SURVEI *CROSS-SECTIONAL* MENGENAI RESILIENSI DAN LITERASI MATEMATIS SISWA KELAS VIII MADRASAH TSANAWIYAH DI LOMBOK TIMUR MENGGUNAKAN PEMODELAN RASCH DAN ANALISIS MULTIVARIAT

DISERTASI

diajukan untuk memenuhi sebagian persyaratan untuk memperoleh gelar Doktor Pendidikan Matematika

oleh

Shahibul Ahyan
NIM 1707662

PROGRAM STUDI PENDIDIKAN MATEMATIKA
FAKULTAS PENDIDIKAN MATEMATIKA DAN IPA
UNIVERSITAS PENDIDIKAN INDONESIA
2023

SURVEI *CROSS-SECTIONAL* MENGENAI RESILIENSI DAN LITERASI MATEMATIS SISWA KELAS VIII MADRASAH TSANAWIYAH DI LOMBOK TIMUR MENGGUNAKAN PEMODELAN RASCH DAN ANALISIS MULTIVARIAT

Oleh

Shahibul Ahyan

Sebuah disertasi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Doktor Pendidikan (Dr.) pada Program Studi Pendidikan Matematika

Universitas Pendidikan Indonesia
Januari 2023

HALAMAN PENGESAHAN

SHAHIBUL AHYAN

SURVEI *CROSS-SECTIONAL* MENGENAI RESILIENSI DAN LITERASI MATEMATIS SISWA KELAS VIII MADRASAH TSANAWIYAH DI LOMBOK TIMUR MENGGUNAKAN PEMODELAN RASCH DAN ANALISIS MULTIVARIAT

Disetujui dan Disahkan oleh Tim Penguji Disertasi untuk memenuhi sebagian persyaratan untuk memperoleh gelar Doktor Pendidikan Matematika,

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

Dr. H. Dadang Juandi, M.Si.
Ko-promotor merangkap Sekretaris

Dr. Bambang Avip Priatna Martadiputra, M.Si.
Anggota Penguji

Prof. Dr. H. Nanang Priatna, M.Pd.
Anggota Penguji

Prof. Dr. Budi Nurani Ruchjana, MS.
Anggota Penguji dari Luar Universitas

Mengetahui,
Ketua Departemen Pendidikan Matematika,

Dr. H. Dadang Juandi, M.Si.
NIP. 19640117 1992 02 1001

ABSTRAK

Shahibul Ahyan (2023). Survei *Cross-Sectional* Mengenai Resiliensi dan Literasi Matematis Siswa Kelas VIII Madrasah Tsanawiyah di Lombok Timur Menggunakan Pemodelan Rasch dan Analisis Multivariat

Literasi matematis menjadi salah satu kompetensi penting bagi siswa. Dengan literasi matematis siswa diharapkan mampu menggunakan kompetensi matematis yang dimiliki dalam memecahkan permasalahan yang dihadapi sehari-hari. Literasi matematis dipengaruhi oleh faktor internal dan eksternal siswa itu sendiri sehingga setiap siswa memiliki tingkat literasi matematis yang berbeda-beda. Salah satu faktor internal yang mempengaruhi literasi matematis siswa adalah sikap positif siswa dalam belajar matematika. Lee dan Johnston-Wilder tahun 2010 berhasil mengembangkan skala untuk mengukur sikap positif seseorang dalam belajar matematika yang dikenal sebagai skala resiliensi matematis (*mathematical resilience scale*). Berkaitan dengan hal tersebut, penelitian ini bertujuan untuk menghasilkan skala resiliensi matematis dan soal literasi matematis yang valid, praktis, dan efektif. Disamping itu juga peneliti ingin mengetahui profil resiliensi dan literasi matematis siswa, dan bagaimana hubungan antara resiliensi matematis dan literasi matematis siswa itu sendiri. Penelitian ini menggunakan penelitian *cross-sectional survey* pada 1.221 siswa (laki-laki = 653, perempuan = 658) kelas VIII Madrasah Tsanawiyah yang tersebar pada 24 MTs di 17 kecamatan di Lombok Timur, Nusa Tenggara Barat. Ada tiga tahapan utama yang dilakukan pada penelitian ini yaitu *expert review* dan *pre-testing, pilot study*, dan *field study*. Data penelitian dianalisis menggunakan pemodelan *Rasch*, *Exploratory Factor Analysis* (EFA), *Confirmatory Factor Analysis* (CFA), dan *Structural Equation Modeling* (SEM). Hasil penelitian menunjukkan bahwa sebesar 49,8% siswa memiliki resiliensi matematis tinggi serta 7 dari 10 siswa memiliki literasi matematis rendah. Hasil penelitian juga menunjukkan bahwa resiliensi dan literasi matematis siswa perempuan lebih baik dibandingkan siswa laki-laki. Disamping itu, dihasilkan 22 item skala resiliensi matematis yang valid, reliabel, dan efektif mengukur resiliensi matematis siswa, serta dihasilkan juga 7 soal literasi matematis yang valid, reliabel, dan efektif mengukur literasi matematis siswa. Hasil penelitian juga menunjukkan bahwa tidak ada hubungan yang signifikan antara resiliensi matematis dan literasi matematis siwa kelas VIII MTs di Lombok Timur.

Kata Kunci: analisis faktor eksploratori, analisis faktor konfirmatori, analisis multivariat, literasi matematis, madrasah tsanawiyah, pemodelan Rasch, pemodelan persamaan struktural, resiliensi matematis, survei *cross-sectional*

ABSTRACT

Shahibul Ahyan (2023). Cross-Sectional Survey of Mathematical Resilience and Mathematical Literacy of Eighth-Grade Students of *Madrasah Tsanawiyah* in *Lombok Timur* Using Rasch Modeling and Multivariate Analysis

