AKSIOMA: Jurnal Program Studi Pendidikan Matematika
Volume 11, No. 4, 2022, 3315-3322

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

THE NUMERICAL-LITERACY SKILL REVIEWED FROM ADVERSITY QUOTIENT ON VIDEO-ASSISTED BASED LEARNING ON WESTERN SUMATERA CULTURE

Ari Limay Trisno Putra[1*], Dertha Mukhtar[2]

[1,2] Universitas Nahdlatul Ulama Sumatera Barat, Kota Padang , Indonesia
*Corresponding author. Jl. S.Parman No. 119 A Ulak Karang Selatan, 25134, Padang, Indonesia
E-mail: aribiozer6@gmail.com [1*)]
derthamukhtar@gmail.com [2)]

Received 19 September 2022; Received in revised form 26 November 2022; Accepted 08 December 2022

Abstrak

Kemampuan literasi numerasi merupakan kemampuan dasar dalam memecahkan masalah matematika dan menjadi indikator minimum dalam penilaian. Kemampuan literasi numerasi siswa yang rendah menjadi permasalahan saat ini. Penelitian ini bertujuan untuk melihat keefektifan pembelajaran matematika berbantuan Video berbasis Budaya Sumatera Barat, mendeskripsikan dan menganalisa kemampuan literasi numerasi siswa ditinjau dari *Adversity Quotient*. Penelitian ini menggunakan mixed methods dengan model sequential. Subyek Penelitian adalah Siswa Kelas VIII SMPN 12 Padang. Instrumen digunakan yaitu tes kemampuan literasi numerasi dan lembar observasi. Hasil Penelitian (1) Pembelajaran matematika berbantuan video pembelajaran berbasis budaya Sumatera Barat efektif terlihat dari jumlah siswa memperoleh nilai berkategori sedang sampai sangat baik, (2) Kemampuan literasi numerasi: siswa kategori *Quitters* mampu menggunakan berbagai macam angka dan simbol yang terkait dengan matematika dasar untuk memecahkan masalah dalam berbagai macam konteks kehidupan sehari – hari. Siswa kategori *Campers* mampu menggunakan berbagai macam angka dan simbol dan menganalisis informasi yang ditampilkan dalam berbagai bentuk (grafik, tabel, bagian, diagram, dan sebagainya) dan siswa kategori *Climbers* mampu menggunakan berbagai macam angka dan simbol, menganalisis informasi, menafsirkan hasil analisis tersebut untuk memprediksi dan mengambil keputusan. Dengan demikian disimpulkan bahwa Pembelajaran matematika berbantuan video pembelajaran berbasis budaya sumatera barat efektif dan mampu mengembangkan kemampuan literasi numerasi siswa.

Kata kunci: *Adversity quotient*; budaya Sumatera Barat; kemampuan literasi numerasi; video pembelajaran

Abstract

Numerical literacy skills refer to basic skills to solve mathematics problems. The skills also become the minimum indicator of assessments. The researchers promoted this research because the researchers found low numerical literacy skills. This research examined the effectiveness of video-assisted based on Western Sumatra culture and described and analyzed the learners' numerical literacy skills reviewed from the adversity quotient. This mixed-method research used sequential design. The subject consisted of eighth graders of Public Junior High School 12 Padang. The applied instruments were numerical literacy skill tests and an observation sheet. The results showed that (1) video-assisted based on Western Sumatra culture for mathematics learning was effective. The learners could reach the score categories of moderate to excellent. (2) the numerical literacy skills of the learners were at quitters. This category could use various numbers and symbols of basic mathematics to solve problems in various life contexts. The campers-type learners could use various numbers and symbols. They could also analyze various information in the forms of graphics, tables, charts, diagrams, and many more. The climber-type learners could use various numbers and symbols. They could also analyze information and interpret the information analysis to predict and make decisions. From the results, the video-assisted based Western Sumatra culture for mathematics learning was effective and could improve the learners' numerical literacy skills.

***Keywords**: Adversity quotient, Western Sumatra culture, numerical literacy skill, learning video*

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

INTRODUCTION

Most learners perceive mathematics lessons as an extreme challenge (Khaesarani & Khairani Hasibuan, 2021). The learners mostly think the lesson focuses on formula memorization, speed in solving questions, personal-task completion, and low teaching variety. These problems make the learners saturated and lost their learning intention. Therefore, mathematics learning requires a joyful atmosphere.

