

DAFTAR PUSTAKA

- Aini, A. N., Mukhlis, M., Annizar, A. M., Jakaria, M. H. D., & Septiadi, D. D. (2020). Creative thinking level of visual-spatial students on geometry HOTS problems. In *Journal of Physics: Conference Series* (Vol. 1465, Issue 1). <https://doi.org/10.1088/1742-6596/1465/1/012054>
- Altaftazani, D. H., Rahayu, G. D. S., Kelana, J. B., Firdaus, A. R., & Wardani, D. S. (2020). Application of the constructivism approach to improve students' understanding of multiplication material. In *Journal of Physics: Conference Series* (Vol. 1657, Issue 1). <https://doi.org/10.1088/1742-6596/1657/1/012007>
- Altieri, M., & Schirmer, E. (2019). Learning the concept of eigenvalues and eigenvectors: a comparative analysis of achieved concept construction in linear algebra using APOS theory among students from different educational backgrounds. *ZDM - Mathematics Education*, 51(7), 1125–1140. <https://doi.org/10.1007/s11858-019-01074-4>
- Amelia, R., Aripin, U., & Hidayani, N. (2018). Analisis Kemampuan Berpikir Kreatif Matematik Siswa SMP Pada Materi Segitiga Dan Segiempat. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, 1(6), 97–104. <https://doi.org/10.31004/cendekia.v2i1.36>
- Andiyana, M. A., Maya, R., & Hidayat, W. (2018). Analisis kemampuan berpikir kreatif matematis siswa smp pada materi bangun ruang. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, 1(3), 239–248.
- Anggraini, N. P., & Pratiwi, H. (2019). Analysis of higher order thinking skills students at junior high school in Surakarta. *Journal of Physics: Conference Series*, 1211(1), 12077.
- Arnidha, Y., & Hidayatullah. (2019). Mathematical Representation of Deaf Students in Problem Solving Seen from Students' Creative Thinking Levels. In *Journal of Physics: Conference Series* (Vol. 1155, Issue 1). <https://doi.org/10.1088/1742-6596/1155/1/012030>
- Arnon, I., Cottrill, J., Dubinsky, E., Trigueros, M., & Weller, K. (2014). *APOS Theory A Framework for Research and Curriculum Development in Mathematics Education*. Springer.
- Artigue, M. (2002). What can we learn from educational research at the university level? *The Teaching and Learning of Mathematics at University Level: An ICMI Study*, 207–220.
- Asfar, A. M. I. T., Asfar, A. M. I. A., Darmawati, & Darmawan, D. (2018). The Effect of REACE (Relating, Exploring, Applying, Cooperating and

- Evaluating) Learning Model Toward the Understanding of Mathematics Concept. *Journal of Physics: Conference Series*, 1028(1), 12145.
- Batlolona, J. R., Diantoro, M., & Latifah, E. (2019). Creative Thinking Skills Students in Physics on Solid Material Elasticity. *Journal of Turkish Science Education*, 16(1), 48–61.
- Baye, M. G., Ayele, M. A., & Wondimuneh, T. E. (2021). Implementing GeoGebra integrated with multi-teaching approaches guided by the APOS theory to enhance students' conceptual understanding of limit in Ethiopian Universities. *Heliyon*, 7(5). <https://doi.org/10.1016/j.heliyon.2021.e07012>
- Borji, V., & Planell, R. M. (2020). On students' understanding of implicit differentiation based on APOS theory. *Educational Studies in Mathematics*, 105(2), 163–179. <https://doi.org/10.1007/s10649-020-09991-y>
- Budiyanto, C. W., Shahbodin, F., Umam, M. U., Isnaini, R., Anayanti, R., & Widiastuti, I. (2021). Developing Computational Thinking Ability in Early Childhood Education: The Influence of Programming Toy on Parent-Children Engagement. *Online Submission*, 5(1), 19–25.
- Cahyanita, E., Sunardi, S., Yudianto, E., Aini, N. R., & Wijaya, H. T. (2021). The development of tangram-based geometry test to measure the creative thinking ability of junior high school students in solving two-dimentional figure problems. *Journal of Physics: Conference Series*, 1836(1), 12051.
- Caratozzolo, P., Lara-Prieto, V., Hosseini, S., & Membrillo-Hernández, J. (2022). The use of video essays and podcasts to enhance creativity and critical thinking in engineering. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 1–21.
- Chen, C. W. J., & Lo, K. M. J. (2019). From teacher-designer to student-researcher: A study of attitude change regarding creativity in STEAM education by using Makey Makey as a platform for human-centred design instrument. *Journal for STEM Education Research*, 2(1), 75–91.
- Chen, P. Z., Chang, T. C., & Wu, C. L. (2020). Effects of gamified classroom management on the divergent thinking and creative tendency of elementary students. *Thinking Skills and Creativity*, 36(October 2019), 1–9. <https://doi.org/10.1016/j.tsc.2020.100664>
- Chuang, S. (2021). The applications of constructivist learning theory and social learning theory on adult continuous development. *Performance Improvement*, 60(3), 6–14.
- Creswell, J. W. (2014). *Research Design : Qualitative, Quantitative and Mixed Methods Approaches* (Fourth Edi). SAGE Publications.

