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Systematic Literature Review: Can the Use of the RADEC Learning Model Enhance Students' Critical Thinking Skills?

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A B S T R A C T

RADEC learning model (*read-answer-discuss-explain-create*) strives to actively involve students in learning activities because, in the 21st-century era every student is required to have critical thinking skills which must be trained through learning activities that support students to be able to build their knowledge independently. This research aims to analyze various previous research results and development trends in using the RADEC learning model to improve students' critical thinking skills when applied in Microeconomic Theory courses. The research method used is a *systematic literature review*. Researchers collected 70 articles published in 2020-2024 in accredited scientific journals sourced from the *database of google scholar* related to the topic being studied, then the article metadata identification process is carried out using the Mendeley application and analyzed using the application *Vosviewer*. Based on the systematic literature review that has been carried out, the results show that the RADEC learning model can improve critical thinking skills, communication, and collaboration skills because students are directed to be able to find solutions to the problems being studied. Apart from that, the syntax of this learning model adapts to Vygotski's social constructivism theory, that the process of building knowledge can be carried out through a process of social interaction through various discussion and collaboration activities. This learning model can be applied in multiple fields of study, including microeconomic theory courses which have contextual learning content and are very close to students' lives, so it can be said that the RADEC learning model has great potential in improving students' critical thinking skills in microeconomic theory courses.

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1. INTRODUCTION

Critical thinking skills are one of the competencies that an individual must have in facing the 21st-century era with various increasingly complex global challenges. A student's thinking ability can be developed through rational thinking activities through various contextual problems so that they can explore questions, analyze arguments, integrate information to find solutions to problems and conclude (Fitriani et al., 2020).This ability is important for students in building their knowledge, so a teacher must choose the right learning activities to be able to train this critical thinking ability (Ramdani et al., 2021). Even in John Dewey's learning theory, it is stated that critical thinking skills are a cognitive process that starts with a problem and ends with a solution/interpretation made by students (Alsaleh, 2020). The contextual problems that will be studied will train students to be directly involved in finding solutions to the problems being studied through analytical and logical thinking processes. This is very important for students, especially students, to be able to adapt and face various challenges in the 21st-century era. This ability can help students in their careers and jobs, because they can compete through creative and innovative thinking and make things easier for them achieve success (Wale & Bishaw, 2020).

Seeing the importance of critical thinking skills for students to have, a teacher/lecturer needs to design learning that can train and empower this ability. However, unfortunately, the results of PISA, which is an international study to measure the quality of the education system based on essential learning outcomes in the 21st century, including reading literacy, mathematics literacy, and scientific literacy, show that in 2022 Indonesia's ranking in PISA will increase by 5-6 positions compared to 2018. however, it is still below several other Southeast Asian countries, such as Brunei Darussalam, Malaysia, and Thailand (Kemendikbudristek, 2023). This shows that there are still many improvements that need to be made to continue to improve the quality of education which can be started through learning. Even at the tertiary level, based on the Independent Learning Campus (Merdeka Belajar Kampus Merdeka/MBKM) policy in the Decree of the Minister of Education and Culture Number 3/M/2021 regarding the Main Performance Indicators (Indikator Kinerja Utama/IKU) that must be met by every tertiary institution, one of which in IKU 7 directs to learning activities must be designed with a collaborative and participatory learning system through *case method* and *team-based project* (Nursi et al., 2023). In this way, the Merdeka campus can provide contextual experiences that can improve students' overall competency and be ready to face future challenges (Ngalimun, 2023).

Learning activities must be directed at the active involvement of students to be able to build their knowledge through a meaningful contextual learning process so that this can be a provision for them in facing competition in the 21st century era which is full of massive technological and information developments. The material in the microeconomic theory course, which discusses various economic problems and the limited scope of economics, is very close to students' lives (Pandriadi et al., 2023). This means that by studying microeconomic theory, it is hoped that they will have the understanding and ability to analyze an economic phenomenon/problem that occurs in society to help provide alternative solutions to problems based on the results of critical and logical thinking so that they can make the right decisions in socio-economic life. The highly contextual characteristics of microeconomic theory courses need to be delivered through appropriate learning design, where students do not only receive learning information, but they must be able to build their knowledge through collaboration and active involvement in learning (FH et al., 2021). In this way, the learning process can foster critical thinking skills needed to face the 21st century era.

