

ASSESSMENT AS LEARNING DAN KETERAMPILAN BERPIKIR KREATIF
BERBASIS *EDUCATION FOR SUSTAINABLE DEVELOPMENT*
MAHASISWA CALON GURU MATEMATIKA

DISERTASI

Diajukan untuk memenuhi sebagian syarat memperoleh gelar Doktor
Pendidikan Matematika



Promovenda

Indah Widiati

NIM 1707487

PROGRAM STUDI PENDIDIKAN MATEMATIKA
SEKOLAH PASCASARJANA
UNIVERSITAS PENDIDIKAN INDONESIA
2021

Indah Widiati, 2021

ASSESSMENT AS LEARNING DAN KETERAMPILAN BERPIKIR KREATIF BERBASIS EDUCATION FOR SUSTAINABLE DEVELOPMENT MAHASISWA CALON GURU MATEMATIKA

Universitas Pendidikan Indonesia | repository.upi.edu | perpustakaan.upi.edu

***ASSESSMENT AS LEARNING DAN KETERAMPILAN
BERPIKIR KREATIF BERBASIS
EDUCATION FOR SUSTAINABLE DEVELOPMENT
MAHASISWA CALON GURU MATEMATIKA***

Oleh
Indah Widiati

Dr. Universitas Pendidikan Indonesia, 2021
M.Pd, Universitas Pendidikan Indonesia, 2012

Sebuah Disertasi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
Doktor Pendidikan (Dr.) pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan
Alam

© Indah Widiati 2021
Universitas Pendidikan Indonesia
Agustus 2021

Hak Cipta dilindungi undang-undang.
Disertasi ini tidak boleh diperbanyak seluruhnya atau sebagian,
dengan dicetak ulang, difoto kopi, atau cara lainnya tanpa ijin dari penulis.

INDAH WIDIATI

ASSESSMENT AS LEARNING DAN KETERAMPILAN BERPIKIR KREATIF
BERBASIS *EDUCATION FOR SUSTAINABLE DEVELOPMENT*
MAHASISWA CALON GURU MATEMATIKA

Disetujui dan Disahkan oleh Tim Penguji Disertasi



Prof. Turmudi, M.Ed., M.Sc., Ph.D
Promotor Merangkap Ketua



Dr. H. Dadang Juandi, M.Si
Ko-Promotor Merangkap Sekretaris



Prof. Dr. H. Wahyudin, M.Pd
Penguji



Prof. Dr. H. Tatang Herman, M.Ed
Anggota Penguji



Prof. Sutarto Hadi, M.Si, M.Sc., Ph.D
Penguji Luar Universitas

Mengetahui,
Ketua Departemen Pendidikan Matematika
Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam
Universitas Pendidikan Indonesia



Dr. H. Dadang Juandi, M.Si
NIP. 19640117 1992 021 001

Abstrak

Mahasiswa calon guru matematika harus mampu merancang soal tes matematika yang kreatif agar dapat mendukung program *Education for Sustainable Development* (ESD). Penelitian ini bertujuan untuk menganalisis *Assessment as Learning* dan keterampilan berpikir kreatif berbasis ESD mahasiswa calon guru matematika. Penelitian ini merupakan penelitian kualitatif dengan desain penelitian fenomenologi dan *grounded theory*. Penelitian ini melibatkan 43 partisipan, dengan 6 diantaranya dianalisis secara mendalam. Melalui penelitian ini diperoleh hasil bahwa dalam melakukan proses berpikir kreatif, mahasiswa melalui tahapan yaitu menentukan domain ESD, menentukan kompetensi dasar/nilai karakter/indikator keterampilan berpikir kreatif, menentukan ide soal, dan menyusun redaksi soal. Kriteria rancangan soal berpikir kreatif berbasis ESD, yaitu: (1) mengaplikasikan materi matematika pada domain sosial, ekonomi, dan lingkungan; (2) mengintegrasikan nilai karakter; dan (3) mengintegrasikan indikator berpikir kreatif yang meliputi *creative process*, *creative product*, dan *creative press*. Indikator keterampilan berpikir kreatif dalam merancang soal tes matematika berbasis ESD yaitu: (1) *new idea*; (2) *originality*; (3) *relevance*; (4) *based on ESD concept*; dan (5) *make students to be creative*. Pada penelitian ini juga diperoleh rancangan lembar *Assessment as Learning* yang meliputi lembar *Self-Assessment* dan *Peer Assessment* dan tahapan *Assessment as Learning* yaitu persiapan, pelaksanaan, dan tindak lanjut.