Mathematical literacy is one of the essential competencies for students. With mathematical literacy, students are expected to be able to use their mathematical competence in solving their daily problems. Mathematical literacy is influenced by internal and external factors of the students themselves, so each student has a different level of mathematical literacy. One of the internal factors that influence students' mathematical literacy is the positive attitude of students toward learning mathematics. Lee and Johnston-Wilder, in 2010, succeeded in developing a scale to measure a person's positive attitude in learning mathematics, known as the mathematical resilience scale. This study aimed to produce valid, practical, and effective mathematical resilience scales and mathematical literacy problems. In addition, the researcher also wanted to know the profile of students' resilience and mathematical literacy and the relationship between students' mathematical resilience and their mathematical literacy. This study was conducted as a cross-sectional survey of 1,221 eighth-grade students (male = 653, female = 658) from 24 *Madrasah Tsanawiyah* (Islamic Junior Secondary School) located in 17 sub-districts in *Lombok Timur*, *Nusa Tenggara Barat*. This study carried out three main stages: expert review and pre-testing, pilot study, and field study. The data were analyzed using Rasch modeling, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). The results show that 49.8% of the students had high mathematical resilience, and 7 out of 10 had low mathematical literacy. The results also show that female students' resilience and mathematical literacy are better than male students. In addition, 22 valid, reliable, and effective mathematical resilience scale items are produced to measure students' mathematical resilience, as well as seven mathematical literacy problems that are valid, reliable, and effective in measuring students' mathematical literacy. The results also show no significant relationship between the mathematical resilience and the mathematical literacy of eighth-grade *Madrasah Tsanawiyah* students in *Lombok Timur*.

Keywords: confirmatory factor analysis, cross-sectional survey, exploratory factor analysis, *madrasah tsanawiyah*, mathematical resilience, multivariate analysis, Rasch model, mathematical literacy, structural equation modeling

DAFTAR ISI

Halaman sampul i
Halaman Hak Cipta ii
Halaman Pengesahan iii
Halaman Pernyataan Keaslian dan Bebas Plagiarisme iv
Ucapan Terima Kasih v
Abstrak viii
Kata Pengantar x
Daftar Isi xii
Daftar Tabel xv
Daftar Gambar xx
Daftar Lampiran xxii
BAB I. PENDAHULUAN 1
1.1. Latar Belakang Penelitian 1
1.2. Tujuan Penelitian 10
1.3. Rumusan Masalah 11
1.4. Manfaat Penelitian 12
1.5. Signifikansi Penelitian 13
1.6. Definisi Operasional 15
BAB II. KAJIAN PUSTAKA 20
2.1. Literasi Matematis 20
2.2. Resiliensi Matematis 45
2.3. Hubungan Resiliensi Matematis dan Literasi Matematis 53
2.4. *Factor Analysis* dan *Structural Equation Modeling* 54
2.5. *Rasch Model* 57
2.6. Hipotesis Penelitian 62
BAB III. METODE PENELITIAN 64
3.1. Desain Penelitian 64
3.2. Populasi dan Sampel Penelitian 66
3.3. Instrumen Penelitian 73
3.4. Prosedur Penelitian 78

3.5. Analisis Data 145
BAB IV. HASIL PENELITIAN DAN PEMBAHASAN 153
4.1. Hasil Penelitian 153
4.1.1. Statistik Deskriptif Resiliensi Matematis …… 154
4.1.2. Statistik Deskriptif Literasi Matematis …….. 167
4.1.3. Validitas Skala Resiliensi Matematis ……. 179
4.1.4. Reliabilitas Skala Resiliensi Matematis …….. 199
4.1.5. Validitas Soal Literasi Matematis …….. 202
4.1.6. Reliabilitas Soal Literasi Matematis …….. 213
4.1.7. Efektifitas Skala Peringkat Skala Resiliensi Matematis … 216
4.1.8. Efektifitas Item-Item Skala Resiliensi Matematis …… 218
4.1.9. Efektifitas Butir Soal Literasi Matematis …….. 219
4.1.10. Kesesuaian Respon Siswa pada Skala Resiliensi Matematis terhadap Model Rasch …… 220
4.1.11. Kesesuaian Jawaban Siswa pada Soal Literasi Matematis terhadap Model Rasch …… 222
4.1.12. Perbedaan Rata-Rata Resiliensi Matematis Siswa Berdasarkan Gender ……. 224
4.1.13. Perbedaan Rata-Rata Literasi Matematis Siswa berdasarkan Gender ……. 225
4.1.14. Hubungan Resiliensi Matematis terhadap Literasi Matematis Siswa …….. 226
4.1.15. Hubungan Resiliensi Matematis terhadap Literasi Matematis Siswa dengan Moderator Gender …… 229
4.1.16. Ringkasan Hasil Penelitian …… 232
4.2. Pembahasan …… 235
4.2.1. Profil Resiliensi Matematis Siswa …….. 235
4.2.2. Profil Literasi Matematis Siswa ……. 238
4.2.3. Validitas dan Reliabilitas Skala Resiliensi Matematis ….. 241
4.2.4. Validitas dan Reliabilitas Soal Literasi Matematis ……. 245
4.2.5. Efektifitas Skala Peringkat Skala Resiliensi Matematis … 248
4.2.6. Efektifitas Item-Item Skala Resiliensi Matematis ……. 248

4.2.7. Efektifitas Butir Soal Literasi Matematis …… 249
4.2.8. Kesesuaian Respon Siswa pada Skala Resiliensi Matematis terhadap Model Rasch …….. 250
4.2.9. Kesesuaian Jawaban Siswa pada Soal Literasi Matematis terhadap Model Rasch …….. 250
4.2.10. Hubungan Resiliensi Matematis terhadap Literasi Matematis Siswa ……. 251
BAB V. KESIMPULAN, IMPLIKASI, DAN REKOMENDASI ……. 254
5.1. Kesimpulan …… 254
5.2. Implikasi …….. 256
5.3. Rekomendasi …… 257
DAFTAR PUSTAKA 259
LAMPIRAN-LAMPIRAN ……. 277

DAFTAR PUSTAKA

Ahyan, S., Zulkardi, & Darmawijoyo. (2014). Developing mathematics problems based on PISA level of change and relationships content. *Journal on Mathematics Education*, *5*(1), 47-56. https://doi.org/10.22342/jme.5.1.1448.47-56.

Ahyan, S., Turmudi, & Juandi, D. (2019). Mathematical literacy of ninth-grade students in solving PISA mathematics problems. *International Journal of Innovation, Creativity and Change*, *5*(6), 483-495.