Several studies that have been conducted previously show that the application of the RADEC learning model (*read-answer-discuss-explain-create*) can increase students' active involvement, creativity, critical thinking skills, scientific literacy, and learning quality (Nurhayati et al., 2023; Setyawan et al., 2023). The learning stages of the RADEC learning model, start from reading activities, answering questions given, discussing things that students have not been able to answer, explaining the results of discussions that have been carried out to making conclusions/ideas for solving problems through a detailed analysis process. critical and logical, this can encourage active student involvement and foster higher-level thinking abilities (Ulfa et al., 2024). Seeing the potential of the RADEC learning model, this research aims to analyze various previous research results and development trends in using the RADEC learning model to improve students' critical thinking skills when applied in Microeconomic Theory courses.

2. METHOD

This research is intended to conduct a systematic literature review regarding the role of the RADEC learning model in improving students' critical thinking skills so that it is applied in Microeconomic Theory courses. Thus, researchers need to conduct a study regarding the development trends and utilization of the RADEC learning model in several previous studies to be able to study further the potential and benefits of the RADEC learning model when applied in teaching Microeconomic Theory courses at Faculty of Teacher Training and Education, Sriwijaya University. The research method used is *systematic literature review* which is a type of qualitative research to obtain data and information through library sources, consisting of journals, books, and other scientific writings, as well as certain research to be further identified, studied, evaluated, and interpreted the results based on the study topic. The literature review aims to provide an overview of research trends, methods, and areas of coverage on research topics in a certain year range (Marwantika, 2021).

In this research, researchers collected various articles in accredited scientific journals sourced from the *database of Google Scholar* related to studies or research on the use of learning models *RADEC* which were published in the last 5 years, namely from 2020-2024. Based on the identification carried out, there were 70 research journal articles which were then carried out by the process of identifying and inputting article metadata using the Mendeley application. Furthermore, the 70 article files were saved in RIS format (*Research Information Systems*) files and analyzed using the application *Vosviewer* which can be used to carry out analysis of bibliometric data, including citation networks, keywords, and author collaboration, so that a picture can be produced regarding the relationship between research documents and research trends that have been carried out (Budianto & Dewi, 2023). In this research, an analysis will be carried out regarding the development trends in the use of the RADEC learning model to improve critical thinking skills based on the results of a systematic literature study that will be carried out.

3. RESULTS AND DISCUSSION

The research results are based on an analysis of *systematic literature review* using the Vosviewer application of 70 articles regarding the utilization and use of the RADEC learning model (*Read-Answer-Discuss-Explain-Create*) published in accredited scientific journals in 2020-2024 can be presented as follows.

3.1 Results

The results of the data analysis that has been carried out show an overview and interrelationships/relationships between research based on the research variables studied, the following data were obtained:

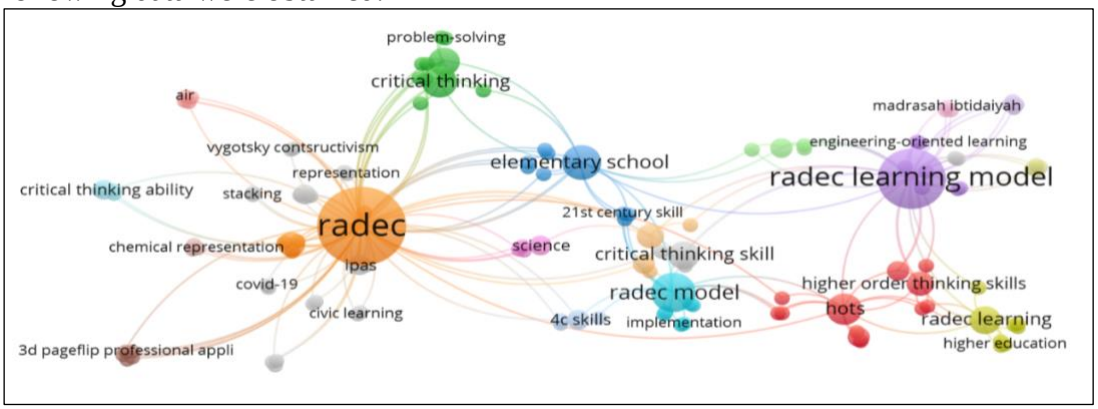

Figure 1. Results of Research Linkage Analysis Regarding the RADEC Learning Model
Source: Data processing using VosViewer, 2024

