PENINGKATAN KEMAMPUAN REPRESENTASI MATEMATIS DAN RESILIENSI MATEMATIS MELALUI *BLENDED LEARNING* BERBASIS PENDIDIKAN MATEMATIKA REALISTIK

DISERTASI

Diajukan untuk Memenuhi Syarat untuk
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PERNYATAAN KEASLIAN

Dengan ini saya menyatakan bahwa disetasi dengan judul "Peningkatan Kemampuan Representasi Matematis dan Resiliensi Matematis melalui *Blended Learning* Berbasis Pendidikan Matematika Realistik" beserta seluruh isinya adalah benar-benar karya saya sendiri, dan saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika keilmuan yang berlaku. Saya siap menanggung resiko/sanksi yang dijatuhkan kepada saya apabila kemudian hari ditemukan adanya pelanggaran terhadap etika keilmuan dalam karya saya ini, atau ada klaim pihak ain terhadap keaslian karya saya ini.

Bandung, Agustus 2023
Yang membuat pernyataan

Laelasari

ABSTRAK

Laelasari (2023). Peningkatan Kemampuan Representasi Matematis dan Resiliensi Matematis melalui *Blended Learning* Berbasis Pendidikan Matematika Realistik

Penelitian ini bertujuan untuk mengkaji secara komprehensif tentang peningkatan kemampuan representasi dan resiliensi matematis mahasiswa melalui pembelajaran *blanded learning* berbasis pendidikan matematika realistik. Desain yang digunakan dalam penelitian ini adalah desain eksperimen jenis pretest-postest-kontrol group design. Desain penelitian menggunakan jenis kuasi eksperimen dengan kelompok control non-equivalen. Populasi penelitian ini meliputi seluruh calon guru matematika yang sedang mengampu mata kuliah Program Linear di salah satu perguruan tinggi swasta di Wilayah III Cirebon pada Tahun Akademik 2018-2019. Sampel penelitian diambil secara purposif sebanyak 42 orang yang terbagi menjadi 22 orang mahasiswa pada kelaas eksperimen dan 20 orang pada kelas kontrol. Penelitian ini menggunakan dua kelas untuk setiap kelasnya dibagi menjadi kategori tinggi, sedang dan rendah berdasarkan kategori KAM. Analisis data dilakukan secara kuantitatif terhadap data pretes dan postes untuk melihat pencapaian serta peningkatann data angket untuk melihat kemampuan resiliensi matematis. Hasil penelitian menunjukkan bahwa: 1) Pencapaian kemampuan representasi matematis mahasiswa yang memperoleh pembelajaran BLMPR lebih baik dari pada yang memperoleh BL; 2)Peningkatan kemampuan representasi matematis mahasiswa yang memperoleh perkuliahan BLPMR lebih baik dari pada yang memperoleh BL; 3) Pencapaian kemampuan resiliensi matematis mahasiswa yang memperoleh pembelajaran BLMPR lebih baik dari pada yang memperoleh BL; 4) Peningkatan kemampuan resiliensi matematis mahasiswa yang memperoleh pembelajaran BLMPR lebih baik dari pada yang memperoleh BL; 5) Tidak terdapat efek interaksi model pembelajaran (BLPMR dan BL) dan KAM (tinggi, sedang, dan rendah) terhadap pencapaian kemampuan representasi matematis; 6) Tidak terdapat efek interaksi model pembelajaran (BLPMR dan BL) dan KAM (tinggi, sedang, dan rendah) terhadap peningkatan kemampuan representasi matematis; 7) Terdapat efek interaksi model pembelajaran (BLPMR dan BL) dan KAM (tinggi, sedang, dan rendah) terhadap pencapaian kemampuan resiliensi matematis. 8) Terdapat efek interaksi model pembelajaran (BLPMR dan BL) dan KAM (tinggi, sedang, dan rendah) terhadap peningkatan kemampuan resiliensi matematis.

Kata Kunci: Peningkatan, Kemampuan Representasi Matematis, Resiliensi Matematis, *Blended Learning*, Pendidikan Matematika Realistik.

ABSTRACT

Laelasari (2023). Improving Mathematics Representation Ability and Mathematics Resilience through Blended Learning Based on Realistic Mathematics Education

This study aims to comprehensively examine the improvement of students' mathematical representation abilities and resilience through blended learning based on realistic mathematics education. The design used in this study was an experimental design with a pretest-posttest-control group design. The research design uses a quasi-experimental type with a non-equivalent control group. The population of this study includes all prospective mathematics teachers who are teaching Linear Programming courses at a private university in Region III Cirebon in the 2018-2019 Academic Year. The research sample was taken purposively as many as 42 people which were divided into 22 students in the experimental class and 20 people in the control class. This study uses two classes for each class divided into high, medium, and low categories based on the KAM category. Data analysis was carried out quantitatively on pre-test and post-test data to see the achievement and improvement of the questionnaire data to see the ability of mathematics resilience. The results of the study show that: 1) The achievement of the mathematics representation abilities of students who receive BLMPR learning is better than those who receive BL; 2) Improving the mathematics representation ability of students who receive BLPMR lectures is better than those who receive BL; 3) Achievement of students' mathematics resilience abilities who received BLMPR learning was better than those who received BL; 4) Increasing the mathematics resilience ability of students who receive BLMPR learning is better than those who receive BL; 5) There is no interaction effect of learning models (BLPMR and BL) and KAM (high, medium, and low) on the achievement of mathematical representation abilities; 6) There is no interaction effect of learning models (BLPMR and BL) and KAM (high, medium, and low) on increasing the ability of mathematics representation; 7) There is an interaction effect of learning models (BLPMR and BL) and KAM (high, medium, and low) on the achievement of mathematics resilience abilities. 8) There is an interaction effect of learning models (BLPMR and BL) and KAM (high, medium, and low) on increasing mathematics resilience abilities.