Akker, Jan van den, Gravemeijer, Koeno., McKenney, Susan, & Nieveen. (2006). *Educational Design Research*. London: Routledge Taylor and Francis Group. https://doi.org/10.4324/9780203088364.

Alivernini, F., Manganelli, S., & Lucidi, F. (2016). The last shall be the first: Competencies, equity and the power of resilience in the Italian school system. *Learning and Individual Differences*, 51, 19–28. https://doi.org/10.1016/j.lindif.2016.08.010

Allen. M. J., & Yen, W. M. (2002). *Introduction to measurement theory*. Prospect Heights, IL: Waveland Press.

Asnawi, A., Awang, Z., Afthanorhan, A., Mohamad, M., & Karim, F. (2019). The influence of hospital image and service quality on patients' satisfaction and loyalty. *Management Science Letters*, *9*(6), 911-920.

Awang, Z. (2012). *Research methodology and data analysis*. Universiti Teknologi MARA Press.

Awang, Z. (2015). SEM Made Simple: A Gentle Approach to Learning Structural Equation Modelling. *Bandar Baru Bangi, MPWS Rich Resources*.

Awang, Z, Lim, SH. & Zainudin, NFS. (2018). Pendekatan Mudah SEM- Structural Equation Modelling. *Bandar Baru Bangi, MPWS Rich Resources*.

Awofala, A. O. A. (2021). A validation of the mathematical resilience scale for twelfth graders through confirmatory factor analysis and its relationship with achievement in mathematics in Nigeria. Springer Nature Social Sciences, 1:204, 1-17. https://doi.org/10.1007/s43545-021-00212-8

Aydin, S. (2018). Math resilience and test anxiety of students: Accounting and task department sample. *The Turkish Online Journal of Educational Technology, special issue (December 2018),* 264 – 272.

Aziz, M. I., Afthanorhan, A., & Awang, Z. (2016). Talent development model for a career in Islamic Banking Institutions: A SEM approach. Cogent Busines and Management 3(1), 1186259.

Babonea, A. M., & Voicu, M. C. (2011). Questionnaires pretesting in marketing research. *Challenges of the Knowledge Society*, 1, 1323-1330.

Bahkia, A.S., Awang, Z., Rahlin. N.A., Zulkifli, A.R. (2020). The Importance of Supportive Leadership in the Sewerage Operation Industry: A case of Indahwater Konsortium Private IWK). Humanities & Social Science Reviews. Humanities and Social Science Review. 8(3), 2020, 149-162. https://doi.org/10.18510/hssr.2020.8317.

Bailey, K. (2008). *Methods of social research, 4th edition*. The Free Press.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44 (9), 1175-1184.

Bansilal, S. (2013). Unpacking Mathematical Literacy Teachers' understanding of the concept of inflation. *African Journal of Research in Mathematics, Science and Technology Education*, 15(2), 179-190. https://doi.org/10.1080/10288457.2011.10740711.

Bansilal, S. & Mkhwanazi, T. W. (2014). Mathematcal Literacy teachers' engagement withcontextualised income tax calculatons. *Pythagoras, 35*(2), 1-10. https://doi.org/10.4102/pythagoras.v35i2.246.

Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, *3*(1), 133-153.

Brennan, L., Binney, W., Parker, L., Aleti, T., & Nguyen, D. (2014). *Social marketing and behaviour change: Models, theory, and applications*. Edward Elgar Publishing.

Boone, W. J., Staver, J. R., & Yale, M. S. (2014). *Rasch analysis in the human science*. Springer.

Brentari, E. & Golia, S. (2007). Unidimensionality in the Rasch model: How to detect and interpret. *STATISTICA, 67*(3), 253-261.

Brown, T. A. (2015). *Confirmatory factor analysis for applied research, second edition*. The Guilford Press.

Byrne, B.M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming (multivariate applications)*. Routledge.

Cheung, K.-C. (2016). The effects of resilience in learning variables on mathematical literacy performance: a study of learning characteristics of the academic resilient and advantaged low achievers in Shanghai, Singapore, Hong Kong, Taiwan and Korea. *Educational Psychology*, 1-18. https://doi.org/10.1080/01443410.2016.1194372

Chirkina, T., Khavenson, T., Pinskaya, M., & Zvyagintsev, R. (2020). Factors of student resilience obtained from TIMSS and PISA longitudinal studies. *Issues in Educational Research, 30*(4), 1245–1263.

Chouinard, R., Karsenti, T. & Roy, N. (2007). Relations among competence beliefs, utility value, achievement goals and effort in mathematics. *British Journal of Educational Psychology*, *77*(3), 501-517.

Christiansen, I. M. (2007). Mathematical literacy as a school subject: Mathematical gaze or livelihood gaze? *African Journal of Research in SMT Education*, *11*(1), 91-105. https://doi.org/10.1080/10288457.2007.10740614.

Chun, H., & Dickson, G. (2011). A psychoecological model of academic performance among Hispanic adolescents. *Journal of youth and adolescence*, *40*(12), 1581-1594.

Chye, S. (2015). Student assessment: Potentials and limitations. Dalam Shin, L. W., Yuanshan, C., & Tan, K., *Assessment and learning in schools*. Pearson Education South Asia Pte Ltd.

Cleary, T. J., & Kitsantas, A. (2017). Motivation and self-regulated learning influences on middle school mathematics achievement. *School Psychology Review*, *46*(1), 88-107.

Comer, J. S. & Kendall, P. C. (2013). *The Oxford handbook of research strategies for clinical psychology*. Oxford University Press.

Comrey, A., Reise, S. & Waller, N. (2000). Factor analysis and scale revision. *Psychological Assessment*, *12*(3), 287-297. https://doi.org/10.1037/1040-3590.12.3.287.

Cresswel, J. W. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. SAGE Publications.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.

DeCoster, J. (1998). *Overview of factor analysis*. Diakses dari http://www.stat-help.com/notes.html.

Demaio, T., & Landreth, A. (2004). Examining expert reviews as a pretest method. In *Conference on Questionnaire Evaluation Standards*-QUEST 2003 (Vol. 9, pp. 60-73). DEU.

Dewantara, A. H., Zulkardi, & Darmawijoyo. (2015). Assessing seventh graders' mathematical literacy in solving PISA-like tasks. *Journal on Mathematics Education, 6*(2), 39-49. https://doi.org/10.22342/jme.6.2.2163.117-128.

