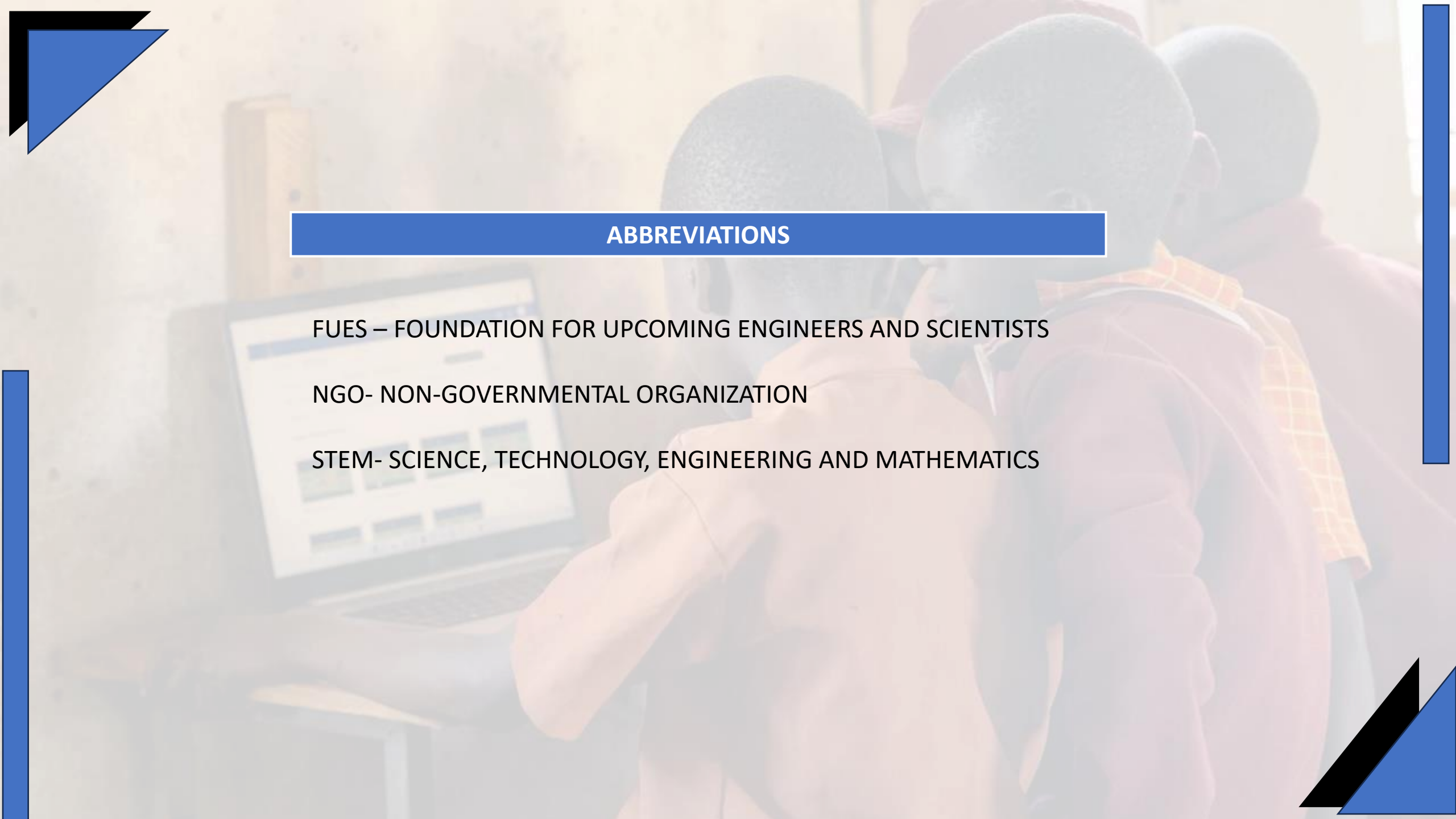
FOUNDATION FOR UPCOMING ENGINEERS AND SCIENTISTS (FUES)

Empowering young Minds, Shaping a Sustainable Future

NGO PROFILE

www.fuesfoundation.or.tz
fuesfoundation@gmail.com
+255765888522
@fuesstem
fuestv



ABBREVIATIONS

FUES – FOUNDATION FOR UPCOMING ENGINEERS AND SCIENTISTS

NGO- NON-GOVERNMENTAL ORGANIZATION

STEM- SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS

TABLE OF CONTENTS

ABOUT FUES

WHO, WHAT & WHY

Foundation for Upcoming Engineers and Scientists(FUES Is a non-governmental organization registered with the registration No. ooNGO/0009503 that is dedicated to improving access to quality Science, Technology, Engineering and Mathematics (STEM) education for children, youth, Disabilities, girls and women in Tanzania. FUES believes that every child deserves access to a quality STEM education, regardless of their socioeconomic background.