Keywords: Improvement, Mathematics Representation Ability, Mathematics Resilience, Blended Learning, Realistic Mathematic Education.

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DAFTAR RUJUKAN

Abbott, J.A., Klein, B., Hamilton, C. and Rosenthal, A. (2009). The Impact of Online Resilience Training for Sales Managers on Wellbeing and Work Performance. *Electronic Journal of Applied Psychology*: *General Articles*, **5**, 89-95.

Abushammala, M. (2019). The Effect of Using Flipped Teaching in Project Management Class for Undergraduate Students. *Journal Of Technology and Science Education*, *9*(1), 41–41. https://dx.doi.org/10.3926/jotse.539

Acosta, M.L. et al. (2018). Student Acceptance of eE-learning Methods in the Laboratory Class in Optometry. PloS One 13(12), e0209004.

Afriansyah, E. A. (2018). Makna Realistic dalam RME dan PMRI. *LEMMA: Letters of Mathematics Education*, 2(2), 96–104. Retrieved from http://ejournal.stkip-pgrisumbar.ac.id/index.php/jurnal-lemma/article/view/578/350

Alessi, SM and Trollip, SR. (2001). *Multimedia for Learning*: *Methods and Development.* (3rd Ed). Boston MA: Allyn and Bacon, Inc.

Allsopp, D. H, Kyger,M.M, Lovin, L. A. (2007). Teaching Mathematics Meaningfully: Solution for Teaching Struggling Learners. Publishing. London.

Amadea, K dan Ayuningtyas, M., D. (2020). Perbandingan Efektivitas Pembelajaran Sinkronus dan Asinkronus pada Materi Program Linear. *Jurnal Primatika*, 9(2).

Amit, M & Fried, M, N. (2005). Multiple Representati ons In 8th Grade Algebra Lessons: Are Learners Really Getting It . In Chick, H. L. & Vincent, J. L. (Eds.). *Proceedings of the 29 th Conference of the International Group for the Psychology of Mathematics Education.* Vol. 2, pp. 57-64.

Anasuri, S., Ph, D., & Anthony, K. (2018). Resilience Levels Among College Students : A Comparative Study from Two Southern States in The USA. IOSR Journal of Humanities and Social Science, 23(1), 52–73. https://doi.org/10.9790/0837-2301035273.

Andriani, T. R., & Kuncoro, J. (2020). Hubungan antara Konsep Diri dan Penyesuaian Diri dengan Resiliensi Mahasiswa dalam Menghadapi Banjir dan Rob di UNISSULA. *Sultan Agung Fundamental Research Journal*, 1(1), 69–76. Diambil dari http://dx.doi.org/10.30659/safrj.1.1.69-76.

Angkatosa, N dan Jalal, A. (2017). Perbandingan Model Pembelajaran *Problem Solving* dengan Model Pembelajaran Kooperatif Tipe *Think Talk Write* (TTW) pada Materi Program Linier terhadap Aspek Kemampuan Representasi Matematis Mahasiswa. *Jurnal Saintifik.* 1(2).

Angreanisita, Mastur, dan Rochmad. (2021). Mathematical Literacy Seen from Learning Independency in Blended Learning with Project Based Learning Assisted by Moodle. *Unnes Journal of Mathematics Education Research.* UJMER, 10(2),155 – 161.

Arikunto, S. (2016). Prosedur Penelitian: Suatu Pendekatan Praktik. Jakarta: Rineka Cipta.

Aristovnik, A., Kerzic, D., Ravselj, D., Tomazevic, N. & Umek, L. (2020). Impacts of the COVID-19 Pandemic on The Life ff Higher Education Students: A Global Perspective. *Journal Sustainability (Switzerland*). 12(20), 134. doi:10.3390/su12208438.

Arnellis, Fauzan, Arnawa dan Yerizon. (2020). The Effect of Realistic Mathematics Education Approach Oriented Higher Order Thinking Skills to Achievements' Calculus. *International Conference on Mathematics and Mathematics Education Journal of Physics*: Conference Series 1554 (2020) 012033 IOP Publishing http://10.1088/1742-6596/1554/1/012033.

Astuti, L. T., Rif'at, M., & Hamdani. (2015). Kemampuan Representasi Matematis Siswa Melalui Pembelajaran Berbasis Masalah di Sekolah Menengah Atas. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, 4(7), 1-15. E-ISSN 2715-2723.

Attard, C., Holmes, K. (2020). An Exploration of Teacher and Student Perceptions of Blended Learning in Four Secondary Mathematics Classrooms. *Journal Math. Education.* 1(22).

Ayu, A.R., Maulana, & Kurniadi, Y. (2016). Pengaruh Pendekatan Kontekstual terhadap Kemampuan Koneksi dan Pemecahan Masalah Matematis Siswa Sekolah Dasar pada Materi Keliling dan Luas Persegi Panjang dan Segitiga. *Jurnal Pena Ilmiah*, 1(1).

Balentyne, P., Varga, M.A., (2017). Attitudes and Achievement in a Self-Paced Blended Mathematics Course. *Journal of Online Learning Research*, 3 (1), 55–72

Barohah, U., Mardiyana, Fitriana L. (2022). E-Module Ethnomathematics on Mathematical Representation Ability of Class XI High School Students. *International Journal of Progressive Sciences and Technologies (IJPSAT)* 31(1) 10-18.

Bastaminia, A., Rezaei, M. R., Rezaei, M. R., & Tazesh, Y. (2019). Resilience and Quality of Life Among Students of Yasouj State University. *International Journal of Research in Humanities and Social Studies*, 3(8), 6–11.

