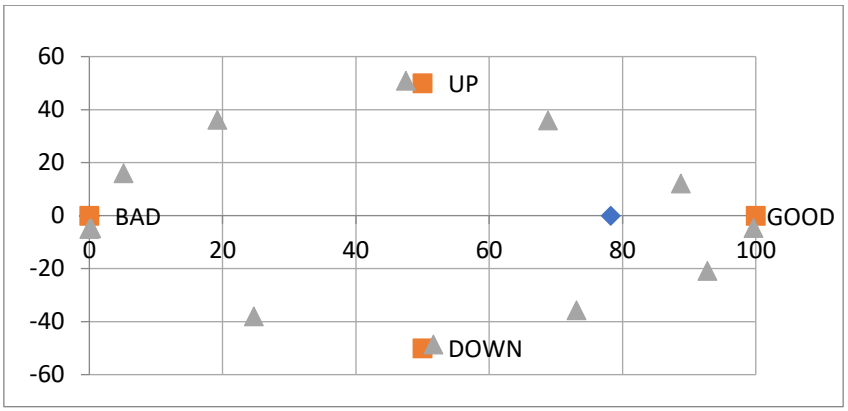

Figure 1. Sustainability status position of critical thinking indicators

According to the study performed to provide an overview of the value of the sustainability index, this value is in the range of 75.01 - 100 with sustainable status. The results of this study are in line with Persky et al (2019) view that students are highly expected to develop critical thinking skills, even though obstacles are still found in mastering them. This requires the role of a teacher or lecturer in passing on good thinking habits to students (Alsaleh, 2020; Mahanal et al., 2019; Alhamlan et al., 2019).

3.2.2. Communication Indicators

Based on the findings of the analysis, it is feasible to determine the sustainability of Riau University students' use of the 21st Century Skills Report on the communication indication depicted in Figure 2.

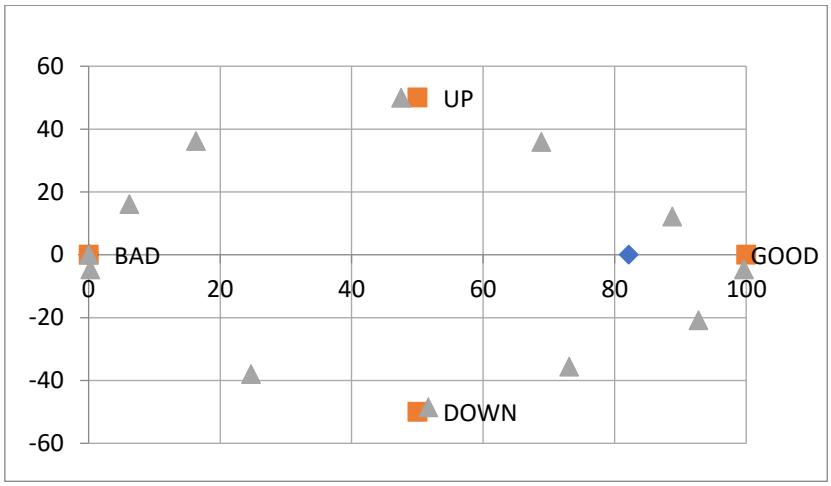

Figure 2. Sustainability status position of communication indicators

The sustainability index is at 82.14 based on the communication indicator analysis, and it is in the range of 75.01–100 with a sustainable status. This result is in line with Smith et al (2018) opinion that someone in a high position is someone who has a good personality for establishing communication with each other. Katuna (2019) and Tomaselo (2018) reinforce this statement that good interaction can enhance a person's moral development.

3.2.3. Creative Thinking Indicators

Based on the study results, it is feasible to determine the sustainability status of Riau University students' use of the 21st Century Skills Report on the creative thinking indication shown in Figure 3.

