JURNALTATSQIF
Jurnal Pemikiran dan Penelitian Pendidikan
Volume 21, No. 1 (June) 2023
Site: http://journal.uinmataram.ac.id/index.php/tatsqif Email: jurnaltatsqif@uinmataram.ac.id
P ISSN: 1829-5940
E ISSN: 2503-4510

THE RELATIONSHIP BETWEEN THE APPLICATION OF SASAK'S LOCAL WISDOM-BASED LEARNING AND STUDENTS' CRITICAL THINKING SKILLS

Adi Fadli
Universitas Islam Negeri Mataram, Mataram, NTB, Indonesia
adi.fadli@uinmataram.ac.id

Abstract

This research examines the correlation between the utilization of Sasak's indigenous knowledge in the learning process and the development of critical thinking abilities among students of Islamic education in the region of West Nusa Tenggara. The present study employed a quantitative research approach, utilizing a survey design methodology to gather data. The primary instrument employed for data collection was a critical thinking abilities questionnaire. The data underwent analysis by the application of a regression test, employing a significance threshold of .05. The findings indicate that there exists a statistically significant correlation between the implementation of learning based on Sasak's local wisdom and the development of critical thinking abilities among Islamic education students in West Nusa Tenggara. Furthermore, the study demonstrates that the utilization of Sasak's local wisdom-based learning contributes to a 30% improvement in critical thinking skills. Therefore, it is imperative for higher institutions to promote the integration of local wisdom-based learning approaches in order to effectively attain the learning objectives associated with 21st-century capabilities.

Keywords: Local Wisdom-Based Learning; critical thinking skills; Islamic education students;

INTRODUCTION

The learning objectives of the Islamic Education Study program in tertiary institutions refer to achieving 21st-century education goals. The achievement of 21st-century skills includes creative thinking skills, critical thinking skills, and communication and collaboration skills (Irwanto et al., 2021; Tanti et al., 2020; van Peppen et al., 2021; Wahyudiati & Ningrat, 2019). Critical thinking skills, one of the characteristics of achieving Islamic education study programs in tertiary institutions, are reflected in the application of student-centered learning activities. Emphasizing student activity determines the achievement of learning objectives through developing student soft skills.

However, previous research proved that learning activities tend to be teacher-centered and prioritize understanding lecture material compared to developing students' critical thinking skills (Isnaeni et al., 2021; 2019; Wahyudiati & Qurniati, 2022). Thus, a learning process oriented towards Islamic education students' critical thinking skills development must be nurtured in tertiary institutions' learning.

Learning activities in tertiary institutions by combining students' daily experiences can make learning more exciting and meaningful; they are motivated to be actively involved so they will be more competent in their fields (Oliver-Hoyo, 2003; Suardana et al., 2018; Verawati et al., 2021; Fadli & Irwanto, 2020; Sumardi et al., 2020). It is believed that applying the learning method of problem-solving activities could train students to develop their critical thinking skills (Irwanto et al., 2018; Valdez & Bungihan, 2019; Wahyudiati et al., 2020). Integrating learning with students' local wisdom is an implementation of a contextual learning approach that refers to students' daily experiences (Bulkani et al., 2022; Setiawan et al., 2017; Toharudin & Kurniawan, 2017; Wahyudiati, 2022b). Applying a learning approach based on local wisdom could train students to develop critical thinking skills and problem-solving. It will make it easier for students to understand concepts to achieve learning objectives optimally. One is integrating Sasak's local wisdom into learning (Abonyi et al., 2014; Sutrisno et al., 2020; Wahyudiati & Ningrat, 2019).

Applying local wisdom-based learning, such as Sasak's local wisdom, improves students' critical thinking skills (Siregar & Nadiroh, 2017; Wahyudiati, 2021b; Zulfa, 2017). Nevertheless, prior studies have indicated that the learning activities implemented within higher institutions prioritize the attainment of cognitive learning outcomes over the development of students' critical thinking abilities (Abonyi et al., 2014; Fadli, 2019; Fadli & Zaki, 2014). In addition, the implementation of local wisdom-based learning approaches in tertiary institutions still tends to be limited, which leads to less

attractive and less meaningful learning (Dewi et al., 2017; Fadli & Irwanto, 2020; Siregar & Nadiroh, 2017; Sumardi et al., 2020; Wahyudiati, 2021b, 2021a; Wahyudiati & Ningrat, 2019; Z et al., 2018; Zulfa, 2017). Therefore, it needs to examine the relationship between applying Sasak's local wisdom-based learning in tertiary institutions and Islamic Education students' critical thinking skills.