Baumert, J., Kunter, M., Blum, W., Brunner, M., Voss, T., Jordan, A., Tsai, M. J. (2017). Teachers' Mathematical Knowledge, Cognitive Activation in the Classroom, and Student Progress. *American Educational Research Journal*, *47* , 133–180. https://doi.org/ 10.3102/0002831209345157.

Benken, B. M., Ramirez, J., Li, X., & Wetendorf, S. (2019). Developmental Mathematics Success: Impact of Students' Knowledge and Attitudes. *Journal of Developmental Education*, *38*(2), 14–22.

Bethania, W. (2016). Resiliensi Mahasiswa Bidikmisi: Studi Kasus terhadap Mahasiswa Bidikmisi Fakultas Ilmu Pendidikan Universitas Negeri Yogyakarta. *E-Journal Bimbingan dan Konseling*, 9(5), 301–312. Retrieved from https://files.eric.ed.gov/fulltext/EJ1083365.pdf

Berrett, B., Murphy, J., & Sullivan, J. (2022). Administrator Insights and Reflections: Technology Integration in Schools. *Qualitative Report, 17*(1), 200–221

Bhargava, D., & Trivedi, H. (2018). A Study of Causes of Stress and Stress Management among Youth. IRA-International Journal of Management & Social Sciences (ISSN 2455-2267), 11(3), 108.

Bray, A., Tangney, B., (2017). Technology Usage in Mathematics Education Research – Asystematic Review of Recent Trends. Comput. Educ. 114, 255–273.

Byrd, D.R. and McKinney, K. J. (2016). Individual, Interpersonal, and Institutional Level Faktors Associated with the Mental Health of College Students. *Journal of American College Health*, **60**, 185-193.

Caillies, S & Denhiere, G. (2002). The Effect of Prior Knowledge on Understanding from Text: Evidence from Primed Recognition. *European Journal of Cognitive Psychology*. 14 (2), 267-286.

Carman, Z. (2005). *Blanded Learning Design: Five Key Ingredients*. Instructional Technology from Utah State University.

Cartuyvels, R., Spinks, G., Moens, and M. F. (2021). Discrete and Continuous Representations and Processing in Deep Learning: Looking forward. journal homepage: www.keaipublishing.com/en/journals/ai-open . Vol. 2 p. 143-159. https://doi.org/10.1016/j.aiopen.2021.07.002.

Castaneda, Apollo, Mario Sánchez Aguilar, and Ana Luisa Gómez-blancarte. (2019). Representations of Mathematicians in Lower Secondary Mathematics Textbooks. *Eurasia Journal of Mathematics, Science and Technology Education*, 15(7).

Chaeruman, U., A.. 2019. Merancang Model Blended Learning Designing Blended Learning Model. *Jurnal Teknodik*, 17(4), p.053. http://dx.doi.org/10.32550/teknodik.v17i4.577

Chamberlin, S. A. (2010). A Review of Instruments Created to Assess Affect in Mathematics. *Journal of Mathematics Education*, *3*(1), 167–182.

Chronaki, Anna, and Núria Planas. (2018). Language Diversity in Mathematics Education Research: A Move from Language as Representation to Politics of Representation. Journal ZDM 50(6):1101–11.

https://doi.org/10.1007/s11858-018-0942-4

Clarà, M. (2017). Teacher Resilience and Meaning Transformation: How Teachers Reappraise Situations Of adversity. *Journal Teaching and Teacher Education*, 63, 82–91.

Connor, K. M. and Davidson, J. R. (2018). Development of a New Resilience Scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18, 76-82.

Dahlan, A. H. (2018). Pengembangan Model Pembelajaran Pendidikan Matematika Realistik Indonesia (PMRI) untuk Meningkatkan Ketertarikan Belajar Matematika. *Jurnal Pendidikan Matematuka*, 1(1): 8—14.

Darhim. (2019). *Pembelajaran Matematika Realistik Sebagai Suatu Pendekatan.* https://docplayer.info/224519-Pembelajaran-matematika-realistik-sebagai-suatu-pendekatan.html.

de Lange, J. (1987). *Mathematics Insight and Meaning.* Utrecht: OW & OC.

Delgado, A. J., Wardlow, L., McKnight, K., & O'Malley, K. (2019). Educational Technology: A Review of the Integration, Resources, and Effectiveness of Technology in K-12 Classrooms. *Journal of Information Technology Education: Research, 14*, 397–416.

Diana, D. H. (2019). Self-efficacy and achievement behaviors. *Educational Psychology Review*, 1, 173-208. https://doi.org/10.1007/BF01320134

Dochy, F.J.R.C., De Ridjt, C., & Dyck, W. (2002). Cognitive Prerequisites and Learning. How far have we progressed since Bloom? Implications for Educational Practice and Teaching. *Active Learning in Higher Education, 3* (3), 265–284.

Dudung, A. 2022. Kompetensi Profesional Guru. *Jurnal Eksponen.* 12(1).

Dunlosky, J., Rawson, K. A, Elizabeth J. Marsh, E, J , Nathan, M, J. 3, and Willingham, D, T. (2013) **.** Improving Students' Learning With Effective Learning Techniques: *Journal Promising Directions From Cognitive and Educational Psychology.* University of Virg Psychological Science in the Public Interest 14(1) 4–58. doi: 10.1177/1529100612453266.

Dziuban, C. D., Hartman J. L, Moskal, P., D. (2019). Blended Learning. *Research Bulletin*. Volume 2004, Issue 7. March 30, 2004.

Edraki, M., & Rambod, M. (2018). Parental Resilience and Psychological Issues Psychological Predictors of Resilience in Parents of Insulin-Dependent Children and Adolescents. *IJCBNM*. 6(3), 239–249.

