




Welcoming the Emancipated Curriculum: Has the Teachers Been Technology Literate?

Reri Seprina Anggraini¹^a, Rian Rafiska²^b, Eline Yanty Putri Nasution¹^c,

Anggi Desviana Siregar³^d and Rini Syevyilni Wisda⁴^e

¹*Jurusan Tadris Matematika, Institut Agama Islam Negeri Kerinci,
Kapten Muradi Street Sumur Gedang Pesisir Bukit, Sungai Penuh, Indonesia*

²*Jurusan Perbankan Syariah, Institut Agama Islam Negeri Kerinci,
Kapten Muradi Street Sumur Gedang Pesisir Bukit, Sungai Penuh, Indonesia*

³*Jurusan Tadris Kimia, Institut Agama Islam Negeri Kerinci,
Kapten Muradi Street Sumur Gedang Pesisir Bukit, Sungai Penuh, Indonesia*

⁴*Jurusan Manajemen Pendidikan Islam, Institut Agama Islam Negeri Kerinci,
Kapten Muradi Street Sumur Gedang Pesisir Bukit, Sungai Penuh, Indonesia*


Keywords: Emancipated Curriculum, Technology, Mathematics.


Abstract: One of the numerous changes that have taken place in education since the COVID-19 pandemic is the alteration of the curriculum, namely The 2013 Curriculum, the Curriculum in Special Circumstances, and the Emancipated Curriculum. Teachers must innovate in the classroom when using the Emancipated Curriculum. Information technology is a crucial instrument for innovation in learning. Teachers must be able to produce content using materials for independent learning. The Emancipated Curriculum requires teachers to be more technologically literate. Especially in the regarded as challenging and abstract field of mathematics. The goal of this study was to evaluate teachers' abilities to facilitate mathematics instruction using technology when implementing the Emancipated Curriculum. A descriptive qualitative research methodology is employed. Through interviews and giving questionnaires to math teachers, data was gathered. The Miles approach is used in data analysis, which involves gathering data, verifying it, and generating conclusions. The findings indicate that: 1) geogebra is one of the applications that the mathematics teacher has used to teach; 2) not all teachers are literate at utilizing technology to aid students' study of maths; 3) there are not enough resources and infrastructure in place to support the use of technology in math learning.


1 INTRODUCTION


The learning curriculum underwent several adjustments during the COVID-19 period to improve student proficiency in academic subjects. A curriculum is a collection of subjects and educational programs offered by a school that includes lesson plans to be taught to pupils throughout the course of one level of education. The 2013 Curriculum and the Curriculum in Special Conditions are the curricula used (Kemendikbud, 2022).


It needs to be modified because the 2013 Curriculum and the Curriculum in Special Conditions have failed to stop learning loss. During the COVID-19 pandemic, learning shifted from being offline to being online (DeCoito & Estaiteyeh, 2022). As a result, the Minister of Education, Culture, Research, and Technology developed a curriculum in the framework of learning recovery based on the diversification principle in line with the circumstances of the educational unit, regional potential, and pupils. The in question curriculum is the Emancipated Curriculum, which makes use of the

^a <https://orcid.org/0000-0003-3674-5939>

^b <https://orcid.org/0000-0002-3756-9693>

^c <https://orcid.org/0000-0001-5526-2778>

^d <https://orcid.org/0000-0003-4223-0640>

^e <https://orcid.org/0000-0002-1795-8325>

National Education Standards and helps students create Pancasila student profiles to achieve the country's educational objectives.

Not all schools are currently mandated to use the Emancipated Curriculum. This is adjusted for educational units recognized as implementing the Emancipated Curriculum, known as the Driving School for public schools and the Center for Vocational High Schools of Excellence for vocational schools, as well as for the readiness of schools to carry out its implementation (Kemendikbud, 2022). Independence in the Emancipated Curriculum's implementation is both independent and reflective. The Emancipated Curriculum's learning approach aims to realize students' holistic and contextual learning. For kids to learn more meaningfully and practically than only by memorization. The revised curricula mandated that teachers change their teaching methods from being teacher-centered to becoming more student-centered. It is advised that teachers transition from their position as the primary source of learning to that of facilitators and observers (Rahimi & Alavi, 2017).