Critical thinking abilities refer to an individual's capacity to engage in analytical processes and resolve complex issues by employing scientific methodologies. The cultivation of students' critical thinking abilities can be achieved by employing the scientific method, which encompasses activities such as problem analysis, hypothesis formulation, logical problem identification, systematic problem-solving, and drawing evidence-based conclusions (Duran & Dökme, 2016; Isnaeni et al., 2021; Kaur, 2013; Oliver-Hoyo, 2003; Patonah et al., 2021; Rahmawati, 2018; Ramdani et al., 2021; Suardana et al., 2018; Verawati et al., 2021; Wahyudiati & Qurniati, 2022).

Furthermore, the cultivation of critical thinking skills can be facilitated by engaging in educational endeavors that emphasize discourse, scientific inquiry, and the dissemination of research findings as a means to address and resolve complex issues (Iyamuremye et al., 2022; Wahyudiati et al., 2020a; Wahyudiati & Qurniati, 2022; Yuliana et al., 2021). Thus, there is relevance between applying local wisdom-based learning and students' critical thinking skills. The development of student's critical thinking skills, which include analytical skills, attitudes towards scientific investigations, application of scientific attitudes, and learning experiences, are not only influenced by the application of contextual approaches but are also by learning experiences that utilize the potential of local wisdom relevant to learning materials (Rahmawati et al. al., 2017; Sumardi & Wahyudiati, 2021). Problem-solving-based learning experiences allow students to actively formulate and prove problems to make learning more exciting and enjoyable (Fadli, 2022; Turpin & Cage, 2004). In addition, the results of previous studies also showed that

students' critical thinking skills could be reflected in their interest, tenacity, and curiosity in learning activities to achieve the learning objectives (Ramdani et al., 2021; Wahyudiati, 2022b; Zhu, 2007).

METHOD

This quantitative study employed a cross-sectional questionnaire design. Choosing a cross-sectional survey seeks to determine whether or not there is a significant relationship between two or more variables when describing field-based situations and conditions (Creswell, 2000). In the Department of Islamic Education at Mataram State Islamic University, a total of 80 students were selected for the research sample using a technique of systematic random sampling.

The data was obtained by administering a questionnaire designed to assess critical thinking skills. The measurement tool for assessing critical thinking abilities is based on Oliver Hoyo (2003) rubric, which encompasses four key indicators: (1) analytical skills, (2) attitudes towards scientific inquiry, (3) application of scientific attitudes, and (4) learning experiences. The researchers developed the Sasak culture-based learning questionnaire instrument used in this study, and its validity and reliability were tested by obtaining a Cronbach alpha coefficient value of $\alpha = .85 > .70$. The value indicated the research instrument met the reliability requirements (Hair et al. al., 2006). Finally, the data were analyzed using a regression test to determine the relationship between the application of learning based on Sasak's local wisdom and the Islamic Education students' critical thinking skills.

RESULT AND DISCUSSION

Before the linear regression test, a prerequisite test consisted of a normality test through Box's M test and a homogeneity test by the Levene test was performed. The normality and homogeneity test results are shown

in Tables 1 and 2.

Table 1. Normality Test Results

Box's M	F	df1	Sig.
15,068	0,413	36	0,356

The normality test showed the data were distributed normally since the significance value was higher than 0.05, 0.356.

Table 2. Homogeneity Test Results

Aspect	F	df1	Sig.
Critical Thinking Skills	3,696	1	0,453

The homogeneity test results showed the data was homogeneous because the significance value was higher than 0.05, that is, 0.453 for critical thinking skills. Thus, because the data were normally distributed and homogeneous, a parametric statistical analysis test of a simple linear regression test was performed, with the results summarized in Table 3.