Edwards, K. J., Hershberger, P.J., Russell, R.K. and Markert, R.J. (2022). Stress, Negative Social Exchange, and Health Symptoms in University Students. *Journal of American College Health,* **50**, 75-79.

Edwards, R. (2002). Distribution and Interconnectedness: The globalisation of education. In M. Lea and K. Nicoll (Eds.), Distributed Learning: Social and Cultural Approaches to Practice. New York: Routledge Falmer.

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning Loss Due to School Closures During the Covid-19 Pandemic. Proceedings of the National Academy of Sciences of the United States of America, 118(17). https://doi.org/10.1073/PNAS.2022376118.

Everall, R. (2006). Creating a Future: A Study of Resillience in Suicidal Female Adolescent. *Journal of Counseling and Development*, 84. (8).

Ernest, P. (1991). The Philosophy of Methematics Education. London: Falmer.

Fadhli. (2021). Implementasi Kompetensi Pembelajaran Sepanjang Hayat melalui Program Literasi. *Jurnal Kajian Informasi & Perpustakaan* ,9(1), p. 19-38.

Fariz, I., N, Isrok'atun, dan Gusrayanim, D. (2019). Pengaruh Pendekatan RME terhadap Kemampuan Representasi Matematis dan Kepercayaan Diri Siswa. *Jurnal Pena Ilmia*h. 2(1). Doi: https://doi.org/10.17509/jpi.v2i1.11211

Fauzan, A. (2001). *Pendekatan Matematika Realistik Suatu Tantangan dan Harapan.* Makalah disampaikan pada Seminar Nasional tentang Pendidikan Matematika Realistik tanggal 14-15 November 2001. Yogyakarta: Tidak Diterbitkan.

Fitriana. (2018). Mathematical Representation Ability of Senior High School Students: An Evaluation from Students' Mathematical Disposition. JRAMathEdu (Journal of Research and Advances in Mathematics Education), 3(1), 46–56. https://doi.org/10.23917/jramathedu.v3i1.5872.

Fredriksen, H. (2021). Exploring Realistic Mathematics Education in a Flipped Classroom Context at The Tertiary Level. International Journal of Science and Mathematics Education, 19(2), 377-396. https://doi.org/10.1007/s10763-020-10053-1.

Freudenthal, H. (1991). *Revisiting Mathematics Education.* China Lectures. Dordrecht: Kluwer Academic Publishers.

Fuadi, D dan Stama. (2020). Discipline Factor and the Impact on Mathematics Learning Outcomes in Vocational High Schools. *Journal of Physics: Conference Series*. IOP Publishing. 1720 (2021) 012003. doi:10.1088/1742-6596/1720/1/012003.

Gagatsis, A. & Elia, I. (2005). A Review of Some Recent Studies on the Role of Representations in Mathematics Education in Cyprus and Greece, in Bosch, M. (Ed.), *Proc. 4th Congress European Society for Research in Mathematics Education* (pp. 102–111). ERME, Saint Feliu de Guixols.

Goldin, G. (2001). Systems of Representations and the Development of Mathematical Concepts. In Cuoco, A. A. & Curcio, F. R. (Ed.), *The Role of Representation in School Mathematics* (pp. 1-23). Reston. NCTM Yearbook.

Goldin, G. A. (2002). Representation in Mathematical Learning and Problem Solving. In L.D English (Ed). *International Research in Mathemtical Education IRME,* 197-218. New Jersey: Lawrence Erbaum Associates.

Graham, C.R. (2005). *Blended Learning System*. Definitions, Current, and Future Directions. The Hand Book of Blended Learning.

Grant, R. (2001). Teaching and Learning With Information and Communication Technology: Succes Through a Whole School Approach. *National Educational Computing Conference*, July 25-27. Chicago.

Gravemeijer, K. (2008). RME Theory and Mathematics Teacher Education. In D. Tirosh, & T. Wood. *The International Handbook of Mathematics Teacher Education: Tools and processes in mathematics teacher education* (pp. 283 - 302). Rotterdam, Netherlands: Sense Publisher.

Gravemeijer, K.P.E. (1994). *Developing Realistic Mathematics Education.* Utrecht: CD-β Press, Freudenthal Institute.

Gürgan, U. (2017). Grupla Psikolojik Danışmanın Üniversite Öğrencilerinin Yılmazlık Düzeylerine Etkisi. Yayımlanmamış Doktora Tezi. Ankara Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Hadi, S. (2005). *Pendidikan Matematika Realistik*. Banjarmasin: Penerbit Tulip.

Haji dan Yumiati. 2019. Implementation of Realistic Mathematics Education Learning Model with Outdoor Approach in Elementary School: Study of Presenting and Processing Data. Mathematics and Science Education International Seminar (MASEIS). *Journal of Physics:* Conference Series doi:10.1088/1742-6596/1731/1/012046

Hall, W., Keynes, M. (2015). *Developing Mathematical Resilience*. UK: The Open University.

Hanifah dan Sutriyono. (2018). Deskripsi Kemampuan Representasi Matematis Siswa SMP Pada Materi Bangun Datar Ditinjau dari Perbedaan Gender. Maju: *Jurnal Ilmiah Pendidikan Matematika*, 5(1), 133–146.

Harahap, M. S. (2017). Pengembangan Bahan Ajar Geometri Berbasis RME (Realistic Mathematic Education) Di STKIP Tapanuli Selatan. *Jurnal Education and Development STKIP Tapanuli Selatan*, 7(5). 21-26.

Harmon, E., dan Jones. (2000). *An Update on Dissonance Theory with a Focus on the Self.* Psychological Perspectives on Self and Identity.

Harries, T. & Barmby, P. (2006). Representing Multiplication. *Proceeding of the BritishSociety for Research into Learning Mathematics.* 26(3), 25 – 30.