Dweck, C. S. (2000). *Self-Theories*. Philadelphia: Psychology Press.

de Alwis, M. P., Martire, R. L., Äng, B. O., & Garme, K. (2016). Development and validation of a web-based questionnaire for surveying the health and working conditions of high-performance marine craft populations. *BMJ Open*, 6(6), e011681.

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

de Lange, J. (2003). Mathematics for literacy. In B. L. Madison, & L. A. Steen (Eds.), *Quantitative literacy: Why numeracy matters for schools and colleges*. Princeton, NJ: National Council on Education and the Disciplines.

de Lange, J. (2014). *Mathematical literacy for living from OECD-PISA perspective*. The Netherlands: Freudenthal Institute.

Dweck, C. (2015). Carol Dweck Revisits the 'Growth Mindset'. *Education Week*. Diakses dari http://www.edweek.org/ew/articles/2015/09/23/carol-dweck-revisits-the-growth-mindset.html?cmp=cpc-goog-ew-growth+mindset&ccid=growth+mindset&ccag=growth+mindset&cckw=%2Bgrowth%20%2Bmindset&cccv=content+ad&gclid=Cj0KEQiAnvfDBRCXrabLl6-6t-0BEiQAW4SRUM7nekFnoTxc675qBMSJycFgwERohguZWVmNDcSUg5gaAk3I8P8HAQ.

Dunn, R., Dunn, K. & Price, G. E. (1979). *Identifying Individual Learning Styles*. Diagnosing and prescribing programs. Reston, VA: National Association of Secondary School Principals, 39-54.

Eckes, T. (2009). *Many-facet Rasch measurement*. TestDaF Institute, University of Bochum. https://www.researchgate.net/publication/228465956_Many-facet_Rasch_measurement

Eckes, T. (2011). *Introduction to many-facet Rasch measurement: Analyzing and evaluating rater-mediated assessments.* Frankfurt am Main: Peter Lang.

Ewell, P.T. (2001). Numeracy, mathematics, and general education. Dalam L.A. Steen (Ed.), *Mathematics and Democracy: The case for quantitative literacy* (h. 37-48). Princeton, NJ: National Council on Education and the Dissciplines.

Field, A. (2009). *Discovering statistics using SPSS, 3rd edition*. London: Sage Publications.

Fointuna, D. W., Kaluge, A. H., & Fernandez, A. J. (2020). An analysis of mathematical literacy of state junior high school students in Kupang. *Journal of Physics: Conference Series*, *1422*(1), 012025. https://doi.org/10.1088/1742-6596/1422/1/012025

Forman, S. L., & Steen, L, A. (2000). *Beyond eighth grade: Functional mathematics for life and work. Berkeley*. CA: NCRVE Materials Distribution Service. National Center for Research in Vocational Education.

Fowler, F. J. (2014) *Survey research method, fifth edition*. United States of America: SAGE Publications, Inc.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). How to design and evaluate research in education (8th ed). McGraw-Hill Higher Education.

Freudenthal, H. (1991). *RME—Realistic Mathematics Education. Revisiting mathematics education: China lectures*. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Frey, B. B. (2018). Rasch Model. In *The SAGE encyclopedia of educational research, measurement, and evaluation*. SAGE.

Gaskin, C. J., & Happell, B. (2014). On exploratory factor analysis: A review of recent evidence, an assessment of current practice, and recommendations for future use. *International Journal of Nursing Studies*, 51(3), 511-521.

Gatabi, A. R., Stacey, K., & Gooya, Z. (2012). Investigating grade nine textbook problems for characteristics related to mathematical literacy. *Mathematics Education Research Journal, 24:* 403-421. https://doi.org/10.1007/s13394-012-0052-5.

Gellert, U., Jablonka, E. & Keitel, C. (2001). Mathematical literacy and common sense in mathematics education: An international perspective. Dalam B. Atweh, H. Forgasz & B. Nebres (Eds.), *Sociocultural research on mathematics education*, (hal. 57-74). USA: Lawrence Erlbaum Associates, Inc., Publishers.

Goodall, J., & Johnston-Wilder, S. (2015). Overcoming mathematical helplessness and developing mathematical resilience in parents: An illustrative case study. *Creative Education*, *6*(5), 526-535.

Gorsuch, R. L. (1990). Common factor analysis versus component analysis: Some well- and little-known facts. *Multivariate Behavioral Research*, 25(1), 33-39.

Gravemeijer, K., & Van Eerde, D. (2009). Design research as a means for building a knowledge base for teaching in mathematics education. *The Elementary School Journal*, *109*(5). https://doi.org/10.1086/596999.

Grealish, D. (2004). Pre-testing questionnaires: The New Zealand experience. In *Conference on Questionnaire Evaluation Standards*-QUEST 2003 (Vol. 9, pp. 37-42). DEU.

Green, S. B., & Salkind, N. J. (2004). *Using SPSS for windows and macintosh: analyzing and understanding data (4th).* Upper Saddle River, NJ: Person Prentice Hall.

Hadi, S. (2017). *Pendidikan matematika realistik: Teori, pengembangan, dan implementasinya*. Rajawali Pers.

Hair, J. F. J., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* Sixth Edition. Prentice Hall.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis, seventh edition*. Pearson.

Handarini, D. M. (2019). Kontribusi faktor-faktor non-kognitif pada prestasi belajar siswa sekolah menengah pertama. *Psychology, Evaluation, and Technology in Educational Research*, *1*(2), 62-72.

Hazzi, O., & Maldaon, I. (2015). A pilot study: Vital methodological issues. *Business: Theory and Practice*, 16(1), 53-62.

Hendriana, H., Rohaeti, E. E., & Sumarmo, U. (2017). *Hard skill dan soft skill matematik siswa*. Bandung: PT. Refika Aditama.

Hernandez-Martinez, P. & Williams, J. (2013). Against the odds: Resilience in mathematics students in transition. *British Educational Research Journal, 39*(1), 45-59. https://doi.org/10.1080/01411926.2011.623153.

Hutauruk, A. JB., & Priatna, N. (2017). Mathematical resilience of mathematics education students. *IOP Conference Series: Journal of Physics: Conference Series 895*, 012067. https://doi.org/10.1088/1742-6596/895/1/012067.