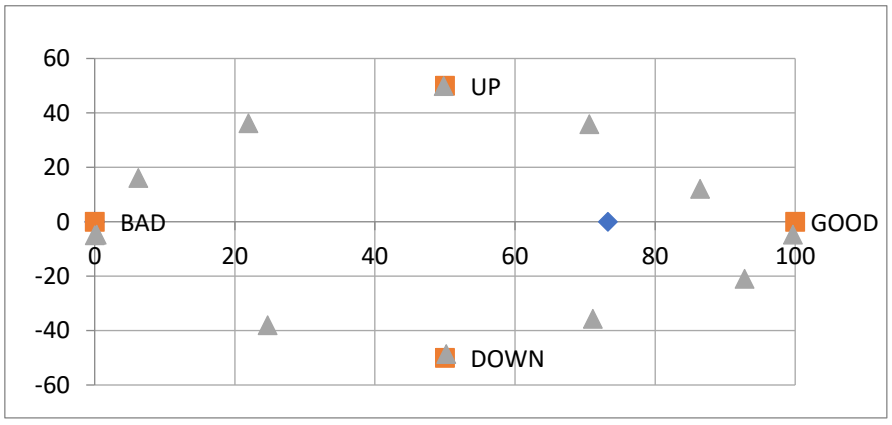

Figure 3. Sustainability status position of critical thinking indicators

According to the study done using the creative thinking indicator, the value of the sustainability index is 73.26, which is in the range of 50.01 to 75.00, indicating a fairly sustainable condition. The findings are backed by Mumford's (2017) research, which argues that students have been attempting to solve issues for a long time using creative thinking ways, despite the fact that impediments to advancing students' critical thinking abilities still exist (Rawlinson, 2017).

3.2.4. Collaboration Indicators

Based on the study results, it is feasible to determine the sustainability state of Riau University students' use of the 21st Century Skills Report on the collaboration indication shown in Figure 4.

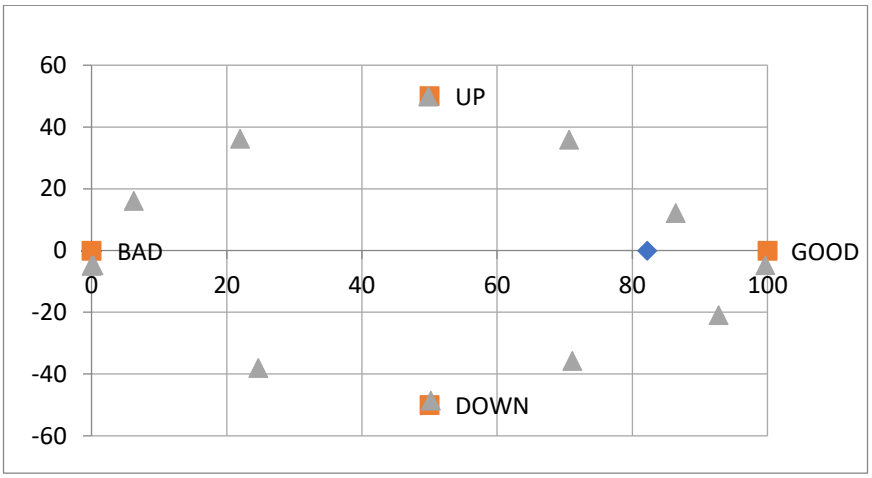

Figure 4. Sustainability status position of collaboration indicators

The most recent study of six factors that impact the cooperation indicator provides an overview of the value of the sustainability index with a value of 82.21, which is in the range of 75.01–100 with continuous status. The findings are backed by Fernandez and Menendez's (2017) belief that being accountable within a group will offer students a meaningful experience in their learning activities. Furthermore, the presence of a group study might boost students' enthusiasm to follow and provide meaningful learning (Mare & Mutezo, 2021; Guo et al, 2021; Lee & Martin, 2019; Erbas dan Emirer, 2019).

Based on the results of the above analysis, the index values and sustainability status of each indicator are presented in the form of tables.

Table 3. Index and sustainability Status of Each Application Indicators 21st Century Skills Students of Riau University

No	Indicators	Index	Sustainability Status
1	Critical Thinking	78,26	Very sustainable
2	Communication	82,14	Very sustainable
3	Creative Thinking	73,26	Sufficient Sustainable
4	Collaboration	82,21	Very sustainable

A multi-dimensional study of the entire indication is then undertaken to establish the overall level of sustainability.