Based on the results of the analysis that has been carried out, 29 clusters are obtained which are interconnected between one research variable and another, with details of the 3 largest clusters, namely as follows:

1) Cluster 1 includes a *21st-century, elementary school, elementary school students, higher-order thinking skills (HOTS), Inquiry learning model*, communication skills, RADEC learning model, *systematic literature, and teaching materials*.
2) Cluster 2 includes *creative thinking, critical thinking, era 5.0, learning, metacognitive, problem-solving, RADEC, skills, and students*.
3) Cluster 3 includes *21st-century skills, collaboration, creative thinking ability, elementary school, finance, financial literacy, higher-order thinking skills, natural science, and participation.*

Furthermore, if we look at the authors and researchers in the last 5 years who have conducted a lot of research related to the RADEC learning model and the relationship between authors/researchers, it can be seen in the following picture of the analysis results:

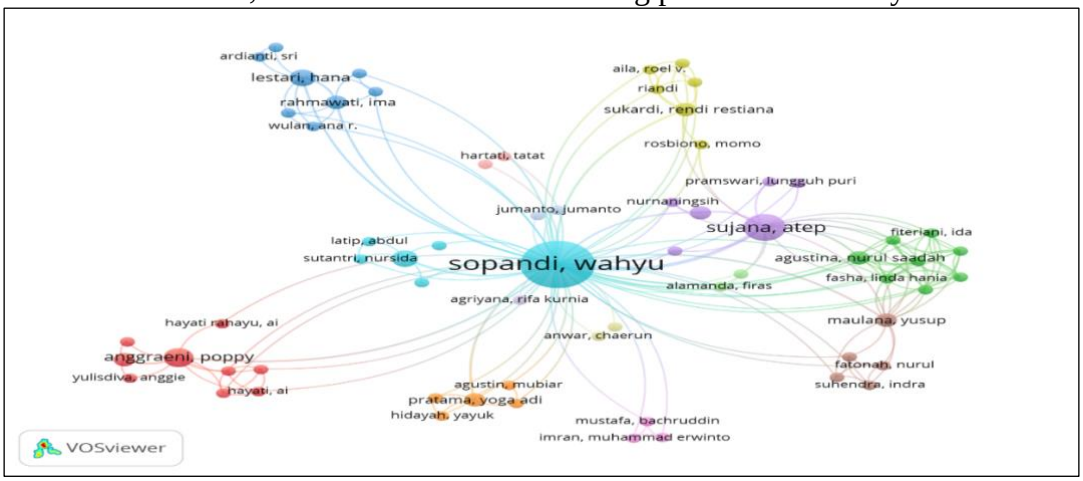

Figure 2. Relationship between Researchers who have Studied the RADEC Learning Model
Source: Data processing using VosViewer, 2024

Based on these results, it can be seen that Wahyu Sopandi is the most cited writer and researcher who has conducted research related to the application of the RADEC learning model

because this learning model was first introduced by Wahyu Sopandi in 2017 at the International Conference in Kuala Lumpur, Malaysia with the hope This learning model can improve the quality of learning, foster students' learning motivation in mastering 21st-century competencies and skills (Kusumaningpuri & Fauziati, 2021). Furthermore, to see the research trends that have been carried out regarding the RADEC learning model, the following analysis results were obtained:

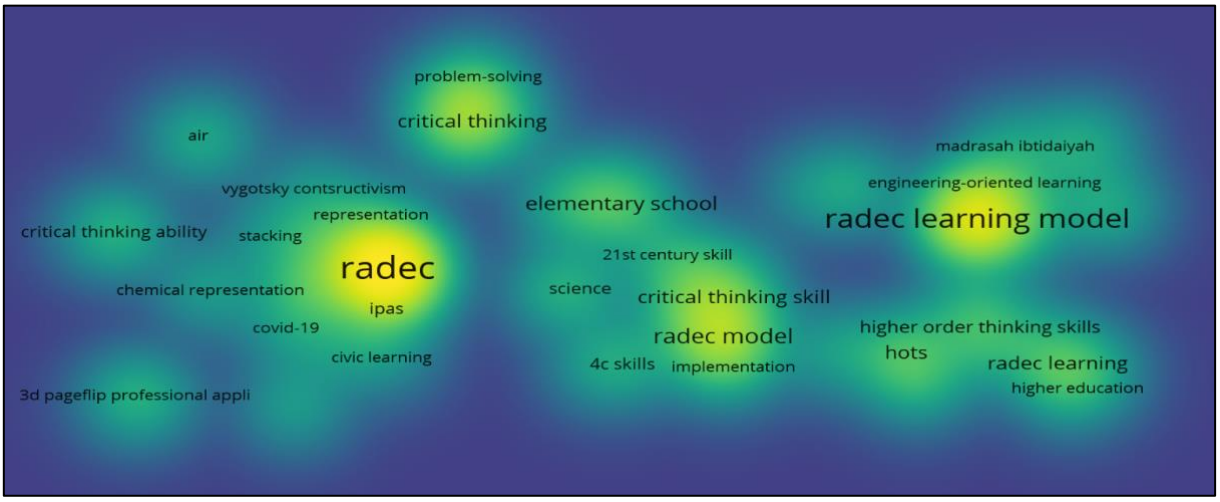

Figure 3. Results of Research Trend Analysis Regarding the RADEC Learning Model
Source: Data processing using VosViewer, 2024

Based on the visualization displayed, it can be seen that the use of the RADEC learning model has been widely used, especially in efforts to develop students' critical thinking skills, 21st-century skills, and *higher-order thinking skills*, this can be seen from the increasing bright yellow color, which means that a lot of research has been carried out. However, this learning model is mostly used at the elementary school level and in the field of science learning. In the field of social sciences, it has been applied in civics learning, but not much has been done for economics and higher education, so this can be a gap and something new for researchers to try to apply the RADEC learning model in the field of social sciences, especially in the field of economics.

3.2 Discussion

RADEC is a learning model developed by Sopandi in 2017 that aims to improve the quality of learning and support students to be able to have 21st-century competencies so that this learning model has a learning syntax that seeks to encourage students to learn actively and productively (Setiawan et al., 2020). The syntax of the RADEC learning model starts with the following stages:

1) Read, where students try to dig up information from various sources, both from books and the internet. So that this activity can be more guided, the teacher can provide several pre-learning questions, so that it is hoped that at this stage they can obtain some information based on their independent information-digging activities.
2) Answer, namely students attempt to answer various pre-learning questions which can be packaged by the teacher in the form of student activity sheets. At this stage, students will be able to assess whether they can answer all the questions given, or whether there are difficult things that cannot be solved.
3) Discuss, where students in groups will discuss the results of work/questions that have previously been given, thus the teacher's role is to be able to guide and observe discussion

activities between groups to ensure that there has been interaction between students to obtain the correct answer.

4) Explain, namely carrying out classical presentation activities to present material covering all cognitive aspects of learning indicators that have been formulated in the previous learning objectives. At this stage, the teacher also continues to encourage active interaction between students, and the teacher can provide explanations regarding essential concepts that students are not yet able to understand.
5) Create, namely the results of students' thoughts obtained through the previous stages will produce creative ideas that can be realized collaboratively or independently (Sopandi, 2023).

Based on the research conducted, it has been shown that previous studies on the RADEC learning model have been extensively carried out, and the related variables that have been widely researched include: a 21st-century skills, elementary school students, higher-order thinking skills (HOTS), Inquiry learning model, communication skills, creative thinking, critical thinking, era 5.0, learning, metacognitive, and problem-solving. Several previous studies have shown that the RADEC learning model has the potential to improve the quality of learning. This learning model is based on the problem-solving process so that it can develop students' critical thinking skills and motivation through systematically structured learning presentations (Afriani et al., 2024; Fatayan et al., 2023; Jumanto et al., 2024; Karlina et al., 2020; Setyawan et al., 2023). Apart from that, this learning model has the principle that all students have the capacity/ability to learn higher levels of knowledge and skills (Komalasari et al., 2022). This means that students are required to be able to find and solve existing problems themselves through a process of interaction and collaboration through discussion and creative activities. This is in line with the view of Vygotsky's social constructivism theory, that the learning process can be carried out through social interactions carried out by students in finding solutions to problems from a concept (Kusumaningpuri & Fauziati, 2021).