Table 3. Regression Test Result

Aspect	R	R Square	F	Sig.
Critical Thinking Skills	0,534	0,300	758,473	0,000

Based on the regression test results, a significance value of 0.000 was obtained, less than 0.05, which means a significant relationship exists between the application of Sasak local wisdom-based learning and the critical thinking skills of Islamic Education students. In addition, based on the results of data analysis, a correlation or relationship (R) value was also obtained, 0.534, with a coefficient of determination (R Square) of 0.300. It means the influence of the independent variable (learning based on Sasak local wisdom) on the dependent variable (critical thinking skills) by 30%. Therefore, the research findings prove a significant relationship between the application of

Sasak local wisdom-based learning and the critical thinking skills of Islamic education students, with a percentage of 30%.

The findings indicated a statistically significant correlation between the implementation of Sasak local wisdom-based learning and the development of critical thinking abilities among students in the field of Islamic Education. The results of the study provided confirmation that the incorporation of Sasak's local wisdom-based learning had a good effect on the development of students' critical thinking abilities (Fadli & Irwanto, 2020; Wahyudiati, 2022c; Wahyudiati & Ningrat, 2019). This study measures critical thinking abilities based on a number of indicators, including analytical skills, attitudes toward scientific investigations, the implementation of scientific attitudes, and learning experiences. It revealed that the ability to analyze, scientific inquiry skills, and learning experiences employed in postsecondary institutions based on local knowledge have a positive effect on the development of students' critical thinking skills (Irwanto et al., 2018; Piraksa et al., 2014; Sumarni & Kadarwati, 2020; Wahyudiati, 2022a; Wahyudiati & Qurniati, 2022). These are supported by prior research indicating that involving students in learning activities and employing a contextual approach coupled with scientific methodologies could enhance students' critical thinking skills (Suardana et al., 2018; Sumarni & Kadarwati, 2020; Yusuf & Adeoye, 2012).

Additionally, the current research found a significant relationship between culture-based learning experiences and students' critical thinking skills. It is because local wisdom-based learning is implemented by integrating learning material with local wisdom to create more significant learning (Sumarni & Kadarwati, 2020). Similarly, prior studies have revealed that the incorporation of culture into educational practices can facilitate students' ability to connect academic content with their everyday life experiences. Consequently, this integration can enhance students' motivation to cultivate essential soft skills, including problem-solving abilities, as well as

fostering their interest, motivation, and critical thinking skills (Patonah et al., 2021; Rahmawati et al., 2017; Wahyudiati, 2022a; Wahyudiati & Ningrat, 2019). Moreover, various previous research results also showed a learning environment based on a contextual approach, one of which is local culture-based learning, provides interesting and fun learning (Fadli & Acim, 2007; Wahyudiati et al., 2021).

Providing learning experiences based on local wisdom by emphasizing the development of student's critical thinking skills also positively impacts learning outcomes. The research backed the results that critical thinking skills and learning experiences based on local wisdom can increase student interest and motivation to be actively involved in constructing their knowledge and learning skills to improve student academic achievement (Valdez & Bungihan, 2019; Yuliana et al. al., 2021). Thus, applying an integrated learning approach with local wisdom is essential. Learning experiences that are oriented to students' daily experiences can be a stimulus to be actively involved in constructing knowledge and experience, even being one of the factors that can influence the development of students' critical thinking skills. In this way, lecturers are expected to design and apply innovative based on local wisdom approaches or learning models.

CONCLUSION

Based on the results of the study, it can be concluded: 1) there is a significant relationship between the application of Sasak local wisdom-based learning and the Islamic Education students' critical thinking skills in West Nusa Tenggara, and 2) there is an influence of the application of Sasak's local wisdom-based learning on the Islamic Education students' critical thinking skills by 30%. Thus, implementing learning based on local wisdom needs to be encouraged in tertiary institutions to achieve 21st-century skills learning objectives. In addition, lecturers are expected to be able to design and apply innovative approaches or learning models based on local wisdom.

BIBLIOGRAPHY

Abonyi, O. S., Njoku, L. A. &, & Adibe, M. I. (2014). Innovations in Science and Technology Education: A Case for Ethnoscience Based Science Classrooms. *International Journal of Scientific & Engineering Research*, *5*(1), 52–56. http://www.ijser.org

Bulkani, Fatchurahman, M., Adella, H., & Andi Setiawan, M. (2022). Development of animation learning media based on local wisdom to improve student learning outcomes in elementary schools. *International Journal of Instruction*, *15*(1), 55–72. https://doi.org/10.29333/iji.2022.1514a

Dewi, I. ., Poedjiastoeti, S., & Prahani, B. (2017). ElSII Learning Model Based Local Wisdom To Improve Students' Problem Solving Skills and Scientific Communication. *International Journal of Education and Research*, *5*(1), : 107-118.