Numerical literacy skills are the basic skills for learners to solve mathematics problems. The skills also become the minimum indicators of assessments (Salsabilah & Kurniasih, 2022). The PISA 2018, released by (PISA, 2019), showed that the mathematics score average in Indonesia was only 379, lower than the OECD standard average, of 487. This matter indicated the low numerical literacy skills of Indonesian learners.

Some studies promoted numerical literacy skills. (Pangesti, 2018) found that numerical literacy skill was important for learning mathematics based on the school curriculum. (Mellyzar, 2021) found no significance between male and female numerical literacy skills. (Salvia et al., 2022) found that mathematics anxiety influenced the numerical literacy skills of learners directly and indirectly. (Winarni et al., 2021) found the effectiveness of video learning to improve the numerical literacy skills and digital literacy skills of the learners.

From the previous studies, the researchers found no studies about numerical literacy skills based on adversity quotient and video-assisted based Western Sumatra culture.

The development of numerical literacy skills is important because the skills are the core of mathematics in solving a daily contextual problems (Pangesti, 2018). Numerical literacy is a science and a skill of (a) using various mathematics-related numbers and symbols in solving practical problems in various daily life contexts, (b) analyzing the given information in the forms of graphics, tables, charts, etc for interpreting purposes, predicting, and drawing conclusions (Kemendikbudristek, 2021).

The learners' learning success depends on problem-solving management (Rosita & Rochmad, 2016). Every learner has different problem-solving management. Stoltz, cited by (Wahyu Hidayat, 2018), explains that intelligence in solving problems is known as Adversity Quotient. (Ardiansyah et al., 2018) explains that the adversity quotient is identical to efforts to manage problems. The adversity quotient supports the learners' success and improves their achievements (Putra et al., 2020)

The implementation of learning media is important to improve learning quality and to realize effective learning (Syukri et al., 2018). The implementation of media and technology for learning, especially four types of multimedia, is useful to improve learning. The media include audio, video, text, and visual media (Multazam et al., 2017). Video learning facilitates learners to learn because the media has interesting, creative, and innovative displays (Daryono et al., 2021).

Education and culture are two correlated matters (Normina, 2017). Education realizes civilized people. Thus, education and culture exist to cooperate and advance civilization. Minangkabau citizens live based on the custom philosophy of Minangkabau. The philosophy is "*Adat Basandi*

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

Syara', Syara' Basandi Kitabullah (ABS-SBK)" and the natural philosophy of Minangkabau, *"Alam takambang menjadi guru.*" The habits and the experience become the teachings of community life. These Western Sumatra-based cultural videos had interesting packages by adjusting the given day's material. The video contained the cultures and customs, including the discussed materials for daily life matters

Thus, mathematics lesson with Western Sumatera culture-based video learning was expected capable of improving the numerical literacy skills of learners. The researchers described and analyzed the numerical literacy skills based on the adversity quotient. The researchers collected valid data about the learners' numerical literacy skills to examine the effectiveness of video-assisted based on Western Sumatra culture. Then, the researchers analyzed the numerical literacy skills based on the adversity quotient.

RESEARCH METHODOLOGY

This mixed-method research combined the quantitative and qualitative research methods to provide comprehensive, valid, reliable, and objective research results. In this research, the researchers applied a sequential explanatory model to combine quantitative and qualitative research methods sequentially. The first stage of the research was the quantitative method while the second stage was the qualitative method. In the quantitative method stage, the data were descriptive. Then, the researchers promoted the qualitative method to prove and comprehend the quantitative data.

The research subjects consisted of the eighth graders of Public JHS 12 Padang. The researchers determined the subjects based on random sampling and considered the sample based on the adversity quotient on the geometrical side materials in the VIII-5 class. The researchers selected 9 learners from 30 learners. The first three learners were quitter-type learners. The second three learners were camper-type learners. Then, the last three learners were climber-type learners. The researchers observed these nine learners in terms of their numerical literacy skills and interviewed them during the research.

