GIEVA.org
Empowering Youth for a Sustainable Future.

GIEVA's 20th Anniversary's STEM Competition

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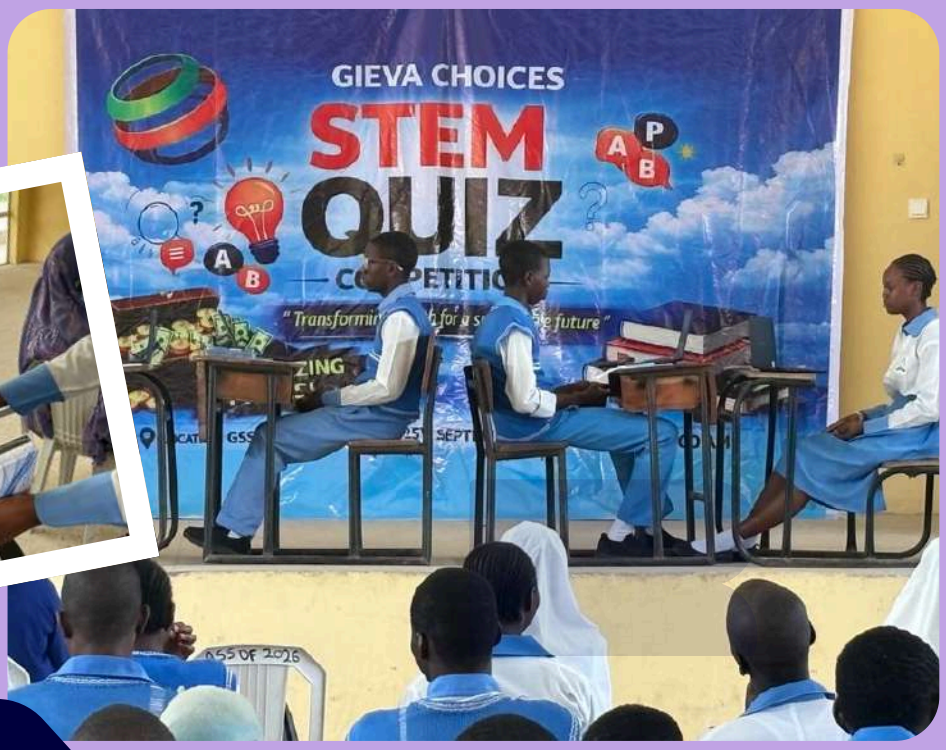
Teacher Capacity-Building Impact Project

SEPTEMBER 22 & 26

2026

GSS Wuye, Abuja





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1. Executive Summary

As part of GIEVA's 20th Anniversary activities, GIEVA implemented a two-part education initiative at Government Secondary School (GSS) Wuye, Abuja, combining teacher capacity building on modern technology and visual learning with a STEM quiz competition for high-performing students.

The initiative was designed to strengthen teachers' capacity to use technology purposefully in the classroom, promote students' interest in STEM, identify emerging talent, encourage healthy academic competition, and test a technology-enabled model that could be replicated in other schools. The intervention reached 21 teachers, 10 student competitors and approximately 130 students, teachers and other observers. GIEVA also donated a laptop to the school to support continued technology-assisted teaching and learning.

The quiz generated an important baseline insight: the 10 participating students achieved an overall average score of approximately 41%, indicating substantial room for improvement in STEM learning outcomes. Biology recorded the strongest performance (46%), while Chemistry recorded the weakest (33%). Discussions with teachers also identified the absence of a dedicated Physics teacher as a significant structural gap.

Beyond the immediate activities, the project demonstrated the importance of combining teacher development, student engagement, technology access and targeted institutional support rather than treating STEM performance as a student-only issue.



Since 2006

2. Goal and Objectives

The initiative sought to build sustainable student and teacher capacity for a modern learning environment while promoting STEM excellence through competition, talent identification, creativity, problem-solving and recognition.

Specific objectives were to:

- Increase students' interest in Science, Technology, Engineering and Mathematics (STEM).
- Promote healthy academic competition.
- Identify students with strong STEM abilities and potential.
- Strengthen teachers' capacity to use modern technology and visual learning strategies.



Increased students' interest

STEM

Healthy Academic competition.



3. Activities & Reach

01

Teacher Capacity Building

A technology-enabled training session introduced 21 teachers to practical approaches for using multimedia and visual learning to make difficult concepts more understandable, memorable and engaging.

The training focused on five practical areas: **Recognize → Visualize → Integrate → Engage → Reflect.**

Teachers explored how to identify difficult concepts, select appropriate visual and digital resources, integrate technology purposefully into lessons, move students from passive viewing to active learning, and assess whether technology actually improves learning. GIEVA also provided 6GB of data to participating teachers to facilitate access to the online training.

02

STEM Quiz Competition

Ten high-performing SS2 and SS3 students were selected based on their previous academic performance. The competition assessed Mathematics, Physics, Biology and Chemistry and was designed as a technology-enabled competition using GIEVA's internally developed quiz platform.