The transformation of the educational system and the promotion of national competitiveness is a difficult, protracted task that calls for a comprehensive, multifaceted strategy (Price, 2015). Because the challenges we confront in our world are so complicated, it takes the fusion of many different disciplines, ideas, and abilities to address them (Roehrig et al., 2021). Mathematics is one of the disciplines covered in school. Given that mathematics contains many parts that are relevant to other topics, including chemistry, physics, and economics, education providers should regularly examine mathematics curriculum development initiatives (Wilkins, 2015).

The background of the challenging and monotonous mathematics course in school is frequently mentioned. This motivates educators to experiment so that instruction can be enjoyable and well-received by students (Arnold & Sangrà, 2018). Given that their classmates are more adept at the material than they are, the difficulties encountered frequently stem from the failure to apply the principle of continuity in the subject matter contained in mathematics. This results in students losing interest in learning, developing psychological disorders, and developing cognitive disorders (Karakolidis et al., 2021; Yeh et al., 2019). Due to the multiplicity of impacting factors, the subject matter needs to be innovative.

It is possible to innovate in math education by using technology-based learning resources to make

lessons more meaningful. The study and ethical use of employing appropriate technological processes and resources to promote learning and improve performance are known as educational technology. The use of technology can encourage resolving these issues in line with the government's objective of creating the Emancipated Curriculum to prevent learning loss after the pandemic is not too widespread. The advancement of information and communication technologies can be used as teaching resources to facilitate learning (Tyler-Wood et al., 2018). A seamless learning process can be supported by communication technology in the form of print and electronic media, including television, numerous Android applications, and laptops (Anggraini et al., 2022).

The pandemic era is a phase of transition from the Industrial Revolution 4.0 to the Society 5.0 era (Tempelaar et al., 2012). Era Society 5.0 combines humans and technology. Humans are technology's primary focus, and vice versa. It was introduced in Japan at the start of 2019 in the Society 5.0 period, which is based on technological advancement. Because of this, the field of education in Indonesia has been significantly impacted by technological advancements in the era of Society 5.0. The effectiveness of the nation's human resources—specifically, the calibre of its teachers or educators—determines how well it will be able to meet the demands of Society 5.0.

Teachers must possess a variety of abilities and be able to adjust to emerging technologies and global concerns, particularly as information and communication technologies advance. Teachers can use a variety of technological teaching tools, including podcasts (non-streaming audio broadcast), infographics, PowerPoint, motion graphics, Google Forms, Quiz, and others. With the aid of a variety of educational resources, including text, images, audio, video, simulations, etc., this technology enables students to get lessons from the comfort of their homes (learn anywhere and anytime) (Useche et al., 2022) Therefore, instructors must implement the use of teaching material technology in the Emancipated Curriculum.

The shift from the industrial revolution era 4.0 to the establishment of the Society 5.0 era after the pandemic period aims to make it simpler for pupils to acquire and comprehend the offered information, so that students themselves might benefit from it when coping with technological advancements. Additionally, the topic of using this technology—specifically, digital technologies in education—was also covered at the G20 forum. This suggests that one

of the most crucial things to do is to use technology in education.

Everyone had to learn to adapt to these rapid changes in life's many spheres, including schooling, which included using digital technological tools. During the pandemic, there has been an incredible acceleration in the employment of digital technologies in the field of education. Technology was brought up as a top issue at the 2022 G20 on Education and Culture meeting for this reason. The foundation of this research is based on information that is currently in circulation, both with regard to the replacement of Emancipated Curriculum and the use of technology in education. Teachers are undoubtedly involved in the use of technology, both as users and as creators of technology-based learning materials. The goal of this study was to evaluate teachers' abilities to facilitate mathematics instruction using technology when implementing the Emancipated Curriculum.