The ability to interact and collaborate is important for every student because, in the 21st century, we are required to have good communication skills, cooperate and collaborate with other people so that we can adapt and compete in this 21st century era. Apart from that, following the syntax of the RADEC learning model which starts from reading activities to creating, it will support the development of high-level thinking skills, because students must be able to carry out the analysis and creation process (Fitri et al., 2023). In fact, in solving problems, each student will go through an analysis process, they start with various questions for which solutions will be sought, explain multiple reasons for answering the questions, and discuss them to obtain the best solution (Arisoy & Aybek, 2021). Various previous research also shows that the RADEC model combined with the use of learning materials and interactive learning media can help accommodate students' literacy and numeracy abilities, and improve students' creative thinking abilities, science process skills, communication, and collaboration abilities (Agriyana & Sopandi, 2022; Agustina et al., 2024; Gunawan et al., 2023; Prastyana et al., 2023).

Seeing the potential that the RADEC learning model has in improving critical thinking skills based on several previous studies, however, not many have implemented this learning model in the field of economic learning. Then the question arises whether if the RADEC learning model is applied in learning microeconomic theory, will it be able to foster students' critical thinking skills?. This can be observed from the characteristics of the content of the microeconomic theory course which discusses the theory of individual behavior both as consumers and producers, market mechanisms, and economic interactions in market structure and price formation(Unsri, 2021). The content of the material presented in the microeconomic

theory course is contextual because the various materials presented are very close to people's lives (FH et al., 2021a). Various economic phenomena and problems that occur in society can be used as learning materials that require students to carry out more in-depth analyses and studies to solve the economic problems being discussed. The RADEC learning model is considered an ideal learning model that can be applied to various group learning issues in any field of study (Sopandi, 2023). Thus, it can be said that applying various learning steps according to the stages of the RADEC learning model in microeconomic theory courses can have the potential to improve student's critical thinking abilities. Critical thinking skills are high-level thinking abilities that direct someone to think rationally, systematically, and reflectively. This ability can be trained through the educational process, meaning that teachers play an important role in developing this ability through the application of learning content and processes, as well as selecting appropriate learning models and methods (Tinanbunan et al., 2024). Thus, to achieve this, the microeconomic theory learning activities that will be applied must be directed at the process of building student knowledge through the stage of presenting problems to finding appropriate problem-solving solutions, where this will involve students actively in building their knowledge and practicing critical thinking skills.

4. CONCLUSION

The RADEC learning model is a learning model that is directed at developing the 21st-century skills that students need. Based on the results of a systematic literature review that has been carried out, various research shows the great potential of implementing the RADEC learning model in improving the quality of learning and high-level thinking abilities, one of which is critical thinking ability. If the RADEC learning model is applied in microeconomic theory courses, this provides great potential to improve students' critical thinking abilities, because the content of the lecture material is very contextual, so students can build their knowledge through systematic learning stages and support students' active involvement in learning. Researchers suggest that further research be carried out regarding the potential effects of implementing/using the RADEC learning model on improving students' critical thinking skills in microeconomic theory courses because based on previous research and the results of systematic literature reviews that have been carried out, it shows that not many people have conducted research. to apply the RADEC learning model to economics learning.

REFERENCES

Afriani, R., Neni, S., Erdi, T., & Utama, G. (2024). The implementation of the RADEC Learning Model through the Experimental Method on Students' Critical Thinking Abilities in Natural Science Learning Material on Animal Locomotion in Grade V of SDN 13 Singkawang. *Jurnal Pendidikan Amartha*, *3*(1), 49–58. file:///C:/Users/user/Downloads/2182-12283-1-PB.pdf

Agriyana, R. K., & Sopandi, W. (2022). Implementation of Read-Answer-Discuss-Explain-and Create (Radec) and Inquiry Learning on Science Process Skills in Ecosystem Materials in Elementary School. *Jp3M*, *03*(2721–2831), 117–126. file:///C:/Users/user/Downloads/admin_jp3m,+1.+RIFA+&+WAHYU+_JURNAL+JP3M_VOL.03.+No.02.+Hal+117-126+SEP22.pdf