Kata kunci: *Assessment as Learning*, *Education for Sustainable Development*, Keterampilan Berpikir Kreatif, Mahasiswa Calon Guru Matematika.

Abstract

Pre-service mathematics teachers must be able to design creative mathematics test questions to support the Education for Sustainable Development (ESD) program. This study aims to analyze Assessment as Learning and ESD-based creative thinking skills of prospective mathematics teachers. It is qualitative research employing a phenomenological research design and grounded theory. It involved 43 participants, with six of them analyzed in depth. This study found that, in carrying out the creative thinking process, students went through stages, namely determining the ESD domain, determining basic competencies/character values/indicators of creative thinking skills, determining question ideas, and preparing question editors. The criteria for designing ESD-based creative thinking questions are: (1) applying mathematics material to social, economic, and environmental domains; (2) integrating character values; and (3) integrating creative thinking indicators, which include the creative process, creative product, and creative press. The indicators of creative thinking skills in designing ESD-based math test questions are: (1) new ideas; (2) originality; (3) relevance; (4) based on the ESD concept; and (5) make students creative. This study also created the design of the Assessment as Learning sheet, which includes the Self- Assessment and Peer Assessment sheets. The stages of Assessment as Learning are preparation, implementation, and follow-up.

Keywords: Assessment as Learning, Education for Sustainable Development, Creative Thinking Skills, Pre-Service Mathematics Teacher.

DAFTAR ISI

	Halaman
HALAMAN JUDUL	i
HALAMAN HAK CIPTA	ii
LEMBAR PENGESAHAN	iii
HALAMAN PERNYATAAN	iv
KATA PENGANTAR	v
UCAPAN TERIMA KASIH	vi
ABSTRAK	viii
ABSTRACT	ix
DAFTAR ISI	x
DAFTAR TABEL	viii
DAFTAR GAMBAR	xiv
DAFTAR LAMPIRAN	xix
BAB I PENDAHULUAN	
1.1. Latar Belakang Penelitian	1
1.2. Tujuan Penelitian	15
1.3. Pertanyaan Penelitian	15
1.4. Manfaat Penelitian	16
1.5. Definisi Operasional.....	17
BAB II LANDASAN TEORITIK	
2.1. <i>Assessment as Learning</i>	18
2.2. Kemampuan Berpikir Kreatif	27
2.3. <i>Education for Sustainable Development</i>	32
2.4. Keterkaitan antara Keterampilan Abad-21 dan <i>Assessment as Learning</i>	51
2.5. Keterkaitan antara <i>Education for Sustainable Development</i> dan <i>Assessment as Learning</i>	57
BAB III METODE PENELITIAN	
3.1. Jenis Penelitian	61
3.2. Partisipan Penelitian	65
3.3. Prosedur Penelitian	66
3.4. Teknik Pengumpulan Data	68