Duran, M., & Dökme, I. (2016). The effect of the inquiry-based learning approach on student's critical-thinking skills. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(12), 2887–2908. https://doi.org/10.12973/eurasia.2016.02311a

Fadli, A. (2019). Problem solving skills and scientific attitudes of prospective teachers based on gender and grades level. *International Journal of Scientific and Technology Research*, *8*(10), 3595–3599.

Fadli, A. (2022). *Students' Gender Perspective Analysis in Higher Education Learning*. *18*(11), 382–384.

Fadli, A., & Acim, S. A. (2007). Scientific Attitude of Pre-Service Islamic Teachers: Gender and Grade Level Differences. *Xisdxjxsu.Asia*, *18*(4). https://www.xisdxjxsu.asia/V18I04-12.pdf

Fadli, A., & Irwanto. (2020). The effect of local wisdom-based ELSII learning model on the problem solving and communication skills of pre-service islamic teachers. *International Journal of Instruction*, *13*(1), 731–746. https://doi.org/10.29333/iji.2020.13147a

Fadli, A., & Zaki, M. (2014). *Exploring Students Scientific Attitudes Based on Gender Perspective*. *18*(6), 742–744.

Irwanto Irwanto, Eli Rohaeti, & A.K. Prodjosantoso. (2021). A Survey Analysis of Pre-service Chemistry Teachers' Critical Thinking Skills. *MIER Journal of Educational Studies Trends & Practices*, *8*(1), 57–73. https://doi.org/10.52634/mier/2018/v8/i1/1423

Irwanto, Saputro, A. D., Rohaeti, E., & Prodjosantoso, A. K. (2018). Promoting critical thinking and Problem Solving Skills of Preservice Elementary Teachers through Process-Oriented Guided-Inquiry Learning (POGIL). *International Journal of Instruction*, *11*(4), 777–794. https://doi.org/10.12973/iji.2018.11449a

Isnaeni, W., Sujatmiko, Y. A., & Pujiasih, P. (2021). Analysis of the Role of Android-Based Learning Media in Learning Critical Thinking Skills and Scientific Attitude. *Jurnal Pendidikan IPA Indonesia*, *10*(4), 607–617. https://doi.org/10.15294/jpii.v10i4.27597

Iyamuremye, A., Nsabayezu, E., & Mukiza, J. (2022). Web-Based Discussion in Teaching and Learning Organic Chemistry: Student's Conception and Reflection. *International Journal of Emerging Technologies in Learning*, *17*(12), 252–257. https://doi.org/10.3991/ijet.v17i12.30129

Kaur, G. (2013). Scientific attitude in relation to critical thinking among teachers. *Educationia Confab*, *2*(8), 24–29.

Ladson-Billings, G. (1995). Toward a Theory of Culturally Relevant Pedagogy. *American Educational Research Journal*, *32*(3), 465–491. https://doi.org/10.3102/00028312032003465

Oliver-Hoyo, M. T. (2003). Designing a written assignment to promote the use of critical thinking skills in an introductory chemistry course. *Journal of Chemical Education*, *80*(8), 899–903. https://doi.org/10.1021/ed080p899

Patonah, S., Sajidan, Cari, & Rahardjo, S. B. (2021). The effectiveness of STLC (science technology learning cycle) to empowering critical thinking

skills. *International Journal of Instruction*, *14*(3), 39–58. https://doi.org/10.29333/iji.2021.1433a

Piraksa, C., Srisawasdi, N., & Koul, R. (2014). Effect of Gender on Student's Scientific Reasoning Ability: A Case Study in Thailand. *Procedia - Social and Behavioral Sciences*, *116*(May 2015), 486–491. https://doi.org/10.1016/j.sbspro.2014.01.245

Rahmawati, Y. (2018). *Should We Transform? Integration Cultural Ethics And Values in Chemistry Teaching And Learning*. *173*(Icei 2017), 383–385. https://doi.org/10.2991/icei-17.2018.102