- Dahar, R. W., & Hayati, Y. S. (2011). *Teori-teori belajar dan pembelajaran*.
- Daud, A. S., Adnan, N, S, M., Aziz, M, K, N, A., & Embong, Z. (2020). Students' Perception towards Mathematics using APOS Theory: A Case Study. In *Journal of Physics: Conference Series* (Vol. 1529, Issue 3). <https://doi.org/10.1088/1742-6596/1529/3/032020>
- Dewi, A., Manurung, H., Yulistiyono, A., Ariningsih, K., Wulandari, R., Rif'an, A., & Harahap, E. (2021). *Strategi dan Pendekatan Pembelajaran di Era Milenial*. Edu Publisher.
- Dubinsky, E. (2000). Using a theory of learning in college mathematics courses. *Teaching and Learning Undergraduate Mathematics*, 12, 10–15.
- Dubinsky, E., & McDonald, M. A. (2001). APOS: A constructivist theory of learning in undergraduate mathematics education research. *The Teaching and Learning of Mathematics at* https://doi.org/10.1007/0-306-47231-7_25
- Dwipayana, I. M., & Sukajaya, I. N. (2020). Delta's Adventure: A Constructivism-based Serious Game for the 1stGrade of Elementary School Students on Inequality Concept. In *CENIM 2020 - Proceeding: International Conference on Computer Engineering, Network, and Intelligent Multimedia 2020* (pp. 127–131). <https://doi.org/10.1109/CENIM51130.2020.9297943>
- Ernawati, M., Muhammad, D., Asrial, & Muhamimin. (2019). Identifying Creative Thinking Skills in Subject Matter Bio-Chemistry. *International Journal of Evaluation and Research in Education*, 8(4), 581–589.
- Eviliasani, K., Hendriana, H., & Senjayawati, E. (2018). Analisis kemampuan berpikir kreatif matematis ditinjau dari kepercayaan diri siswa smp kelas viii di kota cimahi pada materi bangun datar segi empat. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, 1(3), 333–346.
- Fatri, F. F., Maison, & Syaiful. (2019). Kemampuan Representasi Matematis Siswa Kelas VIII SMP Ditinjau dari Gaya Kognitif Visualizer dan Verbalizer. *Jurnal Didaktik Matematika*. <http://202.4.186.66/DM/article/view/14179>
- Ferdiani, R. D., & Khabibah, S. (2022). Activist Learners' Creative Thinking Processes in Posing and Solving Geometry Problem. *European Journal of Educational Research*, 11(1), 117–126.
- Font Moll, V., Trigueros, M., Badillo, E., & Rubio, N. (2016). Mathematical objects through the lens of two different theoretical perspectives: APOS and OSA. *Educational Studies in Mathematics*, 91, 107–122.
- Freire-Barceló, T., Martín-Martínez, F., & Sánchez-Miralles, Á. (2022). A literature review of Explicit Demand Flexibility providing energy services. *Electric Power Systems Research*, 209, 107953.