Haughey, M. and Anderson, T. (1998). *Networking Learning*. The Pedagogy of the Internet. Montreal: McGraw-Hill.

Heck, A and Ellermeijer, T. (2010). Mathematics Assistants: Meeting the Needs of Secondary School Physics Education. *Acta Didactica Napocensia*, 3(2) 18-34.

Hegarty-Hazel, E. & Prosser, M. (2017). Relationship between Students' Conceptual Knowledge and Study Strategies – Part 1: Student Learning in Physics. *International Journal of Science Education, 13,* 303–312.

Hermanto, R dan Santika, S. (2016). Jurnal Penelitian Pendidikan dan pengajaran Matematika. Vol. 2 No.2 pp 135-142.

Holdsworth, S., Turner, M., & Scott-Young, C. M. (2018). Not drowning, waving. Resilience and university: A student perspective. Studies in Higher Education, 43(11), 1837–1853.

https://doi.org/10.1080/03075079.2017.1284193

Hooglanda, et all. 2018. Gravemeijerd Changing Representation in Contextual Mathematical Problems from Descriptive to Depictive: The Effect on Students' Performance. *Studies in Educational Evaluation* 58 (2018) 122–131.

Horn, M. B & Staker, H. (2011). *The Rise of K-12 Blended Learning*. Innosight Institute. Public Impact.
https://doi.org/10.1016/j.est.2021.103673

Huda. (2019). Understanding of Mathematical Concepts in the Linear Equation with Two Variables: Impact of E-Learning and Blended Learning Using Google Classroom. *Al-Jabar: Jurnal Pendidikan Matematika*, 10(2), 261-270. http://ejournal.radenintan.ac.id/index.php/al-jabar/article/view/5303

Hutauruk, A., J., B dan Naibaho, T. (2017). Indikator Pembentuk Resiliensi Matematis Mahasiswa Prodi Pendidikan Matematika FKIP. SEPREN: *Journal of Mathematics Education and Applied*, 1(2),78-91.

Hwang, et al. (2007). Multiple Representation Skills and Creativity Effects on Mathematical Problem Solving using a Multimedia Whiteboard System. *Educational Technology & Society*, 10(2),191-212.

Inan, F. A., & Lowther, D. L. (2021). Faktors Affecting Technology Integration in K-12 Classrooms: A Path Model. *Educational Technology Research & Development, 58*(2), 137–154. https://doi.org/10.1007/s11423-009-9132-y.

Indriyani, Y., D., Sudarman SW, dan Vahlia, I. (2020). Peningkatan Kemampuan Representasi Matematis dan Kemandirian Belajar Siswa Menggunakan Pendekatan RME. *Jurnal Derivat*, 7(1). ISSN: 2407 – 3792.

Johnson-Wilder, S., & Lee, C. (2016). Developing Mathematical Resilience in School-Students Who Have Experienced Repeated Failure. Seville: ICERI.

Johnston, W and Lee, C. (2013). *Children Overheard: Working to Increase Mathematical Resilience.* Mti, ATM, Summer.6

Johnston-Wilder, S & Lee, C. (2010). Mathematical Resilience. *Mathematics Teaching*, 218, 38-41.

Johnston-Wilder, S.; Lee, C.; Garton, L.; Goodlad, S. and Brindley, J. (2013). Developing Coaches for Mathematical Resilience. ICERI 2013 : *6th*

International Conference on Education, Research and Innovation, 18-20 November 2013, Seville, Spain.

Karairmak, O. (2010). Establishing the Psychometric Qualities Of The Connor-Davidson Resilience Scale (CD_RISC) Using Exploratory and Confirmatory Faktor Analysis in Atrauma Survivor Sample. *Psychiatry Research*. 179, 350-356.

Kartono, Arumsari, P. A., & Mariani, S. (2019). Analysis of Students' Mathematical Reflective Thinking on Problem Based Learning (PBL) Based from Learning Styles. *Unnes Journal of Mathematics Education*, 8(1), 34–41.

Kendeou, P & Broek, P. (2007). The Effect of Prior Knowledge and Text Structure on Comprehension Processes During Reading of Scientific Texts. *Memory & Cognition Psychonomic Society, Inc*. 35(7), 1567-1577.

Koltay, T. (2011). The Media and the Literacies: Media Literacy, Information Literacy, Digital Literacy. *Media, Culture & Society*, 33(2), 211–221.

Kooken, J., Welsh, M., Mccoach, B., Johnston-Wilder, S. and Lee, C. (2016) Measuring Mathematical Resilience: an Application of the Construct of Resilience to the Study of Mathematics. In: *AERA 2016, San Francisco, California.*

Krutetskii V.A. (1976). *The Psychology of Mathematical Abilities in School Children*. Chicago: The University of Chicago Press.

Kwon, O. N. (2003). Guided Reinvention of Euler Algorithm: An Analysis of Progressive Mathematization in RME-based Differential Equations Course. *J. Korea Soc. Math. Ed. Ser. A: The Mathematical Education,* 42(3), 387-402.

Laelasari, Darhim, Prabawanto. (2022). Mathematic Resilience Ability of Students in Linear Program Material with Blanded Learning in the Era of Pandemic. *Jurnal Teori dan Aplikasi Matematika*, 6(2).

Lariana, G. (2018). Analysis of Real-World Math Problems: Theoretical Model and Classroom Application. *Journal Education Moscow Studies,* 3(3).

Laurens, T., Batlolona, F. A., Batlolona, J. R., & Leasa, M. (2018). How does realistic mathematics education (RME) improve students' mathematics cognitive achievement? *Eurasia Journal of Mathematics, Science and Technology Education,* 14(2), 569–578. https://doi.org/10.12973/ejmste/76959.