3.5. Teknik Analisis Data	70
3.6. Uji Keabsahan Data Data	72

BAB IV TEMUAN DAN PEMBAHASAN

4.1. Temuan Penelitian.....	74
4.1.1. Proses Berpikir Kreatif Mahasiswa Calon Guru Matematika dalam Merancang Soal Tes Matematika Berbasis <i>Education for Sustainable Development</i>	74
4.1.2. Rancangan Soal Tes Matematika Berbasis <i>Education for Sustainable Development</i> (Ditinjau dari Materi dan Aplikasinya terhadap <i>Education for Sustainable Development</i>	94
4.1.3. Level Keterampilan Berpikir Kreatif Mahasiswa Calon Guru Matematika dalam Merancang Soal Tes Matematika Berbasis ESD.....	104
4.1.4. Rancangan <i>Assessment as Learning</i> yang Dilakukan oleh Mahasiswa Calon Guru Matematika.....	191
4.2. Pembahasan Hasil Penelitian.....	216
4.2.1. Proses Berpikir Kreatif Mahasiswa Calon Guru Matematika dalam Merancang Soal Tes Matematika Berbasis <i>Education for Sustainable Development</i>	217
4.2.2. Analisis Soal Tes Matematika Berbasis <i>Education for Sustainable Development</i> (Ditinjau dari Materi dan Aplikasinya terhadap <i>Education for Sustainable Development</i>	220
4.2.3. Tingkatan Level Serta Kriteria Keterampilan Berpikir Kreatif Mahasiswa Calon Guru Matematika dalam Merancang Soal Tes Matematika Berbasis <i>Education for Sustainable Development</i>	221
4.2.4. Analisis Rancangan <i>Assessment as Learning</i> yang Dilakukan oleh Mahasiswa Calon Guru Matematika	235
4.2.5. Keterbaruan Temuan Penelitian	239
4.2.6. Keterbatasan Penelitian	241

BAB V SIMPULAN, IMPLIKASI, REKOMENDASI

5.1. Simpulan	243
5.2. Implikasi	244
5.3. Rekomendasi.....	246

DAFTAR PUSTAKA	247
-----------------------------	-----

LAMPIRAN

LAMPIRAN A.....	255
LAMPIRAN B	283
LAMPIRAN C.....	302
LAMPIRAN D.....	314
LAMPIRAN E	321
LAMPIRAN F	328

Daftar Pustaka

- Ali, M. (2017). Curriculum Development for Sustainability Education. In *Environmental Progress* (Vol. 24, Issue 4). UPI Press.
- Alkharusi, H. A., & Al-Hosni, S. (2015). Perceptions of classroom assessment tasks: An interplay of gender, subject area, and grade level. *Cypriot Journal of Educational Sciences*, 10(3), 205. <https://doi.org/10.18844/cjes.v1i1.66>
- Amabile, T. (1996). Creativity in Context: Update to The Social Psychology of Creativity. In *Journal of Chemical Information and Modeling* (Vol. 53, Issue 9).
- Amabile, T. (2006). How to kill creativity. *Creative Management and Development, Third Edition, July 2016*, 18–24. <https://doi.org/10.4135/9781446213704.n2>
- Anderson, L. W., & Krathwohl, D. R. (2001). Lorin W. Anderson, David R. Krathwohl - A taxonomy for learning teaching and assessing_ a revision of Bloom`s taxonomy of educational objectives-Longman. In *Longman*.
- Anton, C. (2018). *Chapter · January 2016. January 2016*. <https://doi.org/10.1002/9781118766804.wbiect090>
- Arslan, S. (2018). *Reflections from Pre-Service Teachers Mathematics Teaching Process Reflections from Pre-Service Teachers ' Mathematics Teaching Process Öğretmen Adaylarının Matematiği Öğretme Süreçlerinden Yansımalar. February*. <https://doi.org/10.16986/HUJE.2015014664>
- Aspers, P., & Corte, U. (2019). *What is Qualitative in Qualitative Research. 1*, 139–160.
- Barak, M., & Doppelt, Y. (2000). Using Portfolios to Enhance Creative Thinking. *The Journal of Technology Studies*, 26(2), 16–25. <https://doi.org/10.21061/jots.v26i2.a.3>
- Bass, H. (2008). *Measuring What Counts : A Conceptual Guide for Mathematics Assessment*. National Academies Press.
- Berglund, T., Gericke, N., & Chang Rundgren, S. N. (2014). The implementation of education for sustainable development in Sweden: investigating the sustainability consciousness among upper secondary students. *Research in Science and Technological Education*, 32(3), 318–339. <https://doi.org/10.1080/02635143.2014.944493>
- Berry, R. (2008). *Assessment for Learning*. Hong Kong University Press.