2 METHOD

The research method used is descriptive qualitative research. The subjects of this study were mathematics teachers at SMA Negeri 2 Kerinci which is a Mobilizing School and has implemented the Emancipated Curriculum in grades X and XI. The sampling technique used was purposive sampling, in which researchers deliberately chose individuals to be research informants. The sample used in this study amounted to 6 people. Data collection was carried out through interviews and questionnaires. The questionnaire is given via google form. The data collection carried out aims to determine the teacher's ability to create and use technology as a learning medium. Data analysis uses the Miles method, namely data collection, verification, and concluding.

3 FINDING AND DISCUSSION

Based on the results of interviews and questionnaires that were distributed to math teachers at SMA Negeri 2 Kerinci, the following results were obtained:

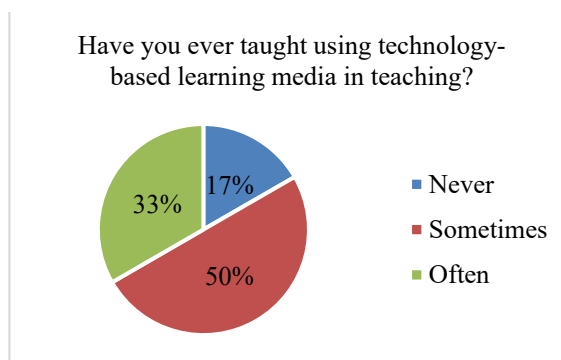


Figure 1: Use of Technology-Based Learning Media.

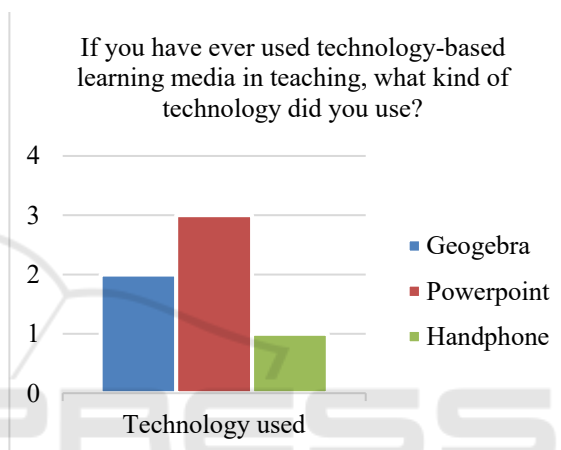


Figure 2: Types of Technology Ever Used.

Based on Figure 1 it is known that there are still 17% of teachers who have never used technology-based learning media in learning mathematics. Mathematics teachers who have used technology-based learning media have a percentage of 50%. Next, the question arises what types of learning media have been used by mathematics teachers in learning? The results of the questionnaire in Figure 2 show that the most technology-based learning media used by mathematics teachers is PowerPoint.

Figure 3 and Figure 4 illustrate that most mathematics teachers admit that they have participated in training on the use of technology-based learning media several times, but of the 83% of teachers who have attended training, not all of them apply the results of the training in mathematics learning activities. Only 50% or half of the number of mathematics teachers apply the results of the training.

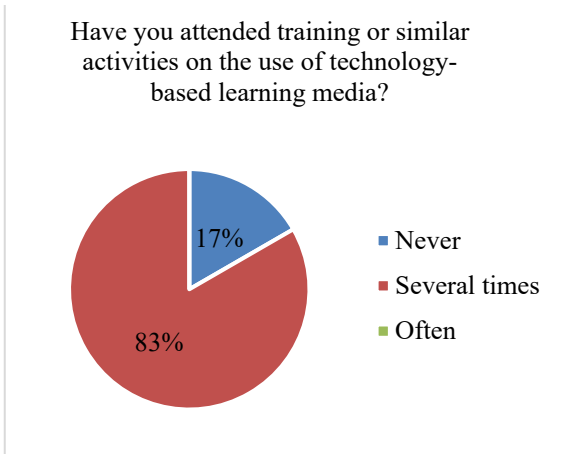


Figure 3: Participate in Training Activities on the Use of Technology-Based Learning Media.