Lee, C and Wilder, S. J. (2008). Dos Articulation Matter When Learning Mathematics? *Proceding of Briish Society for Reaserch into Learning Mathematics,* 28(3).

Lee, M.G.C. & Tan, O.S. (2019). *Collaboration, Dialogue, and Critical Openness Through ProblemBased Learning Processes. In Tan (ed.). Enhancing*

Thinking through Problem-Based Learning Approaches. Singapore: Thomson Learning.

Long, dan Nguyen. 2020. A Structural Equation Model of Blended Learning Culture in the Classroom. *International Journal of Higher Education,* 9(4). http://ijhe.sciedupress.com.

Lovibond, P. F., & Lovibond, S. H. (1995). The Structure of Negative Emotional States: Comparison of the Depression Anxiety Stress Scales (DASS) with The Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335-343.

Luthar, S. (2017). Resilience in development: A Synthesis Of Research Across Five Decades. *Developmental Psychopathology*, 739-783.

Luthar, S., Cicchetti, D., & Becker, B. (2017). The Construct of Resilience: a Critical Evaluation and Guidelines for Future Work. *Child Development*, 71, 543-562.

Mahmood, K., & Ghaffar, A. (2014). The Relationship Between Resilience, Psychological Distress and Subjective Well-Being Among Dengue Fever Survivors. *Global Journals Inc.* 14(10),13-24.

Goffree (2019). The Relation Between Prior Knowledge and Students' Mathematics Reflective Thinking Ability. *Journal of Physics: Conference Series. Mathematics and Science Education International Seminar* (MASEIS). 1731 (2021) 012043. doi:10.1088/1742-6596/1731/1/012043.

Mainali dan Blesh. (2021). Representation in Teaching and Learning Mathematics. *International Journal of Education in Mathematics, Science, and Technology* (IJEMST), 9 (1): 0–21. https://doi.org/10.46328/ijemst.1111.

Mallinckrodt, B., & Wei, M. (2005). Attachment, social competencies, social support, and psychological distress. Journal of Counseling Psychology. 52(3), 358-367.

Mariana, E., dan Harahap, E. (2018). Mengembangkan Kemampuan Berpikir Kritis dan Resiliensi Matematik melalui Pembelajaran Program Linier Berbantuan QM for Windows. *Jurnal Matematika*, 17(2). ISSN: 1412-5056 / 2598-8980. http://ejournal.unisba.ac.id.

Marshall, S. and Gregor, S. (2002). Distance Education in the Online World: Implications for Higher Education. in R. Discenza, C. Howard and K. Schenk (Eds.), The Design & Management of Effective Distance Learning Programs. Hershey, PA: Idea Group Publishing.

Martahayu, V dan Arsisari, A. (2020). Analisis Uji Kompetensi Guru Kabupaten Bangka Tengah terhadap Hasil Ujian Nasional Matematika Siswa SMP. *Jurnal Aksioma*, 9(3).

Martens, R., & Dochy, F.J.R.C. (1997). Assessment and Feedback as Student Support Devices. *Studies in Educational Evaluation*, 23(3), 257–273.

Mazana, M. Y, Montero, C. S. dan Casmir, R., O. 2019. Investigating Students' Attitude towards Learning Mathematics. *International Electronic Journal of Mathematics Education*, 14(1), 207-231. e-ISSN: 1306-3030. https://doi.org/10.29333/iejme/3997.

Meenakshi. 2020. Mathemtics is The real World. *International Journal of Mathematics Trends and Technology* (IJMTT), 66(6).

Minarni, A., Napitupulu, E., & Husein, R. (2016). Mathematical Understanding and Representation Ability of Public Junior High School in North Sumatra. *Journal on Mathematics Education*, 7(1), 43-56.

Monariska, E dan Komala, E. (2021). Analisis Kemampuan Representasi Matematis Mahasiswa Pada Mata Kuliah Program Linear. *Jurnal Edukasi dan Sai*ns, 7(1).

Mudzakir, H. (2006). *Meningkatkan Kemampuan Representasi Multipel Matematik Siswa SMP melalui Strategi Think-talk-write*. Tesis pada Pascasarjana UPI, tahun 2006.

Muhammad. (2016). Kemampuan Representasi Matematis dalam Materi Fungsi dengan Pendekatan Open Ended. *Jurnal Eksponen*, 9(1), 9-20.

National Council of Teachers of Mathematics. (2000). *Curriculum and Evaluation Standards for School Mathematics.* Reston, VA: National Council of Teachers of Mathematics.

Newman, T. (2004) What Works in Building Resilience? London, Barnardo's. Available from.

Oliver, K.M. (2019). Methods for Developing Constructivism Learning on the Web. *Educational Technology*, 40 (6).

Ouyang, M. (2017). A Mathematical Framework to Optimize Resilience of Interdependent Critical Infrastructure Systems under Spatially Localized Attacks. *European Journal of Operational Research.*

Pajares, F., & Kranzler, J. (2018). Self-Efficacy Beliefs and General Mental Ability in Mathematical Problem-Solving. *Contemporary Educational Psychology*, *20*, 426-443. https://doi.org/10.1006/ceps.1995.1029

Palinussa, A. L. (2020). Comparison of Algebra Learning Outcomes Using Realistic Mathematics Education (RME), Team Assisted Individualization (TAI) and Conventional Learning Models in Junior High School 1 Masohi. *Infinity Journal*, 9(2), 173–182. https://doi.org/10.22460/infinity.v9i2.p173-182.

Peatfield, N. (2015). Affective Aspect of Mathematical Resilience. Adams G. (Ed.) *Proceedings of the British Society for Research into Learning Mathematics* 35(2).