- Bialik, M., Martin, J., Mayo, M., & Trilling, B. (2016). Evolving Assessments for a 21st Century Education. *Assessment Research Consortium*, 118. <https://curriculumredesign.org/wp-content/uploads/Evolving-Assessments-for-the-21st-Century-Report-Feb-15-Final-by-CCR-ARC.pdf>
- Black, P., & Wiliam, D. (1998). Assessment and classroom learning. In *International Journal of Phytoremediation* (Vol. 21, Issue 1). <https://doi.org/10.1080/0969595980050102>
- Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, 92(1), 81–90. <https://doi.org/10.1177/003172171009200119>
- Bonnett, M. (2002). Education for sustainability as a frame of mind. *Environmental Education Research*, 8(1), 9–20. <https://doi.org/10.1080/13504620120109619>
- Bramwell, G., Reilly, R. C., Lilly, F. R., Kronish, N., & Chennabathni, R. (2011). Creative teachers. *Roeper Review*, 33(4), 228–238. <https://doi.org/10.1080/02783193.2011.603111>
- Cebrián, G., & Junyent, M. (2015). Competencies in education for sustainable development: Exploring the student teachers' views. *Sustainability (Switzerland)*, 7(3), 2768–2786. <https://doi.org/10.3390/su7032768>
- Cenberci, S. (2018). The Investigation of the Creative Thinking Tendency of Prospective Mathematics Teachers in Terms of Different Variables. *Journal of Education and Training Studies*, 6(9), 78. <https://doi.org/10.11114/jets.v6i9.3434>
- Chamberlin, S. A., & Moon, S. M. (2005). *Scott A. Chamberlin*. XVII(1), 37–47.
- Charmaz, K. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Reserach*. SAGE Publication, Inc.
- Chassapis, D. (2007). Integrating the philosophy of mathematics in teacher training courses: A Greek case as an example. *Philosophical Dimensions in Mathematics Education*, 42(May 2004), 61–79.
- Chee, K. N., Yahaya, N., Ibrahim, N. H., & Hasan, M. N. (2016). Connections Between Creative Teacher and Their Creativity in Teaching. *Malaysian Journal of Higher Order Thinking Skills in Education*, November, 1–29.
- Coelho, A., & Cabrita, I. (2015). A Creative Approach to Isometries Integrating Geogebra and Italic with 'Paper and Pencil' Environments. *Journal of the European Teacher Education Network*, 10(1).
- Corbin, J., & Strauss, A. (1998). FBasics of qualitative research: techniques and procedures for developing grounded theory. *London, Sage Publication*, 4(10),

1633–1636.

Cresswell, J. (2012). Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Reserach. In *Journal of Materials Processing Technology* (Vol. 1, Issue 1). <http://dx.doi.org/10.1016/j.cirp.2016.06.001><http://dx.doi.org/10.1016/j.powtec.2016.12.055><https://doi.org/10.1016/j.ijfatigue.2019.02.006><https://doi.org/10.1016/j.matlet.2019.04.024><https://doi.org/10.1016/j.matlet.2019.127252><http://dx.doi.o>

Cresswell, J. W. (2018). Qualitative Inquiry and Research Design, Choosing Among Five Traditions. In *Journal of Materials Processing Technology* (Vol. 1, Issue 1). SAGE Publication, Inc. <http://dx.doi.org/10.1016/j.cirp.2016.06.001><http://dx.doi.org/10.1016/j.powtec.2016.12.055><https://doi.org/10.1016/j.ijfatigue.2019.02.006><https://doi.org/10.1016/j.matlet.2019.04.024><https://doi.org/10.1016/j.matlet.2019.127252><http://dx.doi.o>

Dann, R. (2002). Promoting Assessment as Learning. In *Promoting Assessment as Learning*. <https://doi.org/10.4324/9780203470152>

Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Denman, C., & Al-Mahrooqi, R. (2018). General Principles of Assessment. *The TESOL Encyclopedia of English Language Teaching*, February, 1–7. <https://doi.org/10.1002/9781118784235.eelt0344>

Dufournaud, A., & Piper, J. (2010). *Assessment For, As and Of Learning: Assessment Practices For Aboriginal Students*. 29.

Earl, L. M. (2003). *Assessment as Learning: Using Classroom Assessment to Maximise Student Learning*. CA:Corwin Press.