- Gagnon, G. W., Collay, M., & Schmuck, R. A. (2006). *Constructivist Learning Design: Key Questions for Teaching to Standards*. SAGE Publications. <https://books.google.co.id/books?id=WoAmB4S3xU0C>
- Graven, M., & Metzuyanim, E. H. (2019). Mathematics identity research: the state of the art and future directions: Review and introduction to ZDM Special Issue on Identity in Mathematics Education. *ZDM - Mathematics Education*, 51(3), 361–377. <https://doi.org/10.1007/s11858-019-01050-y>
- Hartati, M., Nurhafni, Ario, F., Imayanti, R., & Andrian, Y. (2020). *Seri Manual Gerakan Literasi (GLS) di SMA Strategi Think aloud*. Direktorat Sekolah Menengah Atas. <https://doi.org/10.1002/9780470373699.speced2092>
- Herawaty, D., Widada, W., Handayani, S., Berindo, Febrianti, R., & Anggoro, A, F, D. (2020). Students' obstacles in understanding the properties of the closed sets in terms of the APOS theory. In *Journal of Physics: Conference Series* (Vol. 1470, Issue 1). <https://doi.org/10.1088/1742-6596/1470/1/012068>
- Honeck, E. (2016). Inspiring Creativity in Teachers to Impact Students. *Torrance Journal for Applied Creativity*, 1.
- Ishartono, N., Nurcahyo, A., & Setyono, I. D. (2019). Guided discovery: an alternative teaching method to reduce students' rote learning behavior in studying geometric transformation. *Journal of Physics: Conference Series*, 1265(1), 12019.
- Kemp, A., & Vidakovic, D. (2021). Ways secondary mathematics teachers apply definitions in Taxicab geometry for a real-life situation: Midset. *The Journal of Mathematical Behavior*, 62, 100848.
- Kusairi, Syaiful, & Haryanto. (2020). Generative Learning Model in Mathematics: A Solution to Improve Problem Solving and Creative Thinking Skill. *Indonesian Journal of Science and Mathematics Education*, 3(3), 254–261. <https://doi.org/10.24042/ijjsme.v3i2.6378>
- Kusuma, D., Zaenuri, & Wardono. (2021). Mathematic creative thinking ability based on student metacognition in blended learning model with e-module. In *Journal of Physics: Conference Series* (Vol. 1918, Issue 4). <https://doi.org/10.1088/1742-6596/1918/4/042103>
- Kusumastuti, A., & Khoiron, A, M. (2019). *Metode Penelitian Kualitatif*. Lembaga Pendidikan Sukarno Pressindo.
- Lesseig, K., Hine, G., Na, G. S., & Boardman, K. (2019). Perceptions on proof and the teaching of proof: a comparison across preservice secondary teachers in Australia, USA and Korea. *Mathematics Education Research Journal*, 31(4), 393–418.

- Marcos, R. I. S., Fernández, V. L., González, M. T. D., & Phillips-Silver, J. (2020). Promoting children's creative thinking through reading and writing in a cooperative learning classroom. *Thinking Skills and Creativity*, 36, 100663.
- Mataheru, W., Huwaa, N. C., & Matitaputty, C. (2020). The Development of Textbook Based on Constructivism in the Basic Mathematical Concept Course. In *Journal of Physics: Conference Series* (Vol. 1429, Issue 1). <https://doi.org/10.1088/1742-6596/1429/1/012006>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis* (Second Edi). SAGE Publications.
- Mubarik, Budiarto, M., & Sulaiman, R. (2019). Eksplorasi Proses Rekonstruksi Konsep Segiempat berdasarkan Kerangka Asimilasi dan Akomodasi. *Prosiding SNPMAT*.
- Mudrikah, A. (2016). Problem-Based Learning Associated by Action-Process-Object-Schema (APOS) Theory to Enhance Students' High Order Mathematical Thinking Ability. *International Journal of Research in Education and Science*, 2(1), 125–135.
- Nugraheni, H., & Ratu, N. (2018). Analisis tingkat kemampuan berpikir kreatif siswa dalam menyelesaikan soal open-ended pada materi bangun datar segi empat. *Numeracy*, 5(2), 119–133.
- Nurpatri, Y., Muliani, D., & Indrawati, E. S. (2021). Implementation of constructivism approach in physics learning on students' critical thinking ability of junior high school students. In *Journal of Physics: Conference Series* (Vol. 1876, Issue 1). <https://doi.org/10.1088/1742-6596/1876/1/012068>
- Nyikahadzoyi, M. R. (2015). Concept Of A Function: A Theoretical Framework. *International Journal of Science and Mathematics Education*, 13(2), 261–283.
- Pardede, P. (2020). Integrating the 4Cs into EFL Integrated Skills Learning. *Journal of English Teaching*, 6(1), 71–85.
- Paristiowati, M., Rahmawati, Y., Fitriani, E., Satrio, J. A., & Putri Hasibuan, N. A. (2022). Developing Preservice Chemistry Teachers' Engagement with Sustainability Education through an Online Project-Based Learning Summer Course Program. *Sustainability*, 14(3), 1783.
- Possani, E., Trigueros, M., Preciado, J. G., & Lozano, M. D. (2010). Use of models in the teaching of linear algebra. *Linear Algebra and Its Applications*, 432(8), 2125–2140.
- Prastika, V. Y. A., Riyadi, & Siswanto. (2021). Analysis of mathematical creative thinking level based on logical mathematical intelligence. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1796, Issue 1).