Phillips, M. I. 2017. Digital Technology Integration. In M. Henderson, & G. Romeo (Eds.), *Teaching and digital technologies: Big Issues and Critical Questions* (pp.318–331). Port Melbourne, Australia: Cambridge University Press.

Piaget, J. (1983). a Epistemologia Genética/ Sabedoria E Ilusões Da Filosofia/Problemas De Psicologia Genética (2nd ed.). São Paulo, Brazil: Abril Cultural.

Potter, J. 2010. The State of Media Literacy. *Journal of Broadcasting & Electronic Media*, 54(4), 675–696.

Puteh, M., & Khalin, S. Z. (2018). Mathematics Anxiety and Its Relationship with the Achievement of Secondary Students in Malaysia. International Journal of Social Science and Humanity, 6(2), 119-122.

Putra, D. M. P. D., Ardana, I. M., & Astawa, I. W. P. (2019). Contribution of Mathematics Anxiety, Achievement Motivation, and Academic Potential to Problem Solving Ability. *Jurnal Pendidikan dan Pengajaran*, 52(1), 15–25.

Rahman, A. A. (2017). Pengembangan Perangkat Pembelajaran Berbasis Pendekatan Realistik untuk Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa SMP N 3 Langsa. *Jurnal MAJU*, 04(01), 26—27.

Rasmussen, C. L., & King, K. D. (2000). Locating Starting Points in Differential Equations: A Realistic Mathematics Education Approach. *International Journal of Mathematical Education in Science and Technology,* 31(2), 161–172. doi:10.1080/002073900287219.

Reivich, K., & Shatté, A. (2002). *The Resilience Factor: 7 Essential Skills for Overcoming Life's Inevitable Obstacles.* Broadway Books.

Reynolds, J. M. (2003). *The Role of Mathematics Anxiety in Mathematical Motivation: A Path Analysis of the Cane Model*. Unpublished Doctoral Dissertation. The College of Education at the University of Central Florida Orlando, Florida.

Risnawati. (2018). Mathematical Representation Ability of Senior High School Students: An Evaluation From Students' Mathematical Disposition. *Journal of Research and Advances in Mathematics Education*, 3(1), 46–56.

Ronis, D.L. (2018). *Problem-based Learning for Math & Science; Integrating Inquiry and the Internet*. California: Corwin Press.

Rosengrant, D, et. al. (2005). An Overview of Recent Research on Multiple Representations. Physics Education Research Conference. *Proceedings Held at Syracuse*, New York.

Ruseffendi, E.T. (1988). *Pengajaran Matematika Modern dan Masa Kini untuk Guru dan SPG*. Bandung: Tarsito.

Sabandar, J. (2001). Refleksi dalam Pembelajaran Matematika Realistik. Makalah Seminar Nasional tentangt Pendidikan Matematika Realistik Indonesia. Tanggal 14-15 November 2001. Yogyakarta: Tidak diterbitkan.

Safitri, D., A. dan Fauzi, A. (2021). Pengaruh Pendekatan Matematika Realistik Bernuansa Etnomatematika terhadap Kemampuan Komunikasi Matematis Ditinjau dari Resiliensi Matematis Siswa di MTs Swasta An-Naas Binjai. *Jurnal Fibonaci*, 2(1): 42 - 47, Tahun 2021. e-ISSN 27463656. Doi: https://doi.org/10.24114/jfi.v2i1.

Saputra, M. E. A., & Mujib, M. (2018). Efektivitas Model Flipped Classroom Menggunakan Video Pembelajaran Matematika terhadap Pemahaman Konsep. *Desimal: Jurnal Matematika*, 1(2), 173. https://doi.org/10.24042/djm.v1i2.2389

Sari and Haji. (2021). Improving Conceptual Understanding Through Inquiry Learning by Using a Jigsaw Method in Abstract Algebra Subject. Mathematics and Science Education International Seminar (MASEIS). *Journal of Physics:* Conference Series 1731 (2021) 012052 IOP Publishing. http://10.1088/1742-6596/1731/1/012052

Sari, E., F., Nugraheni, N., dan Kiptiyah, S., M. (2019). Learning Based Realistic Mathematics Education in Mathematics Teaching. *International Journa l of Innovation, Creativity and Chang*e, 5(5).

Scarpello, G. (2007). Helping Students Get Past Math Anxiety. *Techniques: Connecting Education and Careers (J1)*, 82(6), 34-35.

Schnotz, W., dan Bannert, M. (2003). Construction and Interference in Learning from Multiple Representation. *American Journal of Education Research*. 20015, 3(11), 1387-1397.

Shahsavarani, A. M., Azad, E., Abadi, M., & Kalkhoran, M. H. (2015). Stress: Facts and Theories through Literature Review. *International Journal of Medical Reviews*, 2(2), 230–241.

Shapiro, A. M. (2019). How Including Prior Knowledge as a Subject Variable may Change the Outcomes of Learning Research. *American Educational Research Journal*, 41(1), 159–189.

Simons, M., Meeus, W., and T'Sas, J. (2017). Measuring Media Literacy for Media Education: Development of a Questionnaire for Teachers' Competencies. *Journal of Media Literacy Education*, 9 (1), 99 – 115.

Spector, J. M. (2021). An Overview of Progress and Problems in Educational Technology. *Interactive Educational Multimedia, 1*, 27–37.

Streefland, L. (1991). *Fractions in Realistic Mathematics Education. A Paradigm of Developmental Research*. Kluwer Academic Publisher. Dordrecht.

Suartama, I. K., Setyosari, P., Sulthoni, & Ulfa, S. (2019). Development of An Instructional Design Model for Mobile Blended Learning in Higher Education. *International Journal of Emerging Technologies in Learning*, 14(16), 4–22. https://doi.org/10.3991/ijet.v14i16 .10633.