Agustina, N. S., Sopandi, W., & Sujana, A. (2024). Implementation of the Inquiry-Oriented RADEC Learning Model. *Jurnal Penelitian Pendidikan IPA*, *10*(1), 80–91. https://doi.org/10.29303/jppipa.v10i1.5119

Alsaleh, N. J. (2020). Teaching critical thinking skills: literature review. *The Turkish Online Journal of Educational Technology*, *19*(1), 21–39.

https://doi.org/10.4324/9780429342042

Arisoy, B., & Aybek, B. (2021). The effects of subject-based critical thinking education in mathematics on students' critical thinking skills and virtues. *Eurasian Journal of Educational Research*, *92*(2021), 99–120. https://doi.org/10.14689/ejer.2021.92.6

Budianto, E. W. H., & Dewi, N. D. T. (2023). Mapping of Research on Net Operating Margin (NOM) in Islamic Banking: A Bibliometric Study using VOSviewer and Literature Review. *Ecobankers: Journal of Economy and Banking*, *4*(2), 84–94. https://journal.bungabangsacirebon.ac.id/index.php/EcoBankers/article/view/872

Fatayan, A., Ayu, S., & Umam, K. (2023). Enhancing learning motivation of university students in Indonesia with the RADEC model and Google Earth. *World Transactions on Engineering and Technology Education*, *21*(2), 128–133.

FH, Y., Fatimah, S., & Barlian, I. (2021a). A Need Analysis in Developing Interactive Digital Teaching Materials Using Contextual Approach in Microeconomic Theory Course. *Advances in Social Science, Education and Humanities Research, Atlantis Press*, *513*, 243–248. https://doi.org/10.2991/assehr.k.201230.113

FH, Y., Fatimah, S., & Barlian, I. (2021b). Pengembangan Bahan Ajar Digital Interaktif Dengan Pendekatan Kontekstual Pada Mata Kuliah Teori Ekonomi Mikro. *Jurnal PROFIT Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi*, *8*(1), 36–46. https://doi.org/10.36706/jp.v8i1.13875

Fitri, H., Fitria, Y., Solfema, & Sukma, E. (2023). Development of Teaching Materials Based on the Radec Model To Improve the HOTS of Grade V Elementary School Students. *Jurnal Cakrawala Pendas*, *9*(1), 108–116. https://www.ejournal.unma.ac.id/index.php/cp/article/view/3847%0Ahttps://www.ejournal.unma.ac.id/index.php/cp/article/download/3847/2526

Fitriani, A., Zubaidah, S., Susilo, H., & Al Muhdhar, M. H. I. (2020). PBLPOE: A learning model to enhance students' critical thinking skills and scientific attitudes. *International Journal of Instruction*, *13*(2), 89–106. https://doi.org/10.29333/iji.2020.1327a

Gunawan, I., Sopandi, W., Handayani, H., Fatonah, N., Suhendra, I., & Maulana, Y. (2023). Repackaging Character Literacy and Numeracy-Oriented RADEC Learning Model Through Teacher Professional Development Program. *Studies in Learning and Teaching*, *4*(3), 656–665. https://doi.org/10.46627/silet.v4i3.342

Jumanto, J., Sa'Ud, U. S., & Sopandi, W. (2024). Development of IPAS Teaching Materials with the RADEC Model Based on Metacognitive Strategies to Enhance Critical and Creative Thinking Skills of Elementary School Students. *Jurnal Penelitian Pendidikan IPA*, *10*(3), 1000–1008. https://doi.org/10.29303/jppipa.v10i3.7010

Karlina, D., Sopandi, W., & Sujana, A. (2020). Critical Thinking Skills of Fourth Grade in Light Properties Materials through the Radec Model. *The 2nd International Conference on Elementary Education*, *2*(1), 1743–1753. http://proceedings.upi.edu/index.php/icee/article/view/802/720

Kemendikbudristek. (2023). PISA 2022 dan Pemulihan Pembelajaran di Indonesia. In *Laporan Pisa Kemendikbudristek*.

Komalasari, D., Apriliana, A. C., & Eka S, W. (2022). The influence of the RADEC (Read, Answer, Discuss, Explain, Create) learning model on fiction story writing skills. *Literat: Jurnal Pendidikan Bahasa Dan Sastra Indonesia*, *I*(2), 103–108. https://ejournal.unsap.ac.id/index.php/literatTlp.