Rahmawati, Y., Ridwan, A., & Nurbaity. (2017). Should we learn culture in chemistry classroom? Integration ethnochemistry in culturally responsive teaching. *AIP Conference Proceedings*, *1868*(October). https://doi.org/10.1063/1.4995108

Ramdani, A., Jufri, A. W., Gunawan, Fahrurrozi, M., & Yustiqvar, M. (2021). Analysis of students' critical thinking skills in terms of gender using science teaching materials based on the 5e learning cycle integrated with local wisdom. *Jurnal Pendidikan IPA Indonesia*, *10*(2), 187–199. https://doi.org/10.15294/jpii.v10i2.29956

Setiawan, B., Innatesari, D. K., Sabtiawan, W. B., & Sudarmin, S. (2017). The development of local wisdom-based natural science module to improve science literation of students. *Jurnal Pendidikan IPA Indonesia*, *6*(1), 49–54. https://doi.org/10.15294/jpii.v6i1.9595

Siregar, S. M., & Nadiroh, N. (2017). Peran Keluarga Dalam Menerapkan Nilai Budaya Suku Sasak Dalam Memelihara Lingkungan. *Jurnal Green Growth Dan Manajemen Lingkungan*, *5*(2), 28. https://doi.org/10.21009/jgg.052.04

Suardana, I. N., Redhana, I. W., Sudiatmika, A. A. I. A. R., & Selamat, I. N. (2018). Students' critical thinking skills in chemistry learning using local culture-based 7E learning cycle model. *International Journal of Instruction*, *11*(2), 399–412. https://doi.org/10.12973/iji.2018.11227a

Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, *13*(3), 357–370. https://doi.org/10.29333/iji.2020.13325a

Sumardi, L., & Wahyudiati, D. (2021). Using Local Wisdom to Foster Community Resilience During the Covid-19 Pandemic: A Study in the Sasak Community, Indonesia. *Proceedings of the 2nd Annual Conference on Education and Social Science (ACCESS 2020)*, *556*(Access 2020), 122–127. https://doi.org/10.2991/assehr.k.210525.059

Sumarni, W., & Kadarwati, S. (2020). Ethno-stem project-based learning: Its impact to critical and creative thinking skills. *Jurnal Pendidikan IPA Indonesia*, *9*(1), 11–21. https://doi.org/10.15294/jpii.v9i1.21754

Sutrisno, H., Wahyudiati, D., & Louise, I. S. Y. (2020). Ethnochemistry in the Chemistry Curriculum in Higher Education: Exploring Chemistry Learning Resources in Sasak Local Wisdom. *Universal Journal of Educational Research*, *8*(12A), 7833–7842. https://doi.org/10.13189/ujer.2020.082572

Tanti, Kurniawan, D. A., Kuswanto, Utami, W., & Wardhana, I. (2020). Science process skills and critical thinking in science: Urban and rural disparity. *Jurnal Pendidikan IPA Indonesia*, *9*(4), 489–498. https://doi.org/10.15294/jpii.v9i4.24139

Toharudin, U., & Kurniawan, I. S. (2017). Sundanese Cultural Values of Local Wisdom: Integrated to Develop a Model of Learning Biology. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, *32*(1), 29–49.

Turpin, T., & Cage, B. N. (2004). Effect of an integrated, activity-based science curriculum on student achievement, science process skills, and science attitudes. *Electronic Journal of Literacy Through Science*, *3*(1), 1–17. https://www.csun.edu/science/ref/curriculum/reforms/nses/nses-complete.pdf

Valdez, J. E., & Bungihan, M. E. (2019). Problem-based learning approach enhances the problem solving skills in chemistry of high school students. *Journal of Technology and Science Education*, *9*(3), 282–294. https://doi.org/10.3926/JOTSE.631

van Peppen, L. M., Verkoeijen, P. P. J. L., Heijltjes, A. E. G., Janssen, E. M., & van Gog, T. (2021). Enhancing students' critical thinking skills: is comparing correct and erroneous examples beneficial? In *Instructional Science* (Vol. 49, Issue 6). Springer Netherlands. https://doi.org/10.1007/s11251-021-09559-0