Subianto, J. (2018). Peran Keluarga, Sekolah, dan Masyarakat dalam Pembentukan Karakter Berkualitas. Edukasia: *Jurnal Penelitian Pendidikan Islam*, 8(2).

Sudarman, S. W, dan Vahlia, I. 2018. Pengembangan Bahan Ajar Trigonometri dengan Pendekatan RME Berbasis Aplikasi Schoology. *Jurnal Derivat.* 5(1). 9-18.

Sugiyono. (2018). Metode Penelitian Kombinasi (Mixed Methods). Bandung: CV Alfabeta.

Suprihatin, S. (2015). Upaya Guru dalam Meningkatkan Motivasi Belajar Siswa. *Jurnal Pendidikan Ekonomi* UM Metro, 3(1), 73–82.

Susanto, Sa'dijah, dan Gipayana, H. (2017). Pengaruh Metode Pembelajaran Dan Gaya Belajar Terhadap Hasil Belajar. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 2(9). https://doi.org/10.17977/jptpp.v2i9.9942.

Suwarsono, St. (2001). *Beberapa Permasalahan yang Terkait dengan Upaya Impelmentasi Pendidikan Matematika Realistik di Indonesia.* Makalah disampaikan pada Seminar Nasional tentang Pendidikan Matematika Realistik tanggal 14-15 November 2001. Yogyakarta: Tidak Diterbitkan.

Tall, D.O. 2008. The Transition to Formal Thinking in Mathematics. *Mathematics Education Research Journal*, 20(2), 5-24.

Tarigan, D. (2006). *Pembelajaran Matematika Realistik*. Jakarta: Depdiknas.

Thompson, R. A. & Zamboanga, B. L. (2004). Academic Aptitude and Prior Knowledge as Predictors of Student Achievement in Introduction to Psychology. *Journal of Educational Psychology*. 96(4), 778-784. *American Psychologyca Association*. DOI: 10. 1037/0022-0663.96.4.778.

Tisza, G dan Markopoulos. (2021). FunQ: Measuring the Fun Experience of a Learning Activity With Adolescents. Curr Psychol (2023) 42:1936–1956.

Treffers, A. (1991). *Realistic Mathematics Education in the Netherlands 1980-1990.* In L. Streefland (ed.), *Realistic Mathematics Education in Primary School.* Utrecht: CD-b Press/Freudenthal Institute, Utrecht University.

Ujjval B. Vyas, Varsha A. Shah, (2022). Differential Evolution Based Regression Algorithm for Mathematical Representation of Electrical Parameters in Lithium-Ion Battery Model. *Journal of Energy Storage.* Volume 45. 103673

Van den Heuvel-Panhuizen, M. (1996). *Assessment and Realistic Mathematics Education*. Utrecht: CD-b Press / Freudenthal Institute, Utrecht University. New Theory: Realistic Mathematics Education.

Vasileva-Stojanovska, T., 2018. Impact of Satisfaction, Personality and Learning Style on Educational Outcomes in a Blended Learning Environment. *Learn. Indiv Differ*, 38, 127–135.

Villegas. J. L., Castro, E., & Gutiérrez, J. (2009). Representations in Problem-Solving: A Case Study With Optimization Problems. *Electronic Journal of Research in Educational Psychology*, 7(17), 279–308.

Vos, P. (2020). How Real People Really Need Mathematics in the Real World-Authenticity in Mathematics Education. *Journal Educ. Sci*, 8, 195; doi:10.3390/educsci8040195.

Wahyuddin, W. (2017). Pendidikan Sepanjang Hayat Menurut Perspektif Islam. Saintifika Islamica: *Jurnal Kajian Keislaman,* 3(02), 191-208.

Widiharti, Y., Hanifah, Haji, S. (2022). Pengaruh Model Pembelajaran Blended Learning Dengan Pendekatan Realistic Mathematicss Education (RME) Terhadap Pemahaman Konsep Matematika. *Jurnal Inovasi Keguruan dan Ilmu Pendidikan*, 2(2). e-ISSN: 2775-7188 | p-ISSN: 2775-717X.

Wratten, S., D. & Hodge, S. (1999). The Use and Value of Prior Knowledge Assessment in Ecology Curriculum Design. *Journal of Biological Education, 33* (4), 201–203.

Yamada, Y., Klugar, M., Ivanova, K., Oborna, I. (2014). Psychological Distress and Academic Self-Perception Among International Medical Student: The Role of Peer Social Support. *Journal BMC Medical Education.* 14(256), 1-8.

Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T. P., & Sahebkar, A. (2017). The Impact of Stress on Body Function: A Review. *EXCLI Journal*, 16:1057-1072, ISSN 1611-2156doi: 10.17179/excli2017-480.

Yeager, D. & Dweck, C. 2012. Mindsets That Promote Resilience: When Students Believe that Personal Characteristics can be Developed. *Educational Psychologist*, 47, 302–314.

Yulianty, N. (2019). Kemampuan pemahaman konsep matematika siswa dengan pendekatan pembelajaran matematika realistik. *Jurnal Pendidikan Matematika Raflesia*, 4(1), 60– 65. Retrieved from https://ejournal.unib.ac.id/index.php/jpmr/article/view/7530/3745.

Zanthy, L. S. (2018). Kontribusi Reseliensi Matemats terhadap Kemampuan Akademik Mahasiswa pada Mata Kuliah Statistika Matematika. *Jurnal Mosharafa***,** 7(1), p-ISSN: 2086-4280; e-ISSN: 2527-8827.

Zulkardi. (2002). *Developing a Learning Environment on Realistic Mathamatics Education for Indonesian Student Teachers*. Ph. D. Thesis University of Twente, Enschede, the Netherlands.