The competition ultimately had to be transferred to a paper-based format when three students could not connect to the digital platform despite the use of alternative networks and devices. This provided a valuable operational lesson for future technology-enabled programming.

Institutional Support

GIEVA donated a new laptop to GSS Wuye to support continued use of technology in teaching and learning. The donation was positively received by the school leadership and community.





4. Key Results and Data Analysis

The quiz results provide useful baseline evidence for future STEM interventions.

Indicator	Result
Student competitors	10
Teachers trained	21
Approx. participants/observers reached	130
Overall student performance	41%
Strongest subject – Biology	46%
Physics	43%
Mathematics	42%
Weakest subject – Chemistry	33%
School technology support	1 laptop donated

Key Inferences

1. STEM learning gaps are significant. An overall performance level of approximately 41% suggests that the students require sustained academic support rather than one-off competitive activities.

2. Chemistry requires particular attention. Chemistry recorded the lowest average performance at 33%, approximately 13 percentage points below Biology, the strongest-performing subject.

3. Teacher availability is a critical constraint. The absence of a dedicated Physics teacher represents a structural barrier to improving performance and cannot be addressed through student-focused interventions alone.

4. The intervention provides a useful baseline. The quiz should be treated not only as a competition but also as an initial diagnostic assessment. Repeating a comparable assessment after targeted support would allow GIEVA and the school to measure improvement over time.

5. Technology access alone will not guarantee learning outcomes. The connectivity challenges demonstrated that effective digital learning requires reliable infrastructure, prepared devices, appropriate platforms and contingency arrangements. Teacher confidence and engagement are also essential for technology to translate into improved classroom practice.



5. Challenges and Lessons Learned

- Digital programmes require tested contingency systems. Internet connectivity affected participation despite multiple backup options.
- Technology and devices should be tested and configured before participants arrive.
- Programme timing is critical. Delays resulted in the competition extending toward school closing time, contributing to distraction and a less orderly award session.
- Teacher engagement must be intentional. Participation from some STEM teachers was lower than expected, highlighting the importance of trust-building, active facilitation and opportunities for teachers to contribute.





Technology should serve pedagogy, not simply provide novelty. The teacher training appropriately emphasized purposeful use of technology to improve understanding and engagement.

6. Recommendations and Proposed Next Steps

1. Establish a structured STEM improvement programme. Move from a one-time competition to a structured 6–12 month STEM support cycle combining teacher development, student mentoring, practice activities and periodic assessments.





2. Prioritize Chemistry and Physics. Develop targeted learning support for Chemistry while addressing the identified Physics teacher shortage through teacher placement, volunteer teaching, partnerships or specialist mentoring.

3. Introduce pre- and post-assessments. Administer a baseline assessment before intervention and a comparable assessment after 6–12 months to demonstrate measurable learning gains.



6. Recommendations and Proposed Next Steps

4. Strengthen teacher capacity and follow-up. Complement one-off training with practical coaching, peer learning and classroom follow-up to determine whether teachers are applying the technology and visual-learning strategies introduced.





5. Improve digital competition readiness. Conduct device, connectivity and participant onboarding tests at least one day in advance. Maintain a tested offline/paper backup and consider low-bandwidth functionality.

6. Expand through inter-school STEM competitions. Once the GSS Wuye model is refined, pilot an inter-school competition involving other CHOICES schools.

7. Track longer-term outcomes. Future reporting should track improvement in STEM assessment scores, teacher adoption of technology-enabled teaching, student participation in STEM activities, progression into STEM-related academic pathways, number of schools adopting the model, and teacher/student feedback.

7. Sustainability and Scale

The project provides a practical foundation for strengthening GIEVA's CHOICES programme. Sustainability should focus on continued teacher capacity building, targeted support for identified staffing gaps, regular STEM activities, inter-school competitions, improved digital infrastructure and systematic monitoring of classroom technology use.

The donated laptop provides an immediate institutional resource, while the teacher training creates an opportunity for the school to integrate technology-assisted teaching beyond the project period. The most important next step is to connect these inputs to measurable improvements in teaching practice and student learning outcomes.



8. Conclusion

The GSS Wuye intervention successfully demonstrated a practical model for combining teacher development, technology, student engagement, academic competition and institutional support within a low-resource secondary school environment.

Its value extends beyond the immediate number of participants reached. The project generated actionable evidence about student learning gaps, teacher capacity needs, technology constraints and institutional barriers. The approximately 41% overall STEM performance provides a clear baseline and reinforces the need for sustained intervention, particularly in Chemistry and Physics.

For GIEVA and potential partners, the next phase should therefore shift from a one-off activity model to a measurable, school-based STEM improvement model. With continued teacher support, targeted interventions, reliable technology, periodic assessment and opportunities for inter-school engagement, the GSS Wuye pilot can provide a scalable foundation for strengthening STEM education across other schools within the CHOICES network.

