Problem-Solving to Take Flight

Teachers learn to help students become problem-solvers for everyday life in Rwanda's first ever Math Camp.

This year Rwanda boasted of its first female pilot joining the national airline, flying its regional jets from Kigali to Nairobi, Johannesburg, Lagos, and Dar es Salaam. The World Bank ranked Rwanda's as the third easiest economy for doing business in sub-Saharan Africa. When pilots learn about a storm approaching, or an economic crisis looms that will affect a business owner's clients, they act without anyone telling them which information is relevant, where to start, or what process to use to find a solution.

"Rwandan children need these skills in order to compete in the regional and international economy," says Anathalie Nyirandagijimana, a curriculum developer at the Rwanda Education Board (REB). Problem-solving, logical thinking, and intelligent decision-making are the skills developed in mathematics, and it all begins in primary school.

Currently, the teaching in primary schools does not emphasize these skills, which—unlike Pythagoras' theorem or the nine times table—all children will make use of in their daily lives. "Rather than simply learning to apply rules and perform mathematical tasks, children need to think mathematically," says Anathalie. Students may chant multiplication facts, solve equation after equation copied from the board, but never solve a problem that prepares them for solving the real problems they'll encounter in their business or other pursuits.

This April, USAID joined REB in hosting the country's first ever Math Camp, bringing together thirty primary math teachers from Karongi district in Rwanda's western province. The Camp emphasized the use of mathematical investigations, which place problems in a real-life context.

While typical math problems ask students to use pre-learned methods to find the abstract, numerical answer, an investigation does not tell students which method to use or what information is relevant in finding the answer.

In one investigation it is imagined that seven people meet and that each person shakes hands with the others. Students must determine the total number of handshakes and come up with their own method for doing this. Once they find the answer, the teacher can ask them to predict how many handshakes would be made if twenty people met, which can produce a general rule.

"Investigations help students to develop key skills such as choosing appropriate strategies, making predictions, thinking critically, and making logical arguments," says Anathalie. These are the skills students will later use in their daily lives, whether they can remember the procedure for figuring out such a problem or not.

Each teacher made an action-plan for implementing aspects of the Camp into their teaching. Leonard Ndamyabera, a grade five teacher at Bisusa School, said that he'll begin using investigations to help his students better understand mathematics. "The investigation is very important because it helps the pupils to think and to discover some things, to solve the problems in their daily life," he said.

And one day, perhaps, it will help them to open their own businesses or fly their own planes.