Earl, L., & Katz, S. (2006a). Rethinking Classroom Assessment with Purpose in Mind. In *Learning*. <https://doi.org/10.4135/9781446214695>

Earl, L., & Katz, S. (2006b). Rethinking Classroom Assessment with Purpose in Mind. In *Learning*. www.wncp.ca

Evans, J. R., & McKinney, J. M. (1987). The modeling process and creative thinking. *International Journal of Mathematical Education in Science and Technology*, 18(1), 1–8. <https://doi.org/10.1080/0020739870180101>

Festus, B. (2015). Mathematics Education for Sustainable Development: Implications To the Production and Retention of Mathematics Teachers in Nigerian Schools. *British Journal of Education*, 3(1), 44–51. www.eajournals.org

- Freudenthal, H. (2002). Revisiting Mathematics Education. In *Journal of Chemical Information and Modeling* (Vol. 53, Issue 9). Kluwer Academic Publisher. <http://www.elsevier.com/locate/scp>
- Ghaicha, A. (2016). Theoretical Framework for Educational Assessment: A Synoptic Review. *Journal of Education and Practice*, 7(24), 212–231.
- Gotoh, G. (2004). The quality of the reasoning in problem solving processes. *The 10 Th International Congress on Mathematical Education*.
- Guilford, J. P. (1967). Creativity: Yesterday, Today and Tomorrow. *The Journal of Creative Behavior*, 1(1), 3–14. <https://doi.org/10.1002/j.2162-6057.1967.tb00002.x>
- Hamers, J. H. ., Van Luit, J. E. ., & Csapo, B. (1999). Teaching and Learning Thinking Skills. In *Teaching and learning thinking skills* (Issue 1981). Sweet & Zeitlinger. <http://www.fi.uu.nl/publicaties/literatuur/6259.pdf>
- Hancock, B. (2006). An Introduction to Qualitative Research Authors. *Qualitative Research*, 4th, 504. <https://doi.org/10.1109/TVCG.2007.70541>
- Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative Research Methods*. SAGE Publication, Inc.
- Herlina, V. Y., Sunardi, S., & Tirta, I. M. (2018). The Level of Students' Creative thinking Skills in Solving Probability Problem through Scientific Approach. *International Journal of Advanced Engineering Research and Science*, 5(7), 284–288. <https://doi.org/10.22161/ijaers.5.7.36>
- Herman, J. L., & Klein, D. C. D. (1997). Assessing opportunity to learn: A California example. *National Center for Research on Evaluation, Standards, and Student Testing (CRESST)*, 453(310), 1–19.
- Hidajat, A. F., Sa'dijah, C., Susiswo, S., Sudirman, S., & Asari, A. . (2018). Mathematical Creative Thinking Leveling on Non-Mathematics Department Students. *Jurnal Pendidikan Sains*, 6(1), 11–15. <http://journal.um.ac.id/index.php/jps/>
- Howit, D., & Cramer, D. (2011). Grounded theory. *NLN Publications*, 15–2233, 33–59. <https://doi.org/10.1177/1077800407308907>
- Jackson, L. (2017). 'Asian' Perspectives on Education for Sustainable Development. *Educational Philosophy and Theory*, 49(5), 473–479. <https://doi.org/10.1080/00131857.2016.1223501>
- Jaspar JC. (2008). *Teaching for Sustainable Development: Teachers' Perceptions*. 5–26.