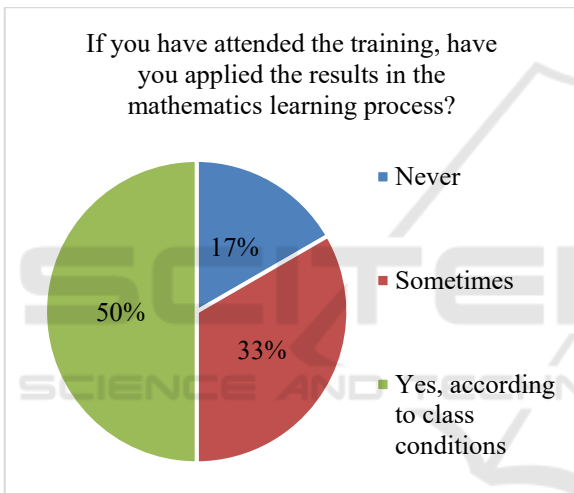


Figure 4: Applying Training Results in Learning Mathematics.

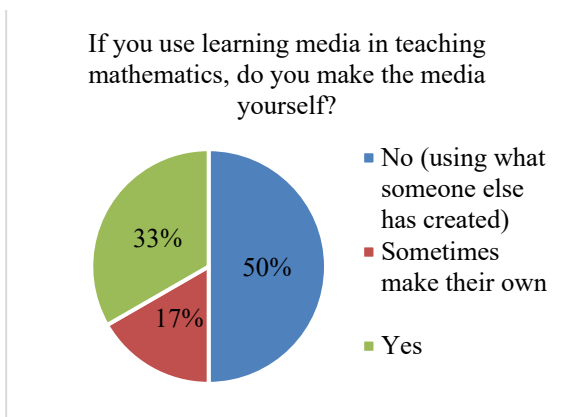


Figure 5: Making Learning Media.

Figure 5 demonstrates that half of the teachers who were observed and interviewed said they used other people's media instead of creating their own. This indicates that, despite their best efforts, teachers do not investigate their capacity to develop technologically based learning medium to overcome the challenges and abstraction of mathematical content in learning. Teachers have tried to use technology-based learning media in learning mathematics even though the media used. Most teachers do not create their own content from learning media independently but instead use templates that have been made by others. This is supported by Figure 6 which shows that teachers are still not fully able to use technology-based learning media in learning. In addition, the inadequate facilities and infrastructure in schools also make it difficult for teachers to be able to apply technology-based learning media to the fullest in mathematics learning.

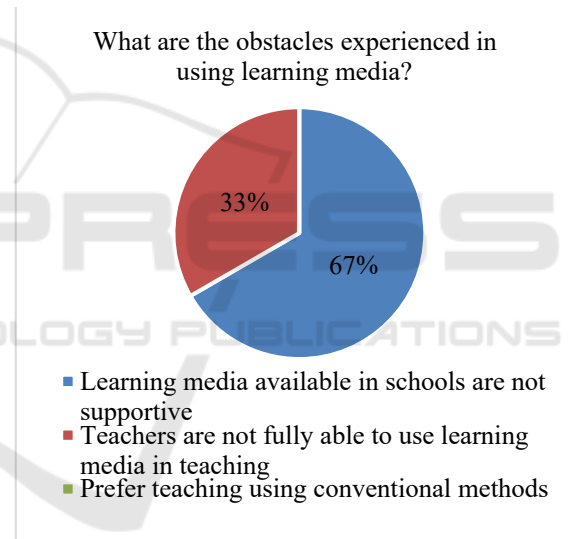


Figure 6: Barriers to Using Technology-Based Learning Media.