<https://doi.org/10.1088/1742-6596/1796/1/012011>

Prihandhika, A., Prabawanto, S., Turmudi, T., & Suryadi, D. (2020). Epistemological Obstacles: An Overview of Thinking Process on Derivative Concepts by APOS Theory and Clinical Interview. In *Journal of Physics: Conference Series* (Vol. 1521, Issue 3). <https://doi.org/10.1088/1742-6596/1521/3/032028>

Purnomo, D. (2021). *Pola dan Perubahan Metakognisi dalam Pemecahan Masalah Matematis*. Media Nusa Creative (MNC Publishing). https://books.google.co.id/books?id=_nNMEAAAQBAJ

Putri, Y., Huda, N., & Yantoro. (2021). Analysis of concept construction errors in mathematical problem solving based on the assimilation and accommodation framework in terms of student learning styles. *Desimal: Jurnal Matematika*, 4(1), 13–20. <https://doi.org/10.24042/djm>

Radmehr, F., & Drake, M. (2019). Revised Bloom's taxonomy and major theories and frameworks that influence the teaching, learning, and assessment of mathematics: a comparison. *International Journal of Mathematical Education in Science and Technology*, 50(6), 895–920.

Rahayu, D. (2018). Pengembangan Lembar Kerja Peserta Didik (Lkpd) Berbasis Pemecahan Masalah Materi Bangun Datar. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 6(3).

Rich, B., & Schmidt, P. (2003). *Schaum's Outlines of Aljabar Elementer Edisi Ketiga*. Erlangga.

Roebyanto, G. (2014). *Geometri Pengukuran Dan Statistik*. Penerbit Gunung Samudera (Grup Penerbit Pt Book Mart Indonesia). <https://books.google.co.id/books?id=zVcoDwAAQBAJ>

Rohaeti, E. E., Nurjaman, A., Sari, I. P., Bernard, M., & Hidayat, W. (2019). Developing didactic design in triangle and rectangular toward students mathematical creative thinking through Visual Basic for PowerPoint. *Journal of Physics: Conference Series*, 1157(4). <https://doi.org/10.1088/1742-6596/1157/4/042068>

Rukajat, A. (2018). *Pendekatan Penelitian Kualitatif (Qualitative Research Approach)*. Deepublish. <https://books.google.co.id/books?id=qy1qDwAAQBAJ>

Sajaka, K., Priyatno, S., & Hariyanto, B. (2019). *Explore Matematika Jilid 3 untuk SMA/MA/SMK/MAK Kelas XII*. Penerbit Duta. <https://books.google.co.id/books?id=gsJHEAAAQBAJ>