The organization provides training programs/projects, access to technology and mentorship to the all students in order to encourage, support and inspire them to pursue a career in STEM. With the mission of creating a more equitable and just world, FUES aims to empower young people with the skills necessary to succeed in today's technology-driven society.

Through its work, FUES has already positively impacted the lives of many young people in Tanzania and has the potential to continue to do so in the years to come. FUES Organization is a trailblazing institution in the world of STEM education and empowerment.

OUR HISTORY

The Foundation for Upcoming Engineers and Scientists (FUES) was established in 2018 by a group of passionate educators and professionals who shared a vision to bridge the persistent gap in STEM education across Tanzania. The founders themselves grew up in rural areas, where their natural curiosity and innovative spirit were often constrained by limited opportunities to explore science and technology.

During their school years, they faced numerous obstacles: poorly equipped laboratories, lack of hands-on learning activities, severe shortages of qualified science teachers, and a system that prioritized rote memorization over practical application. Many of their peers, particularly girls, were discouraged by the widespread perception that STEM education was a field reserved for boys. For students with disabilities, opportunities were even scarcer due to inaccessible facilities and a lack of inclusive teaching practices.

Despite these challenges, the founders remained resilient. They pursued STEM studies with determination, often relying on improvisation and creativity to compensate for the absence of adequate resources. Their perseverance enabled them to advance in their academic and professional careers, but it also revealed the urgent need for systemic change.

Motivated by their own experiences, they came together to create FUES as a platform to empower marginalized students—especially girls, children with disabilities, and rural learners—through hands-on, inclusive, and innovative STEM education. From its inception, FUES has sought not only to improve access to quality STEM learning but also to transform negative perceptions, nurture talent, and inspire the next generation of problem solvers and innovators in Tanzania.

Background Problem Statement

The accelerating technological revolution has underscored the critical importance of Science, Technology, Engineering, and Mathematics (STEM) education in fostering innovation, economic growth, and social development. However, in Tanzania, STEM education continues to be delivered predominantly through theoretical, lecture-based methods, often described as “chalk talk.”

This lack of practical, hands-on learning deprives students of opportunities to apply concepts, thereby diminishing their creativity, problem-solving skills, and curiosity. As a result, many students develop negative attitudes toward STEM subjects, reflected in persistently low performance and limited pursuit of STEM-related careers.

These challenges are exacerbated by structural and social inequities. Girls, children with disabilities, and students from marginalized and rural communities remain excluded from meaningful participation in STEM education.

Contributing factors include the lack of STEM infrastructure such as science laboratories, computer facilities, and innovation spaces; a shortage of qualified teachers with modern pedagogical and practical skills; outdated curricula that emphasize rote memorization over innovation and problem-solving; and limited integration of emerging technologies into classroom practice.

Furthermore, weak collaboration between schools, higher education institutions, industry, and communities has reduced opportunities for learners to see the real-world value of STEM education.

Without targeted and inclusive interventions, these barriers will continue to hinder Tanzania’s progress toward developing a skilled workforce capable of driving technological innovation, economic resilience, and sustainable development.

A. RURAL SHARE OF STEM PIPELINE – Tanzania 2023/24

Stage	Rural % of cohort	Urban % of cohort	Rural deficit
Awareness of any STEM career (age 15-17)	21 %	49 %	–28 pp
Lower-secondary schools with working science lab	28 %	74 %	–46 pp
O-level Physics pass-rate (girls)	46 %	78 %	–32 pp
University entrants choosing STEM majors	18 %	31 %	–13 pp

B. PERSONS WITH DISABILITIES (PWD) IN STEM – Tanzania vs Sub-Saharan Africa

Indicator	Tanzania %	SSA median %
PWD among all primary-age children	7 %	6 %
PWD share of ALL secondary students	1.8 %	2.6 %
PWD share of ALL TVET students	1.2 %	3.8 %
PWD share of ALL university STEM students	0.5 %	0.9 %
Female-PWD share of ALL female STEM students	0.3 %	0.7 %
Secondary labs officially “accessible” (ramps, Braille sci-books, etc.)	< 5 %	9 %
Rural science teachers trained in inclusive STEM pedagogy	11 %	20 % (urban)

CONT……

C. COMBINED RURAL + DISABILITY GAP

Overlap group	Share of total 18-y-old population	Share of current university STEM intake
Rural + Non-disabled	62 %	18 %
Rural + Disabled	5 %	0.2 %
Urban + Disabled	1 %	0.3 %
Urban + Non-disabled	32 %	81.5 %

According to the 2023-24 Tanzania higher education enrollment data, only 22% and 29 % of female students enrolled in engineering or information and communication technology, respectively. Every girl left out of STEM education—and eventually STEM jobs in Tanzania—adds up to a national and global STEM skills shortage with notable economic implications.

Our Solution

FUES bridges the STEM education gap by transforming learning from theory into practice. We provide hands-on, inclusive, and innovative STEM programs that spark curiosity, build problem-solving skills, and inspire creativity among students.