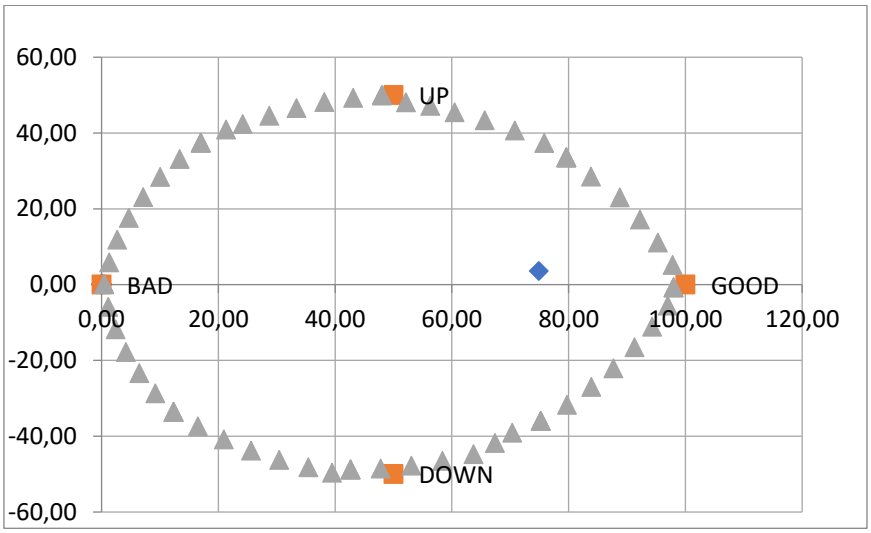

Figure 5. Multi-dimensional analysis of the entire indicator

Based on the results of the analysis, it is possible to identify multidimensional sustainability status at a value of 74.88, where this value is in the range of 50,01–75,00, with a fairly sustainable category. This condition gives the idea that the updating of 21st century skills by students at Riau University is only in a sufficient category, or, can I say, in a state of warning to stakeholders**.**

The results of the above research show that the sustainability of applying 21st century skills to Riau University students today can still be considered quite sustainable. Although some positive progress has been made to incorporate elements of 21st-century skills into curricula and learning activities, there are some issues that require special attention from stakeholders. Faced with the challenges of the world of work, student demands are increasingly complex and dynamic, requiring skills such as problem-solving, creativity, and teamwork. As a result, the results of this study show that students are still not using the skills of the 21st century properly while studying. The results of this study are also in line with the Sari & Atmojo study (2021), which states that the mastery of 21st century competencies in the learning process is not fully optimal. Furthermore, Nurjanah & Putro (2022) found that the critical thinking skills of students in Indonesia are also not optimal.

Therefore, concrete policy scenarios need to be planned and created to ensure that the skills taught will last and be relevant. Situations like this can include increased use of technology in learning, increased industry involvement in the educational process, and the creation of more thorough evaluation techniques. The University of Riau can update 21st-century skills more efficiently by formulating appropriate policy scenarios. This will ensure that graduates are not only prepared to face the challenges of the world of work but also able to contribute positively to an increasingly complex and global society**.**

4. CONCLUSION

To enhance the abilities of Riau University students in the 21st century, it is important for university stakeholders to design and establish strategies that fit this era. Teachers, students, and university administration should be actively engaged in supporting learning that focuses on 21st-century skills such as critical thinking, creativity, good communication, and collaboration. To face the challenges and opportunities that emerge in this digital age, the use of technology in the learning process is also crucial. Besides, there needs to be a professional development program for lecturers so that they can keep up with the demands of the times with their teaching methods. Riau University can ensure that its students not only have strong academic knowledge but also have the relevant and necessary skills to cope with the complex dynamics of the 21st century by implementing robust strategies and involving all stakeholders. It should be acknowledged that this research has some

limitations because it only performs index analysis and determines whether Riau University students overall use the skills of the 21st century. The relevant policies at the university level and curricula that exist at each faculty to accommodate the needs of the 21st century have not been fully discussed in this study. Therefore, further research involving further reviewing the availability of policies and curriculum at the faculty level can be the next step towards obtaining more in-depth and contextual information to get a better overview.

REFERENCES

Alhamlan, Suad, Haya Aljasser, Asma Almajed, Haila Almansour, and Nidhal Alahmad. "A Systematic Review: Using Habits of Mind to Improve Student's Thinking in Class." *Higher Education Studies* 8, no. 1 (2018): 25-35. https://doi.org/10.5539/hes.v8n1p25

Alsaleh, N. J. (2020). Teaching Critical Thinking Skills: Literature Review. *Turkish Online Journal of Educational Technology-TOJET*, *19*(1), 21-39.