Verawati, N. N. S. P., Hikmawati, Prayogi, S., & Bilad, M. R. (2021). Reflective Practices in Inquiry Learning: Its Effectiveness in Training Pre-Service Teachers' Critical Thinking Viewed From Cognitive Styles. *Jurnal Pendidikan IPA Indonesia*, *10*(4), 505–514. https://doi.org/10.15294/jpii.v10i4.31814

Wahyudiati, D. (2021a). Investigating Problem Solving Skills and Chemistry Learning Experiences of Higher Education Base on Gender and Grade Level Differences. *Journal of Science and Science Education*, *2*(2), 62–67. https://doi.org/10.29303/jossed.v2i2.632

Wahyudiati, D. (2021b). Spin Jurnal Kimia & Pendidikan Kimia Ethnochemistry: Analisis Relevansi Materi Sistem Periodik Unsur Dengan Kearifan Lokal Sasak. *Spin*, *3*(2), 190–199. https://doi.org/10.20414/spin.v3i2.4402

Wahyudiati, D. (2022a). Critical Thinking Skills and Scientific Attitudes of Pre-Service Chemistry Teachers Through the Implementation of Problem-Based Learning Model. *Jurnal Penelitian Pendidikan IPA*, *8*(1), 216–221. https://doi.org/10.29303/jppipa.v8i1.1278

Wahyudiati, D. (2022b). Ethnochemistry: Exploring the Potential of Sasak and Java Local Wisdom as a Teaching Materials. *Jurnal Pendidikan Kimia Indonesia*, *6*(2).

Wahyudiati, D. (2022c). Implementation of Islamic Education Concept in

Ethnochemistry. *Jurnal Tarbiyatuna*, *13*(1), 19–28. https://doi.org/10.31603/tarbiyatuna.v13i1.5310

Wahyudiati, D., & Qurniati, D. (2023). Ethnochemistry: Exploring the Potential of Sasak and Javanese Local Wisdom as a Source of Chemistry Learning to Improve the Learning Outcomes of Pre-Service Teachers. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, *11*(1), 12-24.

Wahyudiati, D., & Qurniati, D. (2022). The Effect of Project-Based Learning on Pre-Service Chemistry Teachers' Self-Efficacy and Critical Thinking Skills. *Jurnal Penelitian Pendidikan IPA*, *8*(5), 2307-2311.

Wahyudiati, D., Rohaeti, E., Irwanto, Wiyarsi, A., & Sumardi, L. (2020). Attitudes toward chemistry, self-efficacy, and learning experiences of pre-service chemistry teachers: Grade level and gender differences. *International Journal of Instruction*, *13*(1), 235–254. https://doi.org/10.29333/iji.2020.13116a

Wahyudiati, D. (2021). Eksplorasi Sikap Ilmiah Dan Pengalaman Belajar Calon Guru Kimia Berdasarkan Gender Exploration of Scientific Attitudes and Learning Experiences of Prospective Chemistry Teachers Based on Gender. *Spin Jurnal Kimia & Pendidikan Kimia*, *3*(1), 45–53. https://doi.org/10.20414/spin.v3i1.3333

Wahyudiati, D. (2023). The Relationship between Ethnochemistry Learning Experience and Cognitive Learning Outcomes Based on Gender. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, *8*(1), 57-61.

Yuliana, I., Cahyono, M. E., Widodo, W., & Irwanto, I. (2021). The effect of ethnoscience-themed picture books embedded within contextbased learning on students' scientific literacy. *Eurasian Journal of Educational Research*, *2021*(92), 317–334. https://doi.org/10.14689/ejer.2021.92.16

Yusuf, F., & Adeoye, E. (2012). Developing Critical Thinking and Communication Skills in Students: Implications for Practice in Education.

African Research Review, *6*(1), 311–324. https://doi.org/10.4314/afrrev.v6i1.26

Z, Y., Zed, M., & Erianjoni, E. (2018). A Study on Sasak's Local Wisdom in Supporting Tourism Development in Central Lombok Regency. *Sumatra Journal of Disaster, Geography and Geography Education*, *2*(1), 96. https://doi.org/10.24036/sjdgge.v2i1.119

Zhu, Z. (2007). Gender differences in mathematical problem solving patterns: A review of literature. *International Education Journal*, *8*(2), 187–203.