- Kemendikbud. (2017). Modul Penyusunan Soal Higher Order Thinking Skill (HOTS). *Journal of Chemical Information and Modeling*, 53(9), 1689–1699.
- Kesianye, S. K. (2015). The Three Perspectives of Integrating Assessment and Instruction in the Learning of School Mathematics. *Journal of Education and Practice*, 6(19), 212–214. [http://0-search.ebscohost.com.librarycatalog.fresno.edu/login.aspx?direct=true&db=eric&AN=EJ1079550&site=ehost-live](http://0-search.ebscohost.com/librarycatalog/fresno.edu/login.aspx?direct=true&db=eric&AN=EJ1079550&site=ehost-live)
- Khan, S. N. (2014). Qualitative Research Method: Grounded Theory. *International Journal of Business and Management*, 9(11). <https://doi.org/10.5539/ijbm.v9n11p224>
- Krulik, S., & Rudnick, J. . (1999). *novative tasks to improve critical and creative thinking skills*. In Lee V. Stiff & Frances R Curcio (Eds). *from Developing Mathematical reasoning in Grades K - 12*. The National Council of Teachers of Mathematics.
- Leikin, R., Berman, A., & Koichu, B. (2019). Teaching the Mathematically Gifted: an Attempt at a Historical Analysis. In *Creativity in Mathematics and the Education of Gifted Students*. https://doi.org/10.1163/9789087909352_003
- Lev-Zamir, H., & Leikin, R. (2011). Creative mathematics teaching in the eye of the beholder: Focusing on teachers' conceptions. *Research in Mathematics Education*, 13(1), 17–32. <https://doi.org/10.1080/14794802.2011.550715>
- MacMath, S., Wallace, J., & Chi, X. (2010). Curriculum Integration: Opportunities to Maximize Assessment as, of, and for Learning. *McGill Journal of Education*, 44(3), 451–465. <https://doi.org/10.7202/039949ar>
- Mann, E. L., & Ph, D. (2005). *Mathematical Creativity and School Mathematics : Indicators of Mathematical Creativity in Middle School Students*.
- McGregor, D. (2007). *Developing Thinking Developing learning: a guide to thinking skills in education*.
- Mckeown, R. (2002). *ESD Toolkit version 2*. 1–142. http://www.esdtoolkit.org/esd_toolkit_v2.pdf
- Ministry of Education, O. (2010). Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools. *Growing Success*.
- Mogensen, F., & Schnack, K. (2010). The action competence approach and the “new” discourses of education for sustainable development, competence and quality criteria. *Environmental Education Research*, 16(1), 59–74. <https://doi.org/10.1080/13504620903504032>
- Munandar, S. C. U. (1987). *Creativity and Education*.

- Nicol, D., & Macfarlane-Dick, D. (2006). Rethinking Formative Assessment in HE: a Theoretical Model and Seven Principles of Good Feedback Practice . *Higher Education Academy Accessed*, 8(i), 1–9. http://business.heacademy.ac.uk/assets/York/documents/ourwork/tla/assessment/web0015_rethinking_formative_assessment_in_he.pdf
- Niss, M., & Højgaard, T. (2011). Competencies and Mathematical Learning Ideas and inspiration for the development of mathematics teaching and learning in Denmark. *IMFUFA Tekst, Roskilde University, Denmark*, 485(485), 1–207.
- Norman, D. et all. (2005). *The Sage Handbook of Qualitative Research Third Edition*.
- Prihantoro, A. (2021). *AoEJ: Academy of Education Journal Volume 12 Nomor 1, Januari 2021 Petuah Pendidikan Kewarganegaraan dalam Kontestasi Politik*. 12, 39–47.
- Qutoshi, S. B. (2018). *Journal of Education and Educational Development Discussion Phenomenology: A Philosophy and Method of Inquiry*. 5(1), 215–222.
- Renert, M. (2011). FLM Publishing Association Mathematics for Life: SUSTAINABLE MATHEMATICS EDUCATION. *Jstor*, 31(1), 20–26.
- Ridgway, J., Mccusker, S., Pead, D., Ridgway, J., Mccusker, S., Pead, D., Review, L., & Nesta, E. A. (2007). Literature Review of E-assessment Literature Review of E-assessment. *Bristol*, 44(February), 1–52. <http://www.worldclassarena.net/doc/file14.pdf>
- Ritter, S. M., Mostert, N., Treffinger, D. J., Young, G. C., Selby, E. C., Shepardson, C., Sener, N., & Tas, E. (2002). Assessing Creativity: A Guide for Educators. In *Journal of Education and Learning* (Issue December). <http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED505548%0Ahttp://dx.doi.org/10.1007/s41465-016-0002-3>
- Rohim, M. A., Dafik, Slamin, & Sucianto, B. (2019). The analysis of implementation of research based learning implementation in developing the students' creative thinking skill in solving dominating set problem. *IOP Conference Series: Earth and Environmental Science*, 243(1). <https://doi.org/10.1088/1755-1315/243/1/012143>
- Rosentein, J. G., Caldwell, J. H., & Crown, W. D. (1996). *New Jersey mathematics curriculum framework: Standard 6 - Number sense*. 2011(January 1). <http://www.state.nj.us/education/frameworks/math/math4.pdf>
- Sandham, L., & Burger, R. (2013). *Assessing as leer*.

