

Literature Review: Efforts to Improve Students Creative Thinking Abilities in Science Learning

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Abstract: This research aims to examine efforts that can be made to improve students creative thinking abilities in science learning. The method used is a literature review. The literature review method is used to identify, examine, evaluate, and interpret all available research on the topic area of an interesting phenomenon, with certain relevant research questions. Several learning models that can be used to improve students creative thinking abilities in science learning include project-based learning, problem-based learning, talking stick, guided inquiry and pictures and pictures. Searching for articles through literature studies resulted in 25 articles that met the criteria and were relevant for review. The research results show that there are many learning models that can be applied in science learning to improve students creative thinking abilities. Based on the results of literature studies, it shows that the picture and picture learning model is the most effective model for improving students creative thinking abilities, which is characterized by an average achievement of students creative thinking abilities of 93.76. The range for the number of articles with the highest value that often appears is in the 60-80 range.

Keywords: Creative Thinking Ability; Literature Review; Science Learning

Introduction

Science is a collection of knowledge obtained not only from products but also includes knowledge such as skills in carrying out scientific investigations. The scientific process referred to is, for example, through observation, experiments and rational analysis. Meanwhile, a scientific attitude, for example, is objective and honest in collecting the data obtained. By using scientific processes and attitudes, scientists obtain discoveries or products in the form of facts, concepts, principles and theories. In general, science covers three basic fields of science, namely biology, physics and chemistry, which is a science that is born and develops through the steps of observation, problem formulation, hypothesis preparation, hypothesis testing through experiments, drawing conclusions, and discovering theories and concepts (Gani et al., 2022).

One measure of an educator's success in delivering learning is that the learning carried out can achieve optimal results. This success really depends on the

ability of educators to manage the teaching and learning process. According to Munandar in Utami et al. (2020) the ability to think creatively is the ability to find many possible answers to a problem, where the emphasis is on quantity, effectiveness and diversity of answers. Where the answer in question is the correct answer and varies.

The reality in the field shows that students creative thinking abilities are not yet optimal. Matter This is because learning still uses conventional learning models with lecture and discussion methods. Teachers as educators still tend to dominate the learning process, so that students are only objects and are not given the opportunity to discover the truth and develop their creative thinking abilities (Mahmudah et al., 2022).

Based on this, a study is needed regarding efforts that can be made to improve students creative thinking abilities. Various The efforts in this study can be used as an alternative for teachers to improve students creative thinking abilities, especially in science learning.

How to Cite:

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Method

This research is a literature study or literature review of the research results of various articles regarding creative thinking abilities in science learning. The method used is a literature review. The literature review method is used to identify, examine, evaluate, and interpret all available research on the topic area of an interesting phenomenon, with certain relevant research questions (Triandini et al., 2019). The articles reviewed are articles that are relevant to science learning in improving students creative thinking abilities. The articles reviewed are articles obtained from various

journals, both national and international journals. This research limited the articles reviewed to 25 articles with the keywords creative thinking abilities and science learning. The articles studied were articles published in the period 2019 to 2022.

Result and Discussion

The articles reviewed are articles that discuss creative thinking skills in science learning. The results of the review of articles on creative thinking skills in science learning can be seen in Table 1.

Table 1. Results of Review of Articles on Models, Approaches, Methods and/or Learning Strategies to Improve Students Creative Thinking Abilities in Science Learning