The Emancipated Curriculum has differences from the 2013 Curriculum and the Curriculum in Special Circumstances. This can be seen from the basic framework of the formulation of the curriculum. If the 2013 Curriculum and the Curriculum in Special Circumstances have a main foundational design that is the goal of the National Education System and National Education Standards, then in the Emancipated Curriculum the main basic design besides the goals of the National Education System and National Education Standards also aims to develop a profile of Pancasila students in students (Fatmiyati, 2022).

The results of the interviews conducted explained that teachers who have taught for decades (more than 20 years) are still not used to using technology-based learning media, because this is still new and requires carefulness to learn how to use it. The implementation of learning in the implementation of the Emancipated Curriculum is in the form of differentiated learning (Nurcahyono & Putra, 2022). He admitted that he had participated in training activities to create technology-based learning media that could support the explanation of the material being taught. However, because the training activities are carried out only once, so if after the training is finished, the teacher encounters obstacles when applying the knowledge gained, it is the reason he does not use the learning media and chooses to teach as usual. This is in line with previous research that one of the ways for the successful use of technology is to carry out teacher training (Tyler-Wood et al., 2018).

Another acknowledgment came from math teachers with a lower teaching period of 5-10 years. They say that the use of technology-based learning media is very effective and efficient in learning, because this is still a new thing and has not been used to learning, so students feel more interested and curious about the procedures for using these learning media. It's just that their lack of knowledge about various technology-based learning media is the cause of the type of learning media used is still minimal.

The use of PowerPoint in learning is still in the form of briefly presenting material in the form of slides. The math teacher should also be able to insert questions in the form of multiple-choice questions by directly determining the answer choices for these questions. So that when students are allowed to answer, the results of the assessment will appear. Whether the student's answer is correct or not. If it is correct, the student gets a score of 100. However, if it is not correct, the math teacher will direct students to a summary of the material that can help students answer the question. The idea of making technology-based learning media, especially in learning mathematics is widely shared by several content creators on various search engines platforms such as Google and YouTube. However, of course, this is not 100% necessarily causing teachers to be able to make technology-based learning media self-taught, so assistance is needed by experts who better understand ways of making and using technology-based learning media themselves.

Especially for making technology-based learning media, not only talking about the teacher's ability to use the media but also talking about the facilities and infrastructure owned by the school. More than 50%

of mathematics teachers stated that school facilities and infrastructure for tools related to the procurement of technology-based learning media in schools were still inadequate. This means that there is a balance between the teacher's knowledge of how to use and create technology-based learning media and the existence of adequate facilities and infrastructure.

When asked questions about the readiness of teachers to apply the Emancipated Curriculum, the answers obtained indicated that all mathematics teachers felt ready to implement them. This might be considered by the government in order to maximize this readiness by balancing the skills of teachers and facilities and infrastructure in using technology-based learning media in schools.

4 CONCLUSIONS

Based on the research that has been done, the conclusions are obtained:

1. GeoGebra is one of the applications that mathematics teacher has used to teach;
2. not all teachers are literate in utilizing technology to aid students' study of maths;
3. there are not enough resources and infrastructure in place to support the use of technology in math learning.

ACKNOWLEDGEMENTS

Thank you to the Department of Tadris Mathematics and SMA Negeri 2 Kerinci for providing the opportunity and time for us to carry out this research.