Salgado, H., & Trigueros, M. (2015). Teaching eigenvalues and eigenvectors using

- models and APOS Theory. *The Journal of Mathematical Behavior*, 39, 100–120.
- Schnitzler, K., Holzberger, D., & Seidel, T. (2021). All better than being disengaged: Student engagement patterns and their relations to academic self-concept and achievement. *European Journal of Psychology of Education*, 36(3), 627–652.
- Sfard, A. (1991). On the dual nature of mathematical conceptions: Reflections on processes and objects as different sides of the same coin. *Educational Studies in Mathematics*, 22(1), 1–36.
- Simon, M. A. (2017). Explicating mathematical concept and mathematical conception as theoretical constructs for mathematics education research. *Educational Studies in Mathematics*, 94(2), 117–137. <https://doi.org/10.1007/s10649-016-9728-1>
- Siswono, T. (2018). *Pembelajaran Matematika Berbasis Pengajuan dan Pemecahan Masalah Fokus pada Berpikir Kritis dan Bepikir Kreatif*. PT Remaja Rosdakarya.
- Siyoto, S., & Sodik, M. A. (2015). *Dasar Metodologi Penelitian*. Literasi Media Publishing.
- Sriraman, B. (2004). The characteristics of mathematical creativity. *The Mathematics Educator*, 14(1).
- Sriraman, B. (2009). The characteristics of mathematical creativity. *ZDM*, 41(1), 13–27.
- Subanji. (2015). Teori kesalahan konstruksi konsep dan pemecahan masalah matematika. In *Universitas Negeri Malang*. Universitas Negeri Malang. https://www.researchgate.net/profile/Subanji-Subanji-2/publication/309288199_0_Bagian_Awal/links/5808308208ae5ed04bfe827b/0-Bagian-Awal.pdf
- Sujarwo, E., & Yunianta, T. N. H. (2018). Analisis Kemampuan Berpikir Kreatif Siswa Kelas VIII SMP Dalam Menyelesaikan Soal Luas Bangun Datar. *Jurnal Kajian Pembelajaran Matematika*, 2(1), 1–8.
- Suwarno, A., & Santoso, A. D. (2019). Rekonstruksi Pembelajaran Diskusi Kelompok Menggunakan Peta Konsep Untuk Meningkatkan Hasil Belajar Ips Terpadu. *Sosial Horizon: Jurnal Pendidikan Sosial*, 6(1), 108–122. <https://doi.org/10.31571/sosial.v6i1.1257>
- Syahrin, A., SUWIGNYO, H., & PRIYATNI, E. T. (2019). Creative thinking patterns in student's scientific works. *Eurasian Journal of Educational Research*, 19(81), 21–36.

- Syaiful, Kamid, Muslim, & Huda, N. (2020). Investigate The Relationship Of Creative Thinking Skills and Junior High School Student Motivation. *Humanities & Social Sciences Reviews*, 8. <https://doi.org/https://doi.org/10.18510/hssr.2020.8219>
- Syaiful, Kamid, Muslim, Huda, N., Mukminin, A., & Habibi, A. (2020). Emotional quotient and creative thinking skills in mathematics. *Universal Journal of Educational Research*. <https://doi.org/10.13189/ujer.2020.080221>
- Syaiful, Marzal, J., & Kamid. (2016). Development Of Student Comprehension in Constructing Line and Row: Analyzes From APOS Theory. *ASIO Journal of Chemistry, Physics, Mathematics & Applied Sciences (ASIO-JCPMAS)*, 1(2), 5–9.
- Tahrun. (2021). Implementasi E- Learning Berbasis Konstruktivisme Dalam Pembelajaran Research On Language Teaching. *Prosiding Pendidikan PPs Universitas PGRI Palembang*, 166–175.
- Tanujaya, B., & Mumu, J. (2021). Reconstruction of HOTS problems based on questions in mathematics textbook. *Journal of Physics: Conference Series*, 1832(1). <https://doi.org/10.1088/1742-6596/1832/1/012052>
- Trigueros, M., & Martínez-Planell, R. (2010). Geometrical representations in the learning of two-variable functions. *Educational Studies in Mathematics*, 73, 3–19.
- Tsortanidou, X., Daradoumis, T., & Barberá, E. (2019). Connecting moments of creativity, computational thinking, collaboration and new media literacy skills. *Information and Learning Sciences*.
- Umida, K., Dilora, A., & Umar, E. (2020). Constructivism In Teaching and Learning Process. *European Journal of Research and Reflection in Educational Sciences*, 8(3), 134.
- Utami, S., Usodo, B., & Pramudya, I. (2019). Level of Students' Creative Thinking in Solid Geometry. In *Journal of Physics: Conference Series* (Vol. 1227, Issue 1). <https://doi.org/10.1088/1742-6596/1227/1/012023>
- Valarezo, O., Gómez, T., Chaves-Avila, J. P., Lind, L., Correa, M., Ulrich Ziegler, D., & Escobar, R. (2021). Analysis of new flexibility market models in Europe. *Energies*, 14(12), 3521.
- Weng, S.-S., Liu, Y., & Chuang, Y.-C. (2019). Reform of Chinese universities in the context of sustainable development: Teacher evaluation and improvement based on hybrid multiple criteria decision-making model. *Sustainability*, 11(19), 5471.
- Zahara, R., Sulastri, & Syukri, M. (2020). Promoting inquiry-based learning for

science, technology, engineering, math (STEM) to enhance students' creative thinking skills. In *Journal of Physics: Conference Series* (Vol. 1460, Issue 1). <https://doi.org/10.1088/1742-6596/1460/1/012120>