- Shriki, A. (2010). Working like real mathematicians: Developing prospective teachers' awareness of mathematical creativity through generating new concepts. *Educational Studies in Mathematics*, 73(2), 159–179. <https://doi.org/10.1007/s10649-009-9212-2>
- Shriki, A. (2013). A Model for Assessing the Development of Students' Creativity in the Context of Problem Posing. *Creative Education*, 04(07), 430–439. <https://doi.org/10.4236/ce.2013.47062>
- Sipayung, T. N., Imelda, Siswono, T. Y. E., & Masriyah. (2021). The preliminary study of students' creative problem-solving ability. *Journal of Physics: Conference Series*, 1836(1). <https://doi.org/10.1088/1742-6596/1836/1/012052>
- Siswono, T. Y. E. (2010). Leveling Student's Creativity in Solving and Posing Mathematical Problem. *IndoMS. J.M.E*, 1(1), 17–40.
- Sriraman, B. (2005). Are Giftedness and Creativity Synonyms in Mathematics? *Journal of Secondary Gifted Education*, 17(1), 20–36. <https://doi.org/10.4219/jsge-2005-389>
- Sriraman, B., & Hwa Lee, K. (2011). *The Elements of Creativity and Giftedness in Mathematics*. Sense Publisher.
- Sugiyono. (2017). *Metode Penelitian Kualitatif*. Alfabeta.
- Tilbury, D., & Wortman, D. (2004). *Engaging people in sustainability, Commission on Education and Communication*.
- Torrance, E. P., & Safter, H. T. (1999). *Making the Creative Leap Beyond*. Creative Education Foundation Press.
- Torrance, H. (2007). Assessment as learning? How the use of explicit learning objectives, assessment criteria and feedback in post-secondary education and training can come to dominate learning. *Assessment in Education: Principles, Policy and Practice*, 14(3), 281–294. <https://doi.org/10.1080/09695940701591867>
- UNESCO. (2005). Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability. *Education for Sustainable Development in Action*, 2, 44.
- UNESCO. (2006). *Framework for the UN DESD International Implementation Scheme*.
- UNESCO MGIEP. (2017). *Textbooks for Sustainable Development*. 188. <http://unesdoc.unesco.org/images/0025/002599/259932e.pdf>
- Venetia, K. (2016). *Could Student 's Evaluation be a Pleasant and Effective*

- Vintere, A., & Briede, B. (2016). Engineers' mathematics education in the context of sustainable development. *Engineering for Rural Development, 2016-Janua*, 1121–1127.
- Volante, L. (2010). Assessment of, for, and as Learning within Schools: Implications for Transforming Classroom Practice. *Action in Teacher Education, 31*(4), 66–75. <https://doi.org/10.1080/01626620.2010.10463536>
- Waterloo Region District School Board. (2013). *Assessment , Evaluation and Reporting Handbook*. 1–31.
- WCED. (1988). World commission on environment and development: our common future. In *Revue Juridique de l'Environnement* (Vol. 13, Issue 4, pp. 527–528). Oxford University Press. <http://unesdoc.unesco.org/images/0025/002599/259932e.pdf>
- Widiati, I., & Juandi, D. (2019). Philosophy of mathematics education for sustainable development. *Journal of Physics: Conference Series, 1157*(2). <https://doi.org/10.1088/1742-6596/1157/2/022128>
- Wolf, K., Dunlap, J., & Stevens, E. (2012). Ten Things Every Professor Should Know about Assessment. *Journal of Effective Teaching, 12*(2), 65. <http://connection.ebscohost.com/c/articles/82602328/ten-things-every-professor-should-know-about-assessment>
- Zulfia. (2016). *Peningkatan kemampuan berpikir kreatif matematis dan motivasi siswa sekolah menengah pertama melalui penerapan pendekatan problem solving*. Universitas Syah Kuala.