Writer	Article Title	Achievement of Creative Thinking Abilities
Pratiwi et al., 2021	Pengaruh Model Pembelajaran Picture and Picture terhadap Kemampuan Berpikir Kreatif Siswa di Sekolah Dasar	93.76
Febriyanti et al., 2020	Pengaruh Model Pembelajaran Project Based Learning (PjBL) terhadap Kemampuan Berpikir Kreatif dalam Pembelajaran Tematik Muatan Pelajaran IPA Peserta Didik Kelas V SD Negeri	74.00
Daya et al., 2021	Pengaruh Model Project Based Learning (PjBL) Diorama dalam Pembelajaran IPA Terhadap Kemampuan Berpikir Kreatif Siswa Kelas IV Sekolah Dasar	86.00
Rosidah et al., 2021	Pengaruh Model Pembelajaran Predict-Observe-Explain Terhadap Kemampuan Berpikir Kreatif Siswa pada Mata Pelajaran IPA	73.65
Ningsih et al., 2021	Pengaruh Model Project Based Learning Terhadap Berpikir Kreatif Peserta Didik dalam Pembelajaran IPA	88.80
Qoyyimah et al., 2021	Pengaruh Model Pembelajaran Guided Inquiry Berbasis Pictorial Riddle dalam Meningkatkan Berpikir Kreatif Siswa pada Pembelajaran IPA di SDN Gudang	31.11
Dewi et al., 2019	Meningkatkan Kemampuan Berpikir Kreatif IPA Siswa Sekolah Dasar Menggunakan Model Contextual Teaching and Learning	74.67
Maulidyah et al., 2020	Pengaruh Model Pembelajaran Project Based Learning Terhadap Kemampuan Berpikir Kreatif IPA Kelas IV SD	92.25
Ruqoyyah et al., 2020	Implementasi Model Inkuiri Terbimbing Berbantuan Pop-up Book untuk Meningkatkan Kemampuan Berpikir Kreatif Peserta Didik	72.50
Ramdani et al., 2020	Keterampilan Berpikir Kreatif Mahasiswa dalam Pembelajaran IPA Menggunakan Model Inkuiri Terbuka	62.58
Wulandari et al., 2019	Pengaruh Model Pembelajaran Berbasis Proyek Terhadap Kreativitas Siswa SMP pada Pembelajaran IPA	88.67
Acesta, 2020	Pengaruh Penerapan Metode Mind Mapping Terhadap Kemampuan Berpikir Kreatif Siswa	83.79
Nilayanti et al., 2019	Pengaruh Model Pembelajaran Talking Stick Terhadap Kemampuan Berpikir Kreatif dan Literasi Sains Siswa Kelas IV SD	77.43
Nadia et al., 2021	Pengaruh Penggunaan Media Audio Visual Animasi Terhadap Kemampuan Berpikir Kreatif Siswa Materi IPA	82.93
Santoso et al., 2020	Pengaruh Pembelajaran Berbasis Proyek Dipadu dengan Metode Pemecahan Masalah pada Keterampilan Berpikir Kreatif Siswa	47.93
Simbolon et al., 2019	Pengaruh Penggunaan Model Pembelajaran Problem Based Learning Terhadap Kemampuan Berpikir Kreatif Siswa Biologi di Kelas X SMA Negeri 1 Angkola Barat	91.86
Sukmawijaya et al., 2019	Pengaruh Model Pembelajaran STEM-PjBL Terhadap Kemampuan Berpikir Kreatif Siswa pada Materi Pencemaran Lingkungan	81.60
Mawarnit et al., 2020	Pengaruh Model Project Based Learning Berbasis STEM Terhadap Kemampuan Berpikir Kreatif Siswa pada Materi Pokok Fluida Statis di Kelas XI SMA Negeri 4 Tebing Tinggi T.P 2019/2020	36.96

Writer	Article Title	Achievement of Creative Thinking Abilities
Syafitri et al., 2022	Pengaruh Model PBL Berbasis Etnosains Terhadap Kemampuan Berpikir Kreatif Siswa pada Materi Hidrolisis Garam	71.59
Juniarso, 2020	Model Discovery Learning Terhadap Kemampuan Berpikir Kreatif Mahasiswa	76.69
Rohman et al., 2021	Pengaruh Penerapan Model Project Based Learning Terintegrasi Steam Terhadap Berpikir Kreatif Ditinjau dari Pemahaman Konsep Fisika Siswa SMA pada Materi Dinamika Rotasi	73.45
Damayanti et al., 2020	Pengaruh Model Problem Based-Learning dengan Flipped Classroom Terhadap Kemampuan Berpikir Kreatif	67.28
Nury et al., 2019	Pengaruh Model Project Based Learning dengan Menggunakan Strategi Poster Session Terhadap Kemampuan Berpikir Kreatif	72.26
Nugroho et al., 2019	Pengaruh Model Project Based Learning (PjBL) Terhadap Kemampuan Komunikasi dan Berpikir Kreatif	86.66
Mabruroh et al., 2020	Pengaruh Metode Picture and Picture Terhadap Berpikir Kreatif Siswa Sekolah Dasar	78.24

There are several learning models that can be used to improve students creative thinking abilities in science learning including project-based learning, problem-based learning, talking stick, guided inquiry and pictures and pictures. Based on table 1, it can be seen that the average value of increasing creative thinking abilities in science learning is the lowest, namely 31.11. The low achievement of students creative thinking abilities is because students are not yet familiar with questions related to analyzing problems, especially science related to everyday life (Qoyyimah et al., 2021). Meanwhile, the highest average score for creative thinking ability was 93.76 which was improved by using the picture and picture model. According to Pratiwi et al. (2021), the picture and picture learning model has an influence on elementary school students creative thinking abilities, especially in science learning. Apart from that, by using the picture and picture learning model, students become more active during the learning process, increase their courage to speak or express opinions, strengthen students memory for learning, and also train students creative thinking abilities. In addition, Mabruroh et al. (2020) stated that the picture and picture learning method needs to be developed and applied to other materials so that it can attract students attention and increase student activity in learning so that they can maximize learning outcomes.