Ikart, E. M. (2018). Questionnaire pretesting methods: A comparison of cognitive interviewing and respondent debriefing vis-à-vis the study of the adoption of decision support systems by knowledge workers. *International Journal of Business & Information*, 13(2).

Jablonka, E. (2003). Mathematical literacy. In A.J. Bishop, M.A. Clements, C. Keitel, J. Kilpatrick, & F.K, S. Leung (Eds.), *Second international handbook of mathematics education* (p. 75-102). Berlin: Kluwer Academic Publishers.

Jablonka, E. & Niss, M. (2014). Mathematical literacy. In S. Lerman, B. Sriraman, E. Jablonka, Y. Shimizu, M. Artigue, R. Even, R. Jorgensen, & M. Graven (eds.), *Encyclopedia of Mathematics Education* (p. 391-396). Dordrecht: Springer.

James, C., Wandix White, D., Waxman, H., Rivera, H., & Harmon, W. (2021). Remixing resilience: A critical examination of urban middle school learning environments among resilient African American learners. *Urban Education*, https://doi.org/10.1177/0042085921991632

Jannah, S. L., Fachrudin, A. D., & Ayuningtyas, N. (2019). *Profil literasi matematis siswa SMPN 2 Krembung dalam menyelesaikan soal model PISA ditinjau dari jenis kelamin*. https://repository.stkippgri-sidoarjo.ac.id/375/1/1431077%20-%20siti%20lailatul%20jannah.pdf

Johnston-Wilder, S. (2013). *Measuring Mathematical Resilience: An Application of the Construct of Resilience to the Study of Mathematics*. Diakses dari https://www.nationalnumeracy.org.uk/sites/default/files/wrap_johnston_aera_paper.pdf.

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

Johnston-Wilder, S. & Mackrell, K. (2019). Nonviolent communication, compassion and mathematical resilience. *Proceedings of the British Society for Research into Learning Mathematics*, 39(2), June 2019

Kahveci, G. (2017). Conjoint behavioral concultation, cognitive behavioral therapy and schema-based instruction: enhancing mathematical resilience. EURASIA Journal of Mathematics Science and Technology education, 13(8), 5543-5556. https://doi.org/10.12973/eurasia.2017.00850a.

Kaur, B. & Areepattamannil, S. (2012). Influences of metacognitive and self-regulated learning strategies for reading on mathematical literacy of adolescents in Australia and Singapore. In J. Dindyal, L. P. Cheng & S. F. Ng (Eds.), *Mathematics education: Expanding horizons (Proceedings of the 35th annual conference of the Mathematics Education Research Group of Australasia)*. Singapore: MERGA.

Kementerian Agama [Kemenag]. (2012). *Analisis dan interpretasi data pada Pondok Pesantren, Madrasah Diniyah (Madin), Taman Pendidikan Qur'an(TPQ) tahun pelajaran 2011-2012*. Jakarta: Kemenag.

Kementerian Agama [Kemenag]. (2018). *Jumlah madrasah negeri masih minim*. Diakses dari https://www.republika.co.id/berita/pf10gi366/jumlah-madrasah-negeri-masih-minim#:~:text=Pelaksana%20Harian%20Kepala%20Balai%20Litbang,persennya%20di%20antaranya%20berstatus%20swasta.

Kementerian Agama [Kemenag]. (2019). *Pangkalan Data Pondok Pesantren*. Diakses dari https://ditpdpontren.kemenag.go.id/pdpp/search.

Kementerian Pendidikan dan Kebudayaan [Kemdikbud]. (2016). *Gerakan literasi nasional.* Jakarta: Kemdikbud. Diakses dari http://gln.kemdikbud.go.id/glnsite/.

Kementerian Pendidikan dan Kebudayaan [Kemdikbud]. (2021). Asesmen Kompetensi Minimum Sebagai Bagian dari Asesmen Nasional 2021. Jakarta: Kemdikbud. Diakses dari http://ditsmp.kemdikbud.go.id/asesmen-kompetensi-minimum-sebagai-bagian-dari-asesmen-nasional-2021/.

Kline, R. B. (2010). *Promise and pitfalls of structural equation modeling in gifted research*.

Kontaş, H. & Özcan, B. (2022). Explaining midle school students' mathematical literacy with source of self-efficay, achievement expectation from family, peers, and teachers. *International Journal of Education & Literacy Studies, 10*(1), 198 – 206. https://doi.org/10.7575/aiac.ijels.v.10n.1p.198

Kooken, J., Welsh, M. E., McCoach, D. B., Johnston-Wilder, S., & Lee, C. (2015). Development and validation of the mathematical resilience scale. *Measurement and Evaluation in Counseling and Development*, 49(3), 217–242. https://doi.org/10.1177/0748175615596782

Kridel, C. (2010). *Encyclopedia of curriculum studies (Volume 1)*. SAGE.

Krzywacki, H., Koistinen, L., & Lavonen, J. (2012). Assessment in Finnish mathematics education: Various ways, various needs. *In Proceedings of the 12th International Congress on Mathematical Education*: Topic Study Group 33 (hal. 6661–6670). Seoul, Korea.

Kurniawati, L., Miftah, R., Kadir, & Muin, A. (2021). Student mathematical literacy skill of madrasah in Indonesia with islamic context. *TARBIYA: Journal of Education in Moslem Society, 8*(1), 108 – 118. https://doi.org/10.15408/tjems.v8i1.3184

Lailiyah, S. (2017). Mathematical Literacy Skills of Students' In Term of Gender Differences. *AIP Conference Proceedings 1868*, 050019-1–050019-12. https://doi.org/10.1063/1.4995146.

Lanya, H., Zayyadi, M., Sulfiah, S. K., & Roziq. (2021). Students' mathematical literacy on performance of PISA questions: What is gender correlation? *Jurnal Didaktik Matematika, 8*(2), 222 – 234. https://doi.org/10.24815/jdm.v8i2.20570

LeCompte, M. D. & Schensul, J. J. (1999). Designing and conducting ethnographic research. United Kingdom: AltaMira Press.

Lee, C. & Johnston-Wilder, S. (2010). Mathematical resilience. *Mathematics Teaching*, MT218, pp. 38–41.