The types of collected data were qualitative and quantitative. The applied instruments of qualitative data collection were a questionnaire and a validated interview by experts. The prepared questionnaires had some AQ indicators to determine the learners' criteria, from quitter, camper, and climber. The researchers also used interview guidelines to interview the research subjects. The applied instrument in collecting quantitative data was mathematics numerical literacy skills.

The data analysis techniques in this research were qualitative and quantitative data analysis techniques. The researchers analyzed the qualitative data based on the indicators of numerical literacy skills within the categories of adversity quotient. The researchers obtained the data from the numerical literacy skill test results, the questionnaire results, and the interview results. The researchers analyzed the quantitative data to examine the achievements of the numerical literacy skill indicators. Then, the researchers described the analysis with statistic descriptive, starting from the minimum and maximum scores of the test. Then,

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

the researchers analyzed the data to consider the numerical literacy skill development based on the adversity quotient.

RESULTS AND DISCUSSION

The Numerical Literacy Skill of Learners

In this research, the researcher applied numerical literacy skill indicators to measure and analyze their numerical literacy skills.

Table 1. The numerical literacy skill indicators

Num	The Numerical Literacy Skill Indicators
1	Using various mathematics-related numbers and symbols in solving various life context problems
2	Analyzing the given information in the forms of graphics, tables, charts, diagrams, etc
3	Interpreting the analysis results to predict and make decisions

From the indicators, the researchers arranged the numerical literacy skill test, consisting of three question items. The researchers arranged the problem-related test in daily life. Then, the researchers instilled Western Sumatra's local culture. Table 2 shows the results of the numerical literacy skill test with the applied media, video-assisted based on Western Sumatra's culture.

Table 2. the numerical literacy skill test results

Scores	Categories	F	Percentage
81- 100	Very excellent	3	10%
61 - 80	Excellent	12	40%
41 - 60	Moderate	8	27%
40 - 21	Low	7	23%
20 - 0	Very low	0	0
Total		**30**	**100%**

Table 2 shows three learners in the very excellent category, 12 learners in the excellent category, 8 learners in the moderate category, and 7 learners in the low category. The results showed 63% of learners were between moderate and very excellent categories. The applied media was effective to improve the numerical literacy skills of the learners.

The Numerical Literacy Skills of the Learners based on Adversity Quotient

Table 3 shows the results of the adversity quotient test on 30 learners. Table 4 shows the analysis of the learners' numerical literacy skills reviewed from the adversity quotient based on the indicators of numerical literacy indicators and the obtained data.

Table 3. The Number of subjects based on AQ categories

Categories	Numbers
Quitters	11
Campers	15
Climbers	4
Total	30

Table 4. Score percentage for each numerical literacy skill indicator for quitter category

Num	The Numerical Literacy Skill Indicators	%
1	Using various mathematics-related numbers and symbols in solving various life context problems	63%
2	Analyzing the given information in the forms of graphics, tables, charts, diagrams, etc	59%
3	Interpreting the analysis results to predict and make decisions	0%

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

Table 4 shows the quitter category could apply various mathematics-related numbers and symbols in solving daily life problem context. The quitter-type learners could analyze the given information in the form of graphics, tables, charts, diagrams, etc. However, they could not interpret the results to predict and make decisions. Thus, the quitter-type learners had low numerical literacy skill levels.

Table 5. The score percentage per numerical literacy skill indicator of camper type learners

Num	The Numerical Literacy Skill Indicators	%
1	Using various mathematics-related numbers and symbols in solving various life context problems	100%
2	Analyzing the given information in the forms of graphics, tables, charts, diagrams, etc	87%
3	Interpreting the analysis results to predict and make decisions	35%

Table 5 shows the camper-type learners. They could use various mathematics-related numbers and symbols in solving daily life problem contexts. They could also analyze the given information in the form of graphics, tables, charts, etc. However, they could not interpret the analysis results to predict and make decisions. Thus, the camper-type learners had moderate numerical literacy skills.

Table 6 shows that climber-type learners could use various mathematics-related numbers and symbols in solving daily life problem contexts. They could also analyze the given information in the forms of graphics, tables, charts, diagrams, etc; and interpret the analysis results to predict and make decisions. Thus, the climber-type learners had excellent numerical literacy skills.

