



HOLISTIC
LEARNING
INNOVATIONS

THE SMART-SPLIT BOARD

Country: Kenya

Target Age: 8-10 Years

Learning Areas: Numeracy | Problem-solving |

Collaboration | Confidence | Taking Responsibility

THE CONTEXT

The innovation was developed by a team of five teachers working across four primary schools in Lamu West Sub-County, serving communities in Hindi, Witu, Hongwe, and Bomani zones. Together, the schools serve 1,088 learners, including 101 Grade 3 students directly involved in the pilot. The learner population comes largely from rural farming and fishing communities, including the Boni–Awere community, where poverty, low adult literacy, poor health outcomes, and limited resources contribute to low parental engagement, irregular attendance, and truancy.

Across the schools, teachers identified shared priorities: improving learner motivation, strengthening parental involvement, reducing absenteeism, and addressing persistent gaps in foundational numeracy. Limited access to teaching and learning materials further constrained teachers' ability to support struggling learners, particularly in early mathematics.



Learners at Bodhei Junction, Vipingoni, Mini-Valley and Umoja Comprehensive Schools in Lamu West Sub-County.

THE CHALLENGE

How might we improve students' performance in numeracy using low-cost, available learning materials?

Assessments, classwork, and quizzes consistently showed that learners struggled with basic numeracy skills, especially solving word problems and division. Teachers reported that many learners found it difficult to interpret mathematical questions because of weak reading comprehension, making it hard to identify key information and select appropriate operations. These challenges were observed across multiple grades, indicating a systemic issue rather than an isolated classroom problem. As one Grade 4 mathematics teacher explained, learners found word problems difficult because they required both reading and understanding, skills many had not yet mastered. Without targeted intervention, these gaps continued to undermine confidence, participation, and overall academic performance in mathematics.



“Solving of word problems and division is a challenge to most of my learners as it needs them to read and comprehend which most of them find it difficult.”

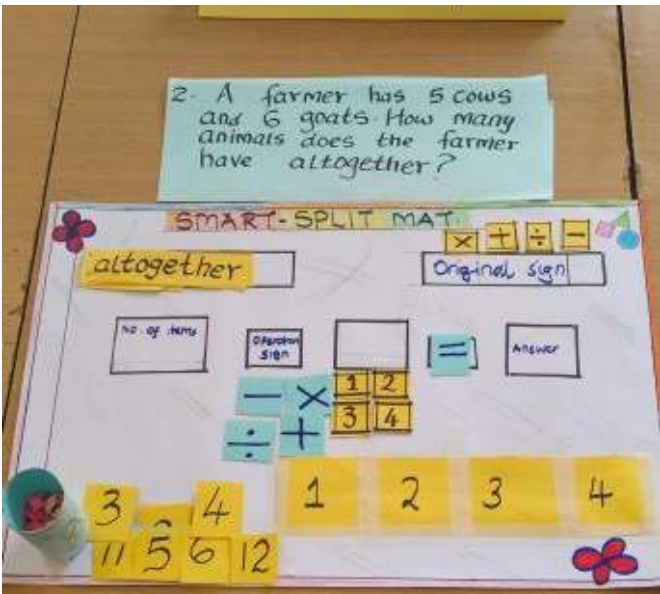
Mr. Joseph Mwacharo
Grade 4 – Math Teacher

THE INNOVATION

THE SMART-SPLIT BOARD

To respond to this challenge, the team developed the Smart Split Board, a low-cost, hands-on numeracy tool designed to make abstract mathematical concepts visible and interactive. The board is constructed using locally available materials such as wooden display boards, bottle tops, sticks, carton tins, number strips, and operation signs.

In practice, teachers display a word problem and guide learners to identify key words using a “keyword flip” approach. Together, the class reconstructs the problem on the Smart Split Board, breaking it down step by step using counters and visual representations. Through repeated testing and iteration, the tool was refined to improve durability, efficiency, and learner engagement. The approach encourages learners to work collaboratively, discuss their reasoning, and take responsibility for problem-solving, transforming numeracy lessons into participatory learning experiences.



Smart split mat. The original idea



Smart split board. The improved version on use of counters



THE IMPACT

Improved numeracy through hands-on, visual problem-solving

Over a five-month pilot period, the Smart Split Board led to measurable improvements in learners' numeracy skills. Teachers observed clearer gains in learners' ability to solve word problems and perform division, alongside faster recall of basic facts and greater accuracy in calculations. Learners became more confident and willing to attempt problems, contributing to richer classroom discussions and higher participation. The hands-on approach helped students understand concepts more deeply by engaging multiple senses—listening, seeing, and doing—making learning easier to grasp and remember. Increased enjoyment of mathematics also made school more attractive to learners, contributing to improved attendance and reduced truancy across participating schools.



Meet the Teachers



James Kazungu

I have been a teacher for 2 years, and passionate working with learners. I love putting a smile on their faces especially as they come from poor backgrounds. This feels fulfilling to me, I always strive to provide a conducive learning environment for my learners and build a better Kenya in general through mentoring young learners achieve their goals. I am always ready to learn and incorporate new ideas in my work and strive to be the best version of myself.



Ann Njeri

I have worked in my current role for 12 years. I aspire that everyday my learners go home having known something new. It is also my joy to stay with learners. I also like to motivate them. My ambition is that my learners get the best and I shape them in what they are competent in.

Meet the Teachers



**Harison Chiriba
Chando**

I have worked in my current role for **two years**. I like to stay with learners and imparting them with knowledge and skills, so that they become useful and independent in the society. I often give them guidance and morale in spiritual and academic wise. My ambition for the future is that my learners achieve the best and nurture them in what they are capable of.



**Zephaniah
Mwadime**

I am an educator who is self motivated, and goal oriented into impacting learners lives positively. I have worked in my current role for **four years**. I am passionate about nurturing young minds and maximizing each learner's potential regardless of their ethnicity and educational background. I believe in the adage, ***Keep a green tree in your heart and maybe a singing bird will come.*** This helps me to continue being patient with every learner am entrusted with.



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