Lee, C. & Johnston-Wilter, S. (2013). Learning mathematics: letting the pupils have their say. *Educational Studies in Mathematics, 83*(2), 163-180. https://doi.org/10.1007/s10649-012-9445-3.

Lee, C. & Johnston-Wilder, S. (2014). Mathematical resilience – What is it and why it important? Dalam Chinn, Steve ed. *The Routledge International Handbook of Dyscalculia and Mathematical Learning Difficulties*. Abingdon: Routledge, pp. 337–345.

Lee, C. & Johnston-Wilder, S. (2017). The construct of mathematical resilience. In: *Understanding emotions in mathematical thinking and learning*. Elsevier Inc. Diakses dari https://doi.org/10.1016/B978-0-12-802218-4.00010-8

Lewis-Beck, M., Bryman, A. E., & Liao, T. F. (2003). *The SAGE encyclopedia of social science research methods*. SAGE Publications.

Linacre, J. M., Engelhard, G., Tatum, D. S., & Myford, C. M. (1994). Measurement with judges: Many-faceted conjoint measurement. *International Journal of Educational Research*, *21*, 569–577.

Linacre, J. M. (1989). *Many-facet Rasch measurement*. Chicago: MESA Press.

Long, C., Bansilal, S. & Debba, R. (2014). An investgaton of Mathematcal Literacy assessment supported by an applicaton of Rasch measurement. *Pythagoras, 35*(1), 1-17. https://doi.org/10.4102/pythagoras.v35i1.235.

Lunz, M. E., & Linacre, J. M. (1998). Measurement designs using multifacet Rasch modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 47–77). Mahwah, NJ: Erlbaum.

Mahdiansyah & Rahmawati. (2014). Literasi matematika siswa pendidikan menengah: analisis menggunakan desain tes internasional dengan konteks Indonesia. *Jurnal Pendidikan dan Kebudayaan, 20*(4), 452-469. https://doi.org/10.24832/jpnk.v20i4.158.

Mammarella, I. C., Donolato, E., Caviola, S., & Giofrè, D. (2018). Anxiety profiles and protective factors: A latent profile analysis in children. *Personality and Individual Differences*, 124, 201–208. https://doi.org/10.1016/j.paid.2017.12.017

Martin, H. (2007). *Mathematics literacy*. Reston, VA: National Association of Secondary School Principals. https://doi.org/10.1111/j.1467-9345.2007.00449.x.

Masten, A. & Powell, J. (2003). A resilience framework for research, policy, and practice. Dalam Luthar S, *Resilience and vulnerability: adaptation in the*

context of childhoold adversities. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511615788.003.

McLeod, S. (2010). *Kolb – Learning styl*e. Diakses dari http://cei.ust.hk/files/public/simplypsychology_kolb_learning_styles.pdf.

McNamara, T. F. (1996). *Measuring second language performance*. London: Longman

Mertens, D. M. (2010). *Reseacrh and evaluation in education and psychology*. SAGE.

Meyers, L. S., Gamst, G., & Guarino, A. J. (2013). *Applied Multivariate Research: Design and Interpretation.* Thousand Oaks, CA: Sage Publications, Inc.

Mooi, E., Sarstedt, M., & Mooi-Reci, I. (2017). *Market research: The process, data, and methods using Stata*. Springer.

Mortimore, T. (2007). *Dyslexia and learning style: a practitioner's handbook*. England: John Wiley & Sons Ltd. https://doi.org/10.1002/9780470987940.

Mota, A. I., Oliveira, H, & Henriques, A. (2016). Developing mathematical resilience: students' voice about the use of ICT in classroom. *Electronic Journal of Research in Educational Psychology, 14*(1), 67-88. https://doi.org/10.14204/ejrep.38.15041.

Munro, B. H. (2005). *Statistical methods for health care research*. Lippincott Williams & Wilkins.

Mustika, E., Apriyani, D. C. N., & Qudsiyah, K. (2021). *Profil resiliensi matematis siswa dalam pembelajaran daring pada masa pandemi COVID-19*. Diakses dari https://repository.stkippacitan.ac.id/id/eprint/433/3/ENDAH%20MUSTIKA_PM_AR2021.pdf

Nagasaki, E. (2009). Mathematics education in the perspective of human lifelong: Prospect of mathematical literacy. Dalam prosiding Ronbunhappyoukai of JSME

Nagasaki, E. (2015). Mathematical literacy for living in the highly information-and-technology-oriented in the 21st century: mathematics education from the perspective of human life in society. Dalam S.J. Cho, *Selected regular lecturers from the 12th international congress on mathematical education*.

Switzerland: Springer International Publishing. https://doi.org/10.1007/978-3-319-17187-6_34.

Namikawa, Y. (2012). *Mathematical literacy in recent education in Japan***.** 12th International Congress on Mathematical Education, CEOEX, Korea Selatan.

NCES. (1993). *National adult literacy survey*. Washington D.C.: NCES.

NCTM. (2000). *Principles and standards for school mathematics*. The National Council of Teachers of Mathematics, Inc.

Nizar, H., Putri, R. I. I., & Zulkardi. (2018). Developing PISA-like mathematics problem using the 2018 ASIAN games football and table tennis context. *Journal on Mathematics Education*, *9*(2), 183-194. https://doi.org/10.22342/jme.9.2.5246.183-194.

Nunnally, J.C. (1978). *Psychometric theory*, 2nd edition. McGraw-Hill.

OECD. (1999). *Measuring student knowledge and skills: A new framework for assessment*. OECD Publishing.

OECD. (2010). *PISA 2009 results; Learning trends' Changes in Student Performance Since 2000 (Volume V)*. OECD Publishing.

OECD. (2013a). *PISA 2012 assessment and analytical framework: Mathematics, reading, science, problem solving and financial literacy.* OECD Publishing.

OECD. (2013). *PISA 2012 assessment and analytical framework: Mathematics, reading, science, problem solving and financial literacy*. OECD Publishing. https://doi.org/10.1787/9789264190511-en.

OECD. (2015). *Social and emotional skills: Well-being, connectedness, and success*. OECD Publishing. https://doi.org/10.1787/9789264226159-en.