Based on Figure 1, it is known that there are four ranges of creative thinking ability values based on the articles reviewed. The first range is 30-40 with the number of articles being 2. The learning used to obtain this value is guided inquiry model learning based on pictorial riddles and STEM-based project based learning model learning. The second range is from 40-60 with the number of articles 1. The learning used to obtain this value is project-based learning combined with problem solving methods. The third range is from 60-80 with a total of 12 articles.

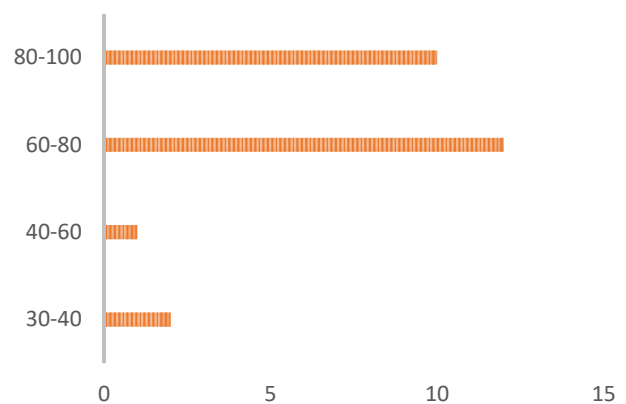


Figure 1. Graph of Range of Creative Thinking Ability Values Based on Reviewed Articles

The learning used to obtain this value is project based learning model learning, predict-observe-explain model learning, contextual teaching and learning model learning, guided inquiry learning model assisted by pop-up books, open inquiry model, talking stick learning model, ethnoscience based PBL model, discovery learning model, STEAM integrated project based learning model, problem based learning model with flipped classroom, project based learning model using poster session strategy, picture and picture method. In this range, the articles with the largest number were found. The fourth range is from 80-100 with a total of 10 articles. The learning used to obtain this value is picture and picture learning model, diorama project based learning (PJBL) model, project based learning model, project based learning model, project based learning model, application of the mind mapping method, use of animated audio-visual media, problem based learning model, stem-pjbl learning model, project based learning (pjbl) model.

Conclusion

Based on a review of 25 articles, several models were obtained that can help improve students creative thinking abilities in science learning. The most effective model used is the picture and picture model with an improvement achievement value of 93.76.