Table 6. The score percentage per numerical literacy skill indicators of climber type learners

Num	The Numerical Literacy Skill Indicators	%
1	Using various mathematics-related numbers and symbols in solving various life context problems	100%
2	Analyzing the given information in the forms of graphics, tables, charts, diagrams, etc	100%
3	Interpreting the analysis results to predict and make decisions	65%

This research showed a percentage of 63% of learners reached the very excellent category. The result showed that the implementation of video-assisted based on Western Sumatra's culture was effective to improve the learners' numerical literacy skills. The observation results found that the learners were enthusiastic in the learning process based on the video learning. (Rahayu & Prayitno, 2020) and (Astriyani, 2020) found that video-assisted learning could improve the interest of learners to participate in learning. In this research, the video contained learning materials about geometrical sides by instilling the cultural values of Western Sumatra, such as traditional music, cultural heritage, etc.

The quitter category could apply various mathematics-related numbers and symbols in solving daily life

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

problem contexts. The quitter-type learners could analyze the given information in the form of graphics, tables, charts, diagrams, etc. However, they could not interpret the results to predict and make decisions. The camper-type category could use various symbols and numbers and analyze the given information in the form of graphics, tables, charts, diagrams, etc. The climber-type learners could use various numbers and symbols. They could also analyze information and interpret the results to predict and make decisions.

In mathematics problem-solving, every individual has a different learning style due to various mindsets. In mathematics problem-solving, some learners might perform excellent, average, and low skills because of their capabilities to deal with challenges. Thus, the adversity quotient is important for learners in solving problems. In this case, teachers must guide the quitter and camper-type learners. On the other hand, climber-type learners must receive additional exercises to develop their HOTS. In this research, the researchers were limited to the implementation of the given module. Thus, further studies must develop supportive modules or teaching materials for numerical literacy skills.

CONCLUSION AND SUGGESTION

From the analysis and the discussion, the researchers concluded that (1) video-assisted based Western Sumatra culture for mathematics learning was effective. The learners could reach the score categories of moderate to excellent. (2) the numerical literacy skills of the learners were at quitters. This category could use various numbers and symbols of basic mathematics to solve problems in various life contexts. The campers-type learners could use various numbers and symbols. They could also analyze various information in the forms of graphics, tables, charts, diagrams, and many more. The climber-type learners could use various numbers and symbols in various life contexts. They could also analyze information in the forms of graphics, tables, charts, diagrams, etc, and interpret the information analysis to predict and make decisions.

From the conclusions, the researchers recommend the importance of improving numerical literacy skills with accurate learning media, such as video learning containing local cultures, for example, Western Sumatra culture. This media could also improve and preserve local culture literacy.

ACKNOWLEDGMENT

With this research completion, the researchers express their thanks to The Ministry of Cultural and Education, the Ministry of Research and Technology, for granting the authors this research grant, the Rector and Academicians of Universitas Nahdlatul Ulama Western Sumatra, the teachers of Public JHS 12 Padang in sharing their knowledge and opportunities to promote this research, the cultural practitioner of Minangkabau Western Sumatra province in sharing their information, and related parties in helping this research.

REFERENCE

Ardiansyah, A. S., Junaedi, I., & Asikin, M. (2018). Student's Creative Thinking Skill and Belief in Mathematics in Setting Challenge Based Learning Viewed by Adversity Quotient. *Unnes Journal of Mathematics Education Research*, *7*(1), 61–70.

Astriyani, A. dan F. F. (2020). Pengaruh

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

Penggunaan Media Audio Visual Youtube Materi Pythagoras Terhadap Keaktifan Belajar Matematika Siswa. *FIBONACCI : Jurnal Pendidikan Matematika Dan Matematika*, *6*(2460 – 7797), 87–90. https://dx.doi.org/10.24853/fbc.6.1.87-90.

