

Editorial from Rully Charitas Indra Prahmana, Southeast Asia Editor of MTRJ



Freudenthal's ideas on mathematics stated that mathematics is a human activity and must be connected to reality. This has influenced the learning of mathematics all over the world. Realistic Mathematics Education (RME) has been adopted in many countries, including Indonesia. The Indonesian version of RME is known as *Pendidikan Matematika Realistik Indonesia* (PMRI) or *Pendidikan Matematika Realistik* (PMR). RME continues to grow in Indonesia, as seen from the increasing number of RME research. There are multiple variations of RME in Indonesia, such as design research, qualitative research, development research, and mix method research approach. RME in Indonesia for two decades has been discussed by Zulkardi, Ratu Ilma Indra Putri, and Ariyadi Wijaya with their articles entitled “Two Decades of Realistic Mathematics Education in Indonesia”, published in *International Reflections on the Netherlands Didactics of Mathematics, ICME-13 Monographs* by Springer. The development of RME research in Indonesia has influenced and inspired the MTRJ to publish a special issue related to Indonesian RME-based research. Therefore, the MTRJ editorial team selected 12 articles that were believed to represent research influenced and inspired by RME in Indonesia. We hope you will enjoy the articles that present research with practical applications for the classroom.

The first four papers of the current issue discuss the research of RME by using design research approach. Susilahudin Putrawangsa (Mataram Islamic State University, Indonesia), Febrian (University of Maritim Raja Ali Haji, Indonesia), Uswatun Hasanah (University of Nahdlatul Ulama NTB, Indonesia) develop intervention of learning to promote students' understanding of percentage. Their findings show that their design supports the students in developing their understanding of several fundamental ideas of percentage. Furthermore, the second paper entitled “Learning Trajectory of Algebraic Expression: Supporting Students' Mathematical Representation Ability” written by Cut Khairunnisak, Rahmah Johar, Yuhatriati, Cut Morina Zubainur, Suhartati, and Putri Sasalia from Research Center of Realistic Mathematics Education, Universitas Syiah Kuala, Indonesia. In this paper, they evaluate the RME-based learning trajectory oriented to enhance students' mathematical representation ability on algebraic expression. Their findings indicated that the designed RME-based learning trajectory (LT) oriented to support students' mathematical representation ability in algebraic expression has been valid and could be implemented in the pilot experiment. On the other hand, the third paper design the learning trajectories in the topic of Quadrilateral applying the RME. This learning trajectory consist of four activities, i.e., origami shape, finding the properties, sulid (stacking sticks), and origami puzzle. From these activities, students can understand the concept of a quadrilateral smoothly. Lastly, Farida Nursyahidah and Irkham Ulil Albab examines a mathematics learning design on the area and volume of cylinders using ethnomathematics context carried by traditional cake mold assisted by GeoGebra. Students show excellent reasoning on how increasing cylindrical radius gives a more significant effect than increasing its height. The student also construes the design of the cylinder that provides the most considerable volume by expanding its base or radius.

The next four paper present the RME research by using qualitative research approach. The fifth manuscript entitled “Students' Ability to Solve Mathematical Problems in The Context of Environmental Issues” is presented by Jeinne Mumu, Vera Sabariah, Benidiktus Tanujaya, Roni Bawole, Hugo Warami, and Harina Orpa Lefina Monim from Universitas Papua, Manokwari, Indonesia, and Rully Charitas

Indra Prahmana from Universitas Ahmad Dahlan, Yogyakarta, Indonesia. In their article, the environmental topics as a global issue used as a context in teaching mathematics. This paper describes students' mathematical abilities in solving problems related to environmental issues and determines students' knowledge and responses to the environment. Next, the paper entitled, "Realistic Mathematics Learning on Students' Ways of Thinking", is written by Resy Nirawati, Darhim, Siti Fatimah, and Dadang Juandi from Universitas Pendidikan Indonesia and STKIP Singkawang. This paper explores the students' thinking in solving geometry problems in schools that applied realistic mathematics learning was described in high-ability students, the mental acts displayed were interpreting, problem-solving and inferring. On the other hand, I Putu Ade Andre Payadnya, I Ketut Suwija, and Kadek Adi Wibawa from Universitas Mahasaraswati Denpasar analyze the students' abilities in solving realistic mathematics problems using "What-If"-Ethnomathematics Instruments with content focused on plane and space materials. Their research shows us the students' abilities in solving realistic ethnomathematics problems using "What-If"-Ethnomathematics Instruments" are still lacking which include: errors in understanding the problems, errors in representation, errors in reasoning, errors in answering "What-If" Questions. Lastly, the eighth paper entitled Pedagogical Content Knowledge of Teachers in Teaching Decimals through Realistic Mathematics Education written by Rahmah Johar, Fitriadi, Cut Morina Zubainur, M. Ikhsan, Tuti Zubaidah from Universitas Syiah Kuala and SMK 1 Al Mubarkeya. This qualitative study involved two teachers teaching fourth grade at the school partner of PRP-PMRI, Aceh Province, Indonesia. Their paper showed that teachers' PCK in teaching focused more on the reality principle, activity principle, interactivity principle, and guidance principle of RME.

The next three paper discuss RME development research. Atiqah Meutia Hilda and Rizki Dwi Siswanto from Universitas Muhammadiyah Prof. DR. HAMKA develop an android application of probability theory of the same element permutation material based on RME as a learning medium, as well as to assess the quality of the apps created for utilize in learning mathematics. Furthermore, the tenth article entitled Developing Realistic Mathematics Problems based on Sidoarjo Local Wisdom is written by Eka Nurmala Sari Agustina, Soffil Widadah, and Putri Afinanun Nisa from STKIP PGRI Sidoarjo. In this paper, they develop mathematical problems based on Sidoarjo's local wisdom on valid and reliable flat-shaped materials. This study produced 15 mathematical questions based on Sidoarjo's local wisdom on flat-shaped material that had been declared valid and reliable. On the other hand, Munawarah, Siti Zuhaerah Thalhah, Andi Dian Angriani, Fitriani Nur, and Andi Kusumayanti from IAIN Bone and Universitas Islam Negeri Alauddin Makassar develop an instrument test for computational thinking (CT) skills in the mathematics based RME (Realistic Mathematics Education) class of the Grade VIII students of JHS/IJHS. This is a Research and Development research carried out using the Plomp model.

Lastly, this issue closes with RME research which uses the mix method approach. In this paper, Namirah Fatmanissa and Nur Qomaria from Sampoerna University and Universitas Trunojoyo investigate prospective teachers' beliefs toward the realism of mathematics word problems. The study employed both quantitative and qualitative analysis. Prospective teachers with realistic beliefs emphasized that any information presented in the word problem should simulate real life as accurately as possible. In contrast, those who have non-realistic beliefs stated that it was acceptable if it can be imagined. Neutral prospective teachers believe that word problems' realism is relative to cultural setting and students' background.

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