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References

- Acesta, A. (2020). Pengaruh Penerapan Metode Mind Mapping Terhadap Kemampuan Berpikir Kreatif Siswa. *NATURALISTIC: Jurnal Kajian Penelitian Pendidikan dan Pembelajaran*, 4(2b), 581-586. DOI: <https://doi.org/10.35568/naturalistic.v4i2b.766>
- Damayanti, S. A., Santyasa, I. W., & Sudiatmika, A. A. I. A. R. (2020). Pengaruh Model Problem Based-Learning Dengan Flipped Classroom Terhadap Kemampuan Berpikir Kreatif. *Jurnal Kependidikan: Penelitian Inovasi Pembelajaran*, 4(1), 83-98. Retrieved from <https://pdfs.semanticscholar.org/4ba5/eee24e145929fffc5cdc1d45eeafe98e80c0.pdf>
- Dewi, S., & Kelana, J. B. (2019). Meningkatkan Kemampuan Berpikir Kreatif IPA Siswa Sekolah Dasar Menggunakan Model Contextual Teaching and Learning. *COLLASE (Creative of Learning Students Elementary Education)*, 2(6), 235-239. Retrieved from <https://journal.ikipsiliwangi.ac.id/index.php/collase/article/view/3401>
- Febriyanti, A. F., Susanta, A. S., & Muktadir, A. M. (2020). Pengaruh Model Pembelajaran Project Based Learning (PjBL) Terhadap Kemampuan Berpikir Kreatif dalam Pembelajaran Tematik Muatan Pelajaran IPA Peserta Didik Kelas V SD Negeri. *Jurnal Pembelajaran Dan Pengajaran Pendidikan Dasar*, 4(1), 176-183. <https://doi.org/10.33369/dikdas.v3i2.14130>
- Gani, R. A., Purnamasari, R., & Mujahidah, F. (2022). Penerapan Model Pembelajaran Inkuiri Terbimbing Untuk Meningkatkan Hasil Belajar Mata Pelajaran Ilmu Pengetahuan Alam. *Jurnal Elementary: Kajian Teori dan Hasil Penelitian Pendidikan Sekolah Dasar*, 5(2), 170-174. <https://doi.org/10.31764/elementary.v5i2.9083>
- Juniarso, T. (2020). Model Discovery Learning Terhadap Kemampuan Berpikir Kreatif Mahasiswa. *ELSE (Elementary School Education Journal): Jurnal Pendidikan dan Pembelajaran Sekolah Dasar*, 4(1), 36-43. <http://dx.doi.org/10.30651/else.v4i1.4197>
- Mabruroh, L. H., & Irianto, A. (2020). Pengaruh Metode Picture and Picture Terhadap Berpikir Kreatif Siswa Sekolah Dasar. *Jurnal Pendidikan Dasar*, 11(1), 102-108. Retrieved from <https://journal.unj.ac.id/unj/index.php/jpd/article/download/15399/9103/>
- Mahmudah, H., Rokhmat, J., & Kosim, K. (2022). Character Value-Integrated Causalitic Model Student Worksheet Development Strategy to Improve Creative Thinking Ability and Character Change. *Jurnal Pendidikan Fisika dan Teknologi*, 8(1), 30-36. <https://doi.org/10.29303/jpft.v8i1.3389>
- Maulidyah, E., Hidayat, M. T., Kasiyun, S., & Hartatik, S. (2020). Pengaruh Model Pembelajaran Project Based Learning Terhadap Kemampuan Berpikir Kreatif IPA Kelas IV SD. *Jurnal DIDIKA: Wahana Ilmiah Pendidikan Dasar*, 6(2), 155-167. <https://doi.org/10.29408/didika.v6i2.2379>
- Mawarni, R., & Sani, R. A. (2020). Pengaruh Model Project Based Learning Berbasis Stem Terhadap Kemampuan Berfikir Kreatif Siswa pada Materi Pokok Fluida Statis Di Kelas XI SMA Negeri 4 Tebing Tinggi TP 2019/2020. *INPAFI (Inovasi Pembelajaran Fisika)*, 8(2). Retrieved from <https://jurnal.unimed.ac.id/2012/index.php/inpaafi/article/view/18678>
- Nadia, N., Wardiah, D., Kuswidyanarko, A., & Kuswidyanarko, A. (2021). Pengaruh Penggunaan Media Audio Visual Animasi Terhadap Kemampuan Berpikir Kreatif Siswa Materi IPA. *Innovative: Journal Of Social Science Research*, 2(1), 133-139. <https://doi.org/10.31004/innovative.v2i1.2872>
- Nilayanti, M., Suastra, W., & Gunamantha, M. (2019). Pengaruh Model Pembelajaran Talking Stick Terhadap Kemampuan Berpikir Kreatif dan Literasi Sains Siswa Kelas IV SD. *PENDASI: Jurnal Pendidikan Dasar Indonesia*, 3(1), 31-40. https://ejournal-pasca.undiksha.ac.id/index.php/jurnal_pendas/article/view/2865
- Ningsih, M. Y., Efendi, N., & Sartika, S. B. (2021). Pengaruh Model Project Based Learning Terhadap Berpikir Kreatif Peserta Didik dalam Pembelajaran IPA. *Jurnal Inovasi Pendidikan Sains (JIPS)*, 2(2), 42-51. <https://doi.org/10.37729/jips.v2i2.1403>
- Nugroho, A. T., Jalmo, T., & Surbakti, A. (2019). Pengaruh Model Project Based Learning (PjBL) Terhadap Kemampuan Komunikasi dan Berpikir Kreatif. *Jurnal Bioterdidik: Wahana Ekspresi Ilmiah*, 7(3), 50-58. Retrieved from <http://jurnal.fkip.unila.ac.id/index.php/JBT/article/download/17428/12388>