Kusumaningpuri, A. R., & Fauziati, E. (2021). The RADEC Learning Model from the perspective of Vygotsky's Constructivism. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar*, *3*(2), 103–111.

https://doi.org/10.36232/jurnalpendidikandasar.v3i2.1169

Marwantika, A. I. (2021). A systematic literature review on digital da'wah in Indonesia. *Proceeding of The 1st Conference on Strengthening Islamic Studies in the Digital Era (FICOSIS)*, *1*, 249–265.

Ngalimun, N. (2023). Industrial Revolution 4.0 Independent Campus of the University of Muhammadiyah Banjarmasin and the Achievement of Key Performance Indicators (KPIs) of Universities with an Entrepreneurial Perspective. *Administraus*, *7*(1), 43–49. https://doi.org/10.56662/administraus.v7i1.174

Nurhayati, Y., Sopandi, W., & Riandi, W. (2023). *RADEC Model in Increasing Student Scientific Literacy Primary School Teacher Education Study Program* (Issue 1). Atlantis Press SARL. https://doi.org/10.2991/978-2-38476-206-4

Nursi, M., Darwianis, & Wirnita. (2023). Implementation of the Merdeka Learning Policy on the Main Performance Indicators (MPI) of Higher Education. *Jurnal CERDAS Proklamator*, *11*(1), 120–126.

Pandriadi, Putri, N. I., Kurniawan, R., Hikmawati, E., Rahmawati, E., Fahmi, D. A., Hari, B. D., Setyono, & Ningsih, E. K. (2023). *Pengantar Ekonomi Mikro*. Widina Bhakti Persada.

Prastyana, V., Anggoro, S., Prisilawati, D. E., Nazirah, A., & Cyril, N. (2023). Development of Canva-Based Interactive E-Book and Book Creator Using the Radec Learning Model To Support Creative Thinking Skills. *Dinamika Jurnal Ilmiah Pendidikan Dasar*, *15*(1), 57. https://doi.org/10.30595/dinamika.v15i1.17407

Ramdani, A., Jufri, A. W., Gunawan, Fahrurrozi, M., & Yustiqvar, M. (2021). Analysis of students' critical thinking skills in terms of gender using science teaching materials based on the 5e learning cycle integrated with local wisdom. *Jurnal Pendidikan IPA Indonesia*, *10*(2), 187–199. https://doi.org/10.15294/jpii.v10i2.29956

Setiawan, D., Hartati, T., & Sopandi, W. (2020). Effectiveness of Critical Multiliteration Model With Radec Model on the Ability of Writing Explanatory Text. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, *12*(1), 1–14. https://doi.org/10.17509/eh.v12i1.17445

Setyawan, J., Roshayanti, F., & Novita, M. (2023). The STEAM-based RADEC learning model on colloidal system material is able to improve students' critical thinking skills. *Practice of The Science of Teaching Journal: Jurnal Praktisi Pendidikan*, *2*(1), 18–26. https://doi.org/10.58362/hafecspost.v2i1.29

Sopandi, W. (2023). *Model Pembelajaran Radec (Teori dan Implementasi di Sekolah)*. UPI Press.

Tinanbunan, D. S., Zulhajjah, Mufidah, A., & Rahayu, P. (2024). The efforts of Stain Madina students in implementing the Radec (Read - Answer - Discuss - Explain - And Create) learning model towards improving students' critical thinking abilities at MAN 3 Mandailing Natal. *Lencana: Jurnal Inovasi Ilmu Pendidikan*, *2*(3), 12–24. file:///C:/Users/user/Downloads/Hal+12-24+DEDI.pdf

Ulfa, M., Oktaviana, E., & Hasanah, N. (2024). The implementation of the Radec Model and Problem-Based Learning in improving literacy skills. *PUSAKA: Journal of Educational Review*, *1*(2), 16–27.

Unsri. (2021). *Kurikulum 2021 Program Studi Pendidikan Ekonomi*.

Wale, B. D., & Bishaw, K. S. (2020). Effects of using inquiry-based learning on EFL students' critical thinking skills. *Asian-Pacific Journal of Second and Foreign Language Education*, *5*(1), 1–14. https://doi.org/10.1186/s40862-020-00090-2