OECD. (2014). *Are disadvantaged students more likely to repeat grades? PISA in focus.* OECD Publishing.

OECD. (2017). *PISA 2015 assessment and analytical framework: Science, reading, mathematics, Financial literacy, and collaborative problem solving*. OECD Publishing. https://doi.org/10.1787/9789264281820-en.

OECD. (2019). *PISA 2018 results: what students know and can do*. OECD Publishing.

Oktay, A., Dogan, H., Özcan, ZÇ, Dönmez, Ö, & Özdemir, H. (2021). Investigation of academic achievement, selfefficacy and psychological resilience of sixth

grade students starting primary school at different ages. Pegem Journal of Education and Instruction, 11(1), 187–216.

Oktiningrum, W., Zulkardi, & Hartono, Y. (2016). Developing PISA-like mathematics task with Indonesia natural and cultural heritage as context to assess students' mathematical literacy**.** *Journal on Mathematics Education*, *7*(1), 1-8. https://doi.org/10.22342/jme.7.1.2812.1-8.

Olson, K. M. (2010). An examination of questionnaire evaluation by expert reviewers. *Field Methods*, *22*(4), 295-318. https://doi.org/10.1177/1525822x10379795

Olsson, C., Bond, L., Burns, J., Vella-Brodrick, D., & Sawyer, S. (2003). Adolescent resilience: A concept analysis. *Journal of Adolescence*, *26*(1), 1-11. https://doi.org/10.1016/S0140-1971(02)00118-5.

Orrill, R. (2011). Mathematics, numeracy, and democracy. Dalam L.A. Steen (Ed.), *Mathematics and Democracy: The case for quantitative literacy* (h. xiii-xx). Princeton, NJ: National Council on Education and the Dissciplines.

Özberk, EBÜ, Yılmaz, L., & Özberk, E. H. (2018). Investigation of the variables affecting the math achievement of resilient students at school and student level. Education and Science, 43, 1–19. https://doi.org/10.15390/EB.2018.7153

Pajares, F., & Schunk, D. H. (2001). Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. In R. Riding & S. Rayner (Eds.), *Perception* (pp. 239–266). London: Ablex Publishing.

Parker, P. D., Van Zanden, B., & Parker, R. B. (2018). Girls get smart, boys get smug: Historical changes in gender differences in math, literacy, and academic social comparison and achievement. *Learning and Instruction*, *54*, 125-137.

Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Sage.

Phakiti, A., De Costa, P., Plonsky, L., & Starfield, S. (2018). Applied linguistics research: Current issues, methods, and trends. In *The Palgrave handbook of applied linguistics research methodology* (pp. 5-29). Palgrave Macmillan, London.

Phoolka, E. S., & Kaur, N. (2012). Adversity Quotient: A new paradigm to explore. *International Journal of Contemporary Business Studies*, *3*(4), 67-78.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching context. *Journal of Educational Psychology, 95*, 667–686.

Prabawati, M., Herman, T., & Turmudi. (2019). Mathematical literacy skills students of the junior high school in term of gender differences. *Journal of Physics: Conference Series, 1315*(1), 012084. https://doi.org/10.1088/1742-6596/1315/1/012084

Prahmana, R. C. I. (2017). *Design Research: (Teori dan implementasinya: Suatu pengantar)*. PT Rajagrafindo Persada.

Priatna, N., & Prabowo, A. (2021). *Model Rasch untuk analisis instrumen*. UPI Press.

Richey, R. C. & Klein, J. D. (2005). Developmental research methods: creating knowledge from instructional design and development practice. *Journal of Computing in Higher Education, 16*(2), 23-38. https://doi.org/10.1007/BF02961473

Rohmah, S., Kusmayadi, T. A., & Fitriana, L. (2020). Problem solving ability of junior high school students viewed by mathematical resilience. *Universal Journal of Educational Research, 8*(7), 3026 – 3033. https://doi.org/10.13189/ujer.2020.080731

Rokhmah, K. N., Retnawati, H, & Solekhah, P. (2019). Mathematical resilience: Is that affecting the students' mathematics achievement? *Journal of Physics: Conference Series, 1320*(1), 012036. https://doi.org/10.1088/1742-6596/1320/1/012036

Salim & Prajono, R. (2018). Profil kemampuan literasi matematis siswa kelas $VIII_1$ SMP Negeri 9 Kendari. *Indonesian Digital Journal of Mathematics and Education, 5*(9), 594 – 602.

Salkind, N. J. (2010). *Encyclopedia of research design (Volume 1)*. SAGE.

Salsabila. (2021). *Analisis resiliensi matematis ditinjau dari hasil belajar mateamtika siswa SMA*. Diakses dari https://repository.uinjkt.ac.id/dspace/bitstream/123456789/58912/1/%2811170170000047%20Salsabila%20Water%20mark.pdf

Sari, R. H. N. & Wijaya, A. (2017). Mathematical literacy of senior high school students in Yogyakarta. *Jurnal Riset Pendidikan Matematika, 4*(1), 100 – 107. https://doi.org/10.21831/jrpm.v4i1.10649

Sato, H. (2017). The structure of PISA penetration into education policy in Japan and Norway. Dalam *The Impact of the OECD on Education Worldwide (International perspectives on education and society), 31*: 209-230. https://doi.org/10.1108/S1479-367920160000031011.

Schunk, D. H. (2008). Metacognition, self-regulation, and self-regulated learning: Research recommendations. *Educational Psychology Review*, *20*, 463–467.

Schumacker, R. E. & Lomax, R. G. (2016). *A beginner's guide to structural equation modelling*. Routledge.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.

Setiawan, A., Sukestiyarno, Y. L., & Junaedi, I. (2022). Pengaruh resiliensi matematis terhadap literasi matematika peserta didik MA Nudia Semarang. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 11*(3), 2431-2440. https://doi.org/10.24127/ajpm.v11i3.5441

Shek, D. T. L. & Yu, L. (2014). Confirmatory factor analysis using AMOS: a demonstration. *Int J Disabil Hum Dev, 13*(2): 191–204. https://doi.org/10.1515/ijdhd-2014-0305.

