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Press Release

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Children Learn STEM Through Fun, From Cardboard to a Miniature Kudus Tower

Kudus, Central Java, 3 September 2026 — Used cardboard, bottle caps, stones, and plastic cups may seem like ordinary objects. But in the hands of children at RA Miftahul Falah Dawe and PAUD Terpadu Kalirejo, they become learning tools for exploring science, technology, engineering and mathematics (STEM). The approach is in line with the launch of the National STEM Program, which promotes the 5M principles: Easy, Affordable, Enjoyable, Mindful and Meaningful.

At RA Miftahul Falah Dawe, teacher Fitria Anggraeni engages children in a project to build a miniature school from cardboard. The children think about how to arrange the cardboard so the structure can stand, choose suitable adhesive materials, and measure and calculate the amount and size of cardboard needed.

“For technology, the children learn how cardboard can be used to build a school. For engineering, they learn how to make sure the building does not collapse. For mathematics, they can take measurements and calculate how many pieces of cardboard are needed,” Fitria, speaking about the STEM practices she has introduced at her school.

For Fitria, the experience shows that STEM can be integrated naturally into early childhood education.

“Thankfully, we have actually been applying many of these practices in our learning activities. We just did not know that they were called STEM,” she said.

She believes the approach is important for preparing children for a changing world. “Children need to be given opportunities to experiment, combine learning with technology, and use mathematics, because STEM knowledge will be needed in the future,” she said.

A similar approach is used at PAUD Terpadu Kalirejo, led by principal Sumiyati. The school uses tools and materials that are easy to find, inexpensive, easy to find, and readily available in the children’s surroundings. Students are encouraged to observe objects, identify their functions, plan how to use them, explore, create their own projects and learn mathematical concepts along the way.

One of the school’s latest activities involved building a miniature Kudus Tower. The children chose plastic cups as pillars to support the structure, selected materials for the roof, decorated the building and then counted the number of levels.

“The children understand why they need to use cups to make the pillars because they know that the cups can stand upright. Then they count — there were six levels or layers from the bottom to the top,” Sumiyati said.

She said the children’s enjoyment is an important part of the learning process. “The children are happier and enjoy the activities more. With the tools and objects we provide, they have more opportunities to explore,” she said.



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Sumiyati added that these practices are not entirely new. “Actually, we have all been doing this, but we had not identified it as STEM. From inquiry-based learning and computational thinking to the Merdeka Curriculum, all of these can be integrated into STEM,” she said.

Minister of Primary and Secondary Education Abdul Mu’ti stressed the importance of nurturing and developing curiosity in early childhood. “We must guide children and help them find meaning in the things they encounter around them. Through 5M STEM, we hope to prepare our children to become young scientists with strong Pancasila values — scientists who have good character and who develop knowledge based on the natural resources and wealth we have as a nation,” he concluded.

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