Bahng, E., & Lee, M. (2017). Learning Experiences and Practices of Elementary Teacher Candidates on the Use of Emerging Technology: A Grounded Theory Approach. *International Electronic Journal of Elementary Education*, *10*(2), 225-241. https://doi.org/10.26822/iejee.2017236118

Borga, L. G. (2019). Children's own time use and its effect on skill formation. *The Journal of Development Studies*, *55*(5), 876-893. https://doi.org/10.1080/00220388.2018.1499893

Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). *European Journal of Education*, *54*(3), 356-369. https://doi.org/10.1111/ejed.12345

Care, E., Scoular, C., & Griffin, P. (2016). Assessment of collaborative problem-solving in education environments. Applied Measurement in Education, 29, 250–264. https://doi.org/10.1080/08957347.2016.1209204

Chalkiadaki, A. (2018). A Systematic Literature Review of 21st-Century Skills and Competencies in Primary Education. International Journal of Instruction, 11(3), 1-16. https://doi.org/10.12973/iji.2018.1131a

Erbas, C., & Demirer, V. (2019). The effects of augmented reality on students' academic achievement and motivation in a biology course. *Journal of Computer Assisted Learning*, *35*(3), 450-458. https://doi.org/10.1111/jcal.12350

Fernandez-Rio, J., & Menendez-Santurio, J. I. (2017). Teachers and students' perceptions of a hybrid sport education and teaching for personal and social responsibility learning unit. *Journal of Teaching in Physical Education*, *36*(2), 185-196. https://doi.org/10.1123/jtpe.2016-0077

Giesenbauer, B., & Müller-Christ, G. (2020). University 4.0: Promoting the transformation of higher education institutions toward sustainable development. *Sustainability*, *12*(8), 3371. https://doi.org/10.3390/su12083371

Grewal, D., Kroschke, M., Mende, M., Roggeveen, A. L., & Scott, M. L. (2020). Frontline cyborgs at your service: How human enhancement technologies affect customer experiences in retail, sales, and service settings. *Journal of Interactive Marketing*, *51*(1), 9-25. https://doi.org/10.1016/j.intmar.2020.03.001

Guo, P., Saab, N., Wu, L., & Admiraal, W. (2021). The Community of Inquiry perspective on students' social presence, cognitive presence, and academic performance in online project-based learning. *Journal of Computer Assisted Learning*, *37*(5), 1479-1493. https://doi.org/10.1111/jcal.12586

Ilori, M.O. and Ajagunna, I. (2020), "Re-imagining the future of education in the era of the fourth industrial revolution", *Worldwide Hospitality and Tourism Themes*, Vol. 12 No. 1, pp. 3-12. https://doi.org/10.1108/WHATT-10-2019-0066

Iñiguez-Berrozpe. T., and E. Boeren, (2020). "Twenty-First Century Skills for All: Adults and Problem Solving in Technology Rich Environments," Technology, Knowledge and Learning, Volume 25 (4) pp. 929-951, https://doi.org/10.1007/s10758-019-09403-y

Jalinus, N. (2021). Developing blended learning model in vocational education based on 21st century

integrated learning and industrial revolution 4.0. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(8), 1239-1254. https://doi.org/10.17762/turcomat.v12i8.3035

Katuna. B (2019), "Effective Academic Leadership", *Degendering Leadership in Higher Education* (*Great Debates in Higher Education*), Emerald Publishing Limited, Bingley, pp. 19-61. https://doi.org/10.1108/978-1-83867-130-320191003

Lee, J., & Martin, L. (2019). Investigating students' perceptions of motivating factors of online class discussions. *International Review of Research in Open and Distributed Learning*, *18*(5), 148-172. https://doi.org/10.19173/irrodl.v18i5.2883

Lynch, S. J., Peters-Burton, E. E., Behrend, T., House, A., Ford, M., Spillane, N., Matray, S., Han, E., & Means, B. (2018). Understanding inclusive STEM high schools as opportunity structures for underrepresented students: Critical components. Journal of Research in Science Teaching., 55(5), 712–748. https://doi.org/10.1002/tea.21437

Mahanal, S., Zubaidah, S., Sumiati, I. D., Sari, T. M., & Ismirawati, N. (2019). RICOSRE: A Learning Model to Develop Critical Thinking Skills for Students with Different Academic Abilities. *International Journal of Instruction*, *12*(2), 417-434. https://doi.org/10.29333/iji.2019.12227a

Malik, R.S. (2018). Educational Challenges in 21st Century and Sutainable Development. Journal Sstainable Development Education and RResearch. vol. 2, no. 1, pp. 9–20, doi: https://doi.org/10.17509/jsder.v2i1.12266

Maré, S., & Mutezo, A. T. (2021). The effectiveness of e-tutoring in an open and distance e-learning environment: evidence from the university of south africa. *Open Learning: The Journal of Open, Distance and e-Learning*, *36*(2), 164-180. https://doi.org/10.1080/02680513.2020.1717941yh