Shin, L. W., Yuanshan, C., & Tan, K. (2015). Setting the context of assessment and learning in Schools. Dalam Shin, L. W., Yuanshan, C., & Tan, K., *Assessment and learning in schools*. Pearson Education South Asia Pte Ltd.

Smith, S. M. & Albaum, G. S. (2005). *Fundamentals of marketing research*. SAGE.

Soebagyo, J., Purwanto, S. E., Ibrahim, A. …….., & Kartikawati, E. (2021). Analysis of Students' Mathematical Resilience through Google Classroom-Based Learning during the COVID-19 Pandemic. *Proceeding of the 1st International Conference on Education, Humanities, Health and Agriculture, ICEHHA 2021, 3-4 June 2021, Ruteng, Flores, Indonesia*. https://doi.org/10.4108/eai.3-6-2021.2310777

Soydaş, H. (2018). Mathematical resilience and accounting test anxiety of students: Office management department sample. *The Turkish Online Journal of Educational Technology, special issue (December 2018)*, 255 – 263.

Stacey, K. (2011). The PISA view of mathematical literacy in Indonesia. *Journal on Mathematics Education (IndoMS-JME), 2*(2), 1–24.

Stacey, K. (2015). The International Assessment of Mathematical Literacy: PISA 2012 Framework and Items. *The 12th International Congress on Mathematical Education*, https://doi.org/10.1007/978-3-319-17187-6_43

Stapleton, C. (1997). *Basic Concepts in Exploratory Factor Analysis (EFA) as a Tool to Evaluate Score Validity: A Right-Brained Approach. College Station.* TX: Texas A&M University.

Steen, L.A. (2001). *Mathematics and Democracy: The case for quantitative literacy*. Princeton, NJ: National Council on Education and the Dissciplines.

Steen, L.A., Turner, R., & Burkhardt, H. (2007). Developing mathematical literacy. *Modelling and Applications in Mathematics Education: The 14th ICMI Study*, 10, 285-294.

Stoltz, P.G. (1999). *Adversity quotient: turning obstacles into opportunities*. USA: John Wiley & Sons, Inc.

Suciati, Munadi, S., Sugiman, & Febriyanti, W. D. R. (2019). Design and validation of mathematical literacy instrument for assessment for learning in Indonesia. *European Journal of Educational Research*, 9(2), 865 – 875.

Sumintono, B. & Widhiarso, W. (2013). *Aplikasi model Rasch untuk penelitian ilmu-ilmu sosial*. Penerbit Trim Komunikata.

Sumintono, B. & Widhiarso, W. (2015). *Aplikasi model Rasch pada assessment pendidikan*. Penerbit Trim Komunikata.

Sumirattana, S., Makanong, A., & Thipkong, S. (2017). Using realistic mathematics education and the DAPIC problem-solving process to enhance secondary school students' mathematical literacy. *Kasetsart Journal of Social Sciences*, https://doi.org/10.1016/j.kjss.2016.06.001.

Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA* (p. 724). Belmont, CA: Thomson/Brooks/Cole.

Tasaki, N. (2017). The impact of OECD-PISA results on Japanese educational policy. *European Journal of Education, 52*, 145-153. https://doi.org/10.1111/ejed.12217.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53.

Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. Washington, DC: American Psychological Association.

Tout, D. & Gal, I. (2015). Perspectives on numeracy: Reflections from international assessments. *ZDM Mathematics Education*. https://doi.org/10.1007/s11858-015-0672-9.

Tufte, E.R. (1997). *Visual explanations – images and quantities, evidence and naarative.* Cheshire, CT: Graphic Press.

Van den Heuvel-Panhuizen, M. (1996). *Assessment and realistic mathematics education*. The Netherlands: CD-ß Press Utrecht University.

Wahyudin & Dahlan, J. A. (2018). *Statistika terapan lanjut*. Bandung: Penerbit Mandiri.

Wang, M. C., Haertel, G. D., & Walbererg, H. J. (1994). *Educational resilience in inner cities*. Mahwah.

Watson, A. (2002). Teaching for understanding. In L. Haggarty (Ed.), *Aspects of teaching secondary mathematics: Perspectives on practice*. London, UK: Routledge Falmer.

Williams, B. & Onsman, A. (2010). Exploratory factor analysis: A five step guide for novices. *Journal of Emergency Primary Health, 8*(3), Article 990399.

Wind, S. & Hua, C. (2021). *Rasch measurement theory analysis in R: Illustrations and practical guidance for researchers and practitioners*. https://bookdown.org/chua/new_rasch_demo2/RS-model.html

World Economic Forum. (2015). *The skills needed in the 21st century*. Diakses dari https://widgets.weforum.org/nve-2015/chapter1.html.

World Health Organization [WHO]. (2019). *Gender, equity, and human rights*. https://www.who.int/gender-equity-rights/understanding/gender-definition/en/.

Wright, B. (1992). Point-biserials and item fits. *Rasch Measurement Transactions, 5(4).* http://www.rasch.org/rmt/rmt54a.htm

Wright, B. D., & Stone, M. H. (1999). *Measurement Essentials (2nd Ed.).* http://www.rasch.org/measess/me-all.pdf

Wright, B. D. (1996). Comparing Rasch measurement and factor analysis. *Structural Equation Modeling, 3*, 3-24.

Yansen, D., Putri, R. I. I., Zulkardi, & Fatimah, S. (2019). Developing PISA-like mathematics problems on uncertainty and data using ASIAN games football context. *Journal on Mathematics Education, 10*(1), 37-46. https://doi.org/10.22342/jme.10.1.5249.37-46.

Yan, W., & Lin, Q. (2005). Parent involvement and mathematics achievement: Contrast across racial and ethnic groups. *The Journal of Educational Research, 99*(2), 116-127.

Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79-94.

Zikl, P., Havlíčková, K., Holoubková, N., Hrníčková, K., & Volfová, M. (2014). Mathematical literacy of pupils with mild intellectual disabilities. *Procedia - Social and Behavioral Sciences, 174*, 2582 – 2589. https://doi.org/10.1016/j.sbspro.2015.01.936.

Zulkardi & Kohar, A. W. (2017). Designing PISA-like mathematics task in Indonesia: Experiences and challenges. *IOP Conference Series: Journal of Physics: Conference Series 947*, 012015. https://doi.org/10.1088/1742-6596/947/1/012015.