- Nury, N., Munawaroh, F., Hadi, W. P., & Rosidi, I. (2019). Pengaruh Model Project Based Learning dengan menggunakan Strategi Poster Session Terhadap Kemampuan Berpikir Kreatif. *Natural Science Education Research (NSER)*, 2(1), 25-32. <https://doi.org/10.21107/nser.v2i1.4272>
- Pratiwi, N., & Aslam, A. (2021). Pengaruh Model Pembelajaran Picture and Picture Terhadap Kemampuan Berpikir Kreatif Siswa di Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 3(6), 3697-3703. DOI: <https://doi.org/10.31004/edukatif.v3i6.1081>
- Qoyyimah, T. F., & Nugroho, O. F. (2021). Pengaruh Model Pembelajaran Guided Inquiry Berbasis Pictorial Riddle dalam Meningkatkan Berpikir Kreatif Siswa pada Pembelajaran IPA di SDN Gudang. *Jurnal Perseda: Jurnal Pendidikan Guru Sekolah Dasar*, 4(3), 141-147. <https://doi.org/10.37150/perseda.v4i3.1321>
- Ramdani, A., & Artayasa, I. P. (2020). Keterampilan Berpikir Kreatif Mahasiswa dalam Pembelajaran IPA menggunakan Model Inkuiri Terbuka. *Jurnal Pendidikan Sains Indonesia*, 8(1), 1-9. <https://doi.org/10.24815/jpsi.v8i1.15394>
- Rosidah, A., & Kurino, Y. D. (2021). Pengaruh Model Pembelajaran Predict-Observe-Explain Terhadap Kemampuan Berpikir Kreatif Siswa pada Mata Pelajaran IPA. *Jurnal Pendidikan Dan Konseling (JPDK)*, 3(2), 150-156. Retrieved from <https://jpdk.org/index.php/jpdk/article/view/114>
- Ruqoyyah, R., Fatkhurrohman, M. A., & Arfiani, Y. (2020). Implementasi Model Inkuiri Terbimbing Berbantuan Pop-up Book untuk Meningkatkan Kemampuan Berpikir Kreatif Peserta Didik. *JEMS: Jurnal Edukasi Matematika Dan Sains*, 8(1), 42-48. <http://doi.org/10.25273/jems.v8i1.6166>
- Santoso, B. P., & Wulandari, F. E. (2020). Pengaruh Pembelajaran Berbasis Proyek Dipadu dengan Metode Pemecahan Masalah pada Keterampilan Berpikir Kreatif Siswa dalam Pembelajaran IPA. *Journal of Banua Science Education*, 1(1), 1-6. <https://doi.org/10.20527/jbse.v1i1.3>
- Simbolon, P., & Siregar, N. (2019). Pengaruh Penggunaan Model Pembelajaran Problem Based Learning Terhadap Kemampuan Berpikir Kreatif Siswa Biologi di Kelas X SMA Negeri 1 Angkola Barat. *Jurnal Edugenesi*, 1(2), 35-44. Retrieved from https://scholar.google.co.id/citations?view_op=view_citation&hl=id&user=tnVCS_kAAAAJ&citation_for_view=tnVCS_kAAAAJ:IjCSPb-OGe4C
- Sukmawijaya, Y., Suhendar, S., & Juhanda, A. (2019). Pengaruh Model Pembelajaran STEM-PjBL Terhadap Kemampuan Berpikir Kreatif Siswa pada Materi Pencemaran Lingkungan. *Jurnal BIOEDUIN: Program Studi Pendidikan Biologi*, 9(2), 28-43. Retrieved from <https://journal.uinsgd.ac.id/index.php/bioeduin/article/view/5893>
- Syafitri, I., Haryanto, H., Fuldiaratman, F., Rusdi, M., Afrida, A., & Yusnidar, Y. (2022). Pengaruh Model PBL Berbasis Etnosains Terhadap Kemampuan Berpikir Kreatif Siswa pada Materi Hidrolisis Garam. *Hydrogen: Jurnal Kependidikan Kimia*, 10(2), 224-235. Retrieved from <https://e-journal.undikma.ac.id/index.php/hydrogen/article/view/5723-20355>
- Triandini, E., Jayanatha, S., Indrawan, A., Werla Putra, G., & Iswara, B. (2019). Metode Systematic Literature Review untuk Identifikasi Platform dan Metode Pengembangan Sistem Informasi di Indonesia. *Indonesian Journal of Information Systems*, 1(2), 63-77. <https://doi.org/10.24002/ijis.v1i2.1916>
- Utami, R. W., Endaryono, B. T., & Djuhartono, T. (2020). Meningkatkan Kemampuan Berpikir Kreatif Matematis Siswa Melalui Pendekatan Open-Ended. *Faktor: Jurnal Ilmiah Kependidikan*, 7(1), 43-48. Retrieved from <https://journal.lppmunindra.ac.id/index.php/Faktor/article/view/5328>