REFERENCES

- Anggraini, R. S., Sustipa, W., & Erita, S. (2022). Pengembangan E-Modul Pembelajaran Matematika menggunakan Aplikasi Flipbook Maker. *Journal on Teacher Education*, 4(2), 745–756. <https://doi.org/https://doi.org/10.31004/jote.v4i2.9342>
- Arnold, D., & Sangrà, A. (2018). Dawn or dusk of the 5th age of research in educational technology? A literature review on (e-)leadership for technology-enhanced learning in higher education (2013-2017). *International Journal of Educational Technology in Higher Education*, 15(24), 1–29. <https://doi.org/10.1186/s41239-018-0104-3>
- DeCoito, I., & Estaiteyeh, M. (2022). Online teaching during the COVID-19 pandemic: exploring science/STEM teachers' curriculum and assessment practices in Canada. *Disciplinary and Interdisciplinary*

- Science Education Research*, 4(8), 1–18. <https://doi.org/10.1186/s43031-022-00048-z>
- Karakolidis, A., Duggan, A., Shiel, G., & Kiniry, J. (2021). Examining educational inequalities: insights in the context of improved mathematics performance on national and international assessments at primary level in Ireland. *Large-Scale Assessment Education*, 9(5), 1–23. <https://doi.org/10.1186/s40536-021-00098-1>
- Kemendikbud. (2022). *Salinan Keputusan Menteri Pendidikan, Kebudayaan, Riset dan Teknologi Republik Indonesia Nomor 56/M/2022 tentang Pedoman Penerapan Kurikulum dalam Rangka Pemulihan Pembelajaran*.
- Nurchayono, N. A., & Putra, J. D. (2022). Hambatan Guru Matematika Dalam Mengimplementasikan Kurikulum Merdeka di Sekolah Dasar. *Wacana Akademika: Majalah Ilmiah Kependidikan*, 6(3), 377–384.
- Price, J. K. (2015). Transforming learning for the smart learning environment: lessons learned from the Intel education initiatives. *Smart Learning Environment*, 2(16), 1–16. <https://doi.org/10.1186/s40561-015-0022-y>
- Rahimi, M., & Alavi, J. (2017). The role of teaching experience in language teachers' perceptions of a top-down curriculum change. *Curriculum Journal*, 28(4), 479–503. <https://doi.org/10.1080/09585176.2017.1344134>
- Roehrig, G. H., Dare, E. A., Ring-Whalen, E., & Wieselmann, J. R. (2021). Understanding coherence and integration in integrated STEM curriculum. *International Journal of STEM Education*, 8(2), 1–21. <https://doi.org/10.1186/s40594-020-00259-8>
- Tempelaar, D. T., Kuperus, B., Cuypers, H., Kooij, H. van Der, Evert, V. de V., & Heck, A. (2012). The Role of Digital, Formative Testing in e-Learning for Mathematics: A Case Study in the Netherlands. In: "Mathematical e-learning." *Universities and Knowledge Society Journal (RUSC)*, 9(1), 284–305. <https://doi.org/10.7238/rusc.v9i1.1272>
- Tyler-Wood, T. L., Cockerham, D., & Johnson, K. R. (2018). Implementing new technologies in a middle school curriculum: a rural perspective. *Smart Learning Environments*, 5(22), 1–16. <https://doi.org/10.1186/s40561-018-0073-y>
- Useche, A. C., Galvis, Á. H., Arceo, F. D., Rivera, A. E. P., & Muñoz-Reyes, C. (2022). Reflexive pedagogy at the heart of educational digital transformation in Latin American higher education institutions. *International Journal of Educational Technology in Higher Education*, 19(62), 1–15. <https://doi.org/10.1186/s41239-022-00365-3>
- Wilkins, J. L. M. (2015). Standards-based mathematics curricula and the promotion of quantitative literacy in elementary school. *International Journal of STEM Education*, 2(1), 1–13. <https://doi.org/10.1186/s40594-015-0032-x>
- Yeh, C. Y. C., Cheng, H. N. H., Chen, Z.-H., Liao, C. C. Y., & Chan, T.-W. (2019). Enhancing achievement and interest in mathematics learning through Math-Island. *Research and Practice in Technology Enhanced Learning*, 14(5), 1–19. <https://doi.org/10.1186/s41039-019-0100-9>