Daryono, R. W., Rochmadi, S., & Hidayat, N. (2021). Development and validation of video-based learning media to increase competency achievement in civil engineering education. *Journal of Physics: Conference Series*, *1833*(1). https://doi.org/10.1088/1742-6596/1833/1/012022

Kemendikbudristek. (2021). Modul Literasi Numerasi Di Sekolah Dasar. *Modul Literasi Numerasi Di Sekolah Dasar*, *1*, 22. http://ditpsd.kemdikbud.go.id/upload/filemanager/2021/06/2 Modul Literasi Numerasi.pdf

Khaesarani, I. R., & Khairani Hasibuan, E. (2021). Studi Kepustakaan Tentang Model Pembelajaran Think Pair Share (TPS) Dalam Meningkatkan Hasil Belajar Matematika Siswa. *Jurnal Matematika, Sains, Dan Pembelajarannya*, *15*(3), 37–49. https://ejournal.undiksha.ac.id/index.php/JPM/article/view/38716

Mellyzar. (2021). 11176-38670-1-Pb. *Lantanida Journal*, *9*(2), 93–182.

Multazam, M., Maspaeni, -, & Bahar, -. (2017). Pengembangan dan Implementasi Multimedia dalam Pembelajaran. *Explore*, *7*(2), 39. https://doi.org/10.35200/explore.v7i2.37

Normina. (2017). Pendidikan dalam Kebudayaan. *Ittihad Jurnal Kopertais Wilayah XI Kalimantan*, *15*(28), 17–28.

Pangesti, F. T. P. (2018). Menumbuhkembangkan Literasi Numerasi Pada Pembelajaran Matematika Dengan Soal Hots. *Indonesian Digital Journal of Mathematics and Education*, *5*(9), 566–575. http://idealmathedu.p4tkmatematika.org

PISA, O. (2019). PISA 2018 Assessment and Analytical Framework. In *OECD Publishing*. https://doi.org/10.1787/b25efab8-en

Putra, A. L. T., Dwidayati, N. K., & Isnarto. (2020). Problem-Solving Ability in terms of Adversity Quotient On SFE Learning Based on Firing Line. *Unnes Journal of Mathematics Education Research*, *9*(1), 78–85.

Rahayu, D. R., & Prayitno, E. (2020). Minat dan Pemahaman Konsep siswa dalam Pembelajaran Berbasis Problem Based Learning Berbantuan Media Video. *Jurnal Pendidikan IPA Veteran*, *3*(1), 69–80. https://doi.org/10.31331/jipva.v4i1.1064

Rosita, D., & Rochmad. (2016). Analisis Kesalahan Siswa dalam Pemecahan Masalah Ditinjau dari Adversity Quotient Pada Pembelajaran Creative Problem Solving. *Unnes Journal of Mathematics Education Research (UJMER)*, *5*(2), 106–113. http://journal.unnes.ac.id/sju/index.php/ujmer

Salsabilah, A. P., & Kurniasih, M. D. (2022). Analisis kemampuan literasi numerasi ditinjau dari efikasi diri pada peserta didik SMP. *Edumatica : Jurnal Pendidikan Matematika*, *12*(2),

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v11i4.6131

138–149.

Salvia, N. Z., Sabrina, F. P., & Maula, I. (2022). Analisis Kemampuan Literasi Numerasi Peserta Didik Ditinjau Dari Kecemasan Matematika. *ProSANDIKA UNIKAL …*, *3*(2019), 352–360. https://www.proceeding.unikal.ac.id/index.php/sandika/article/view/890

Syukri, R., Winarni, S., & Hidayat, R. (2018). Pengembangan Media Pembelajaran Komik Matematika Berbasis Problem Based Learning dengan Manga Studio V05 dan Geogebra. *EDUMATICA | Jurnal Pendidikan Matematika*, *8*(2), 81–91. https://doi.org/10.22437/edumatica.v8i2.5486

Wahyu Hidayat. (2018). KEMAMPUAN PEMECAHAN MASALAH MATEMATIS DAN ADVERSITY QUOTIENT SISWA SMP MELALUI PEMBELAJARAN OPEN ENDED. *Jurnal JNPM (Jurnal Nasional Pendidikan Matematika)*, *Vol. 2 No.*, 109.

Winarni, S., Kumalasari, A., Marlina, M., & Rohati, R. (2021). Efektivitas Video Pembelajaran Matematika Untuk Mendukung Kemampuan Literasi Numerasi Dan Digital Siswa. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *10*(2), 574. https://doi.org/10.24127/ajpm.v10i2.3345