Mumford, Michael D., and Tristan McIntosh. (2017). "Creative thinking processes: The past and the future." *The Journal of Creative Behavior* 51(4): 317-322. https://doi.org/10.1002/jocb.197

Mutohhari, F., Sutiman, S., Nurtanto, M., Kholifah, N., & Samsudin, A. (2021). Difficulties in Implementing 21st Century Skills Competence in Vocational Education Learning. *International Journal of Evaluation and Research in Education*, *10*(4), 1229-1236. http://doi.org/10.11591/ijere.v10i4.22028

Nurjanah, D., & Putro, A. A. Y. (2023). Implementasi Penggunaan Media Pembelajaran pada Kemampuan Berpikir Kritis Siswa Kelas IV Sekolah Dasar. *Pendekar: Jurnal Pendidikan Berkarakter*, *6*(2), 152-161. https://doi.org/10.31764/pendekar.v6i2.15741

Nurtanto, M., Sofyan, H., Pardjono. P., Suyitno, S. (2020). Development model for competency improvement and national vocational qualification support frames in automotive technology. International Journal of Evaluation an Research in Education (IJERE). vol. 9, no. 1, pp. 168-176. https://doi.org/10.11591/ijere.v9i1.20447.

Olszewski-Kubilius, P., Subotnik, R. F., Davis, L. C., & Worrell, F. C. (2019). Benchmarking psychosocial skills important for talent development. *New Directions for Child and Adolescent Development*, *2019*(168), 161-176. https://doi.org/10.1002/cad.20318

Orazbayeva, K.O. (2016). Professional Competence of Teachers in the Age of Globalization. *International Journal of Environmental and Science Education, 11*(9), 2659-2672. doi:10.12973/ijese.2016.714a

Pedersen, H., Söderström, S., & Kermit, P. S. (2021). "The fact that I can be in front of others, I am used to being a bit behind": how assistive activity technology affects participation in everyday life. *Disability and Rehabilitation: Assistive technology*, *16*(1), 83-91. https://doi.org/10.1080/17483107.2019.1642391

Persky, A. M., Medina, M. S., & Castleberry, A. N. (2019). Developing critical thinking skills in pharmacy students. *American journal of pharmaceutical education*, *83*(2). https://doi.org/10.5688/ajpe7033

Ramdhan, M. (2021). *Metode penelitian*. Cipta Media Nusantara.

Rawlinson, J.G. (1981). Creative Thinking and Brainstorming (1st ed.). Routledge. https://doi.org/10.4324/9781315259000

Sari, F. F. K., & Atmojo, I. R. W. (2021). Analisis Kebutuhan Bahan Ajar Digital Berbasis Flipbook untuk

Memberdayakan Keterampilan Abad 21 Peserta Didik pada Pembelajaran IPA Sekolah Dasar. *Jurnal Basicedu*, *5*(6), 6079-6085 https://doi.org/10.31004/basicedu.v5i6.1715

Scott, Chyntia, L.S. (2015). The futures of learning 2: What kind of learning for the 21st Century? (ERF Working Paper No. 14). Paris: UNESCO Education Research and Foresight. https://unesdoc.unesco.org/ark:/48223/pf0000242996

Shear, L., Novais, G., Means, B., Gallagher, L., & Langworthy, M. (2010). ITL researchdesign. Menlo Park: SRI International Retrieved from https://www.sri.com/sites/default/files/publications/itl_research_design_15_nov_2010.pdf

Smith, S. A., Patmos, A., & Pitts, M. J. (2018). Communication and teleworking: A study of communication channel satisfaction, personality, and job satisfaction for teleworking employees. *International Journal of Business Communication*, *55*(1), 44-68. https://doi.org/10.1177/2329488415589101

Stehle, S.M & Peters, B. (2019) International Journal of STEM Education (2019) 6:39 https://doi.org/10.1186/s40594-019-0192-1

Tomasello, M. (2018). The normative turn in early moral development. *Human Development*, *61*(4-5), 248-263. https://doi.org/10.1159/000492802

Wang, B., Liu, Y., & Parker, S. K. (2020). How does the use of information communication technology affect individuals? A work design perspective. *Academy of Management Annals*, *14*(2), 695-725. https://doi.org/10.5465/annals.2018.0127

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 13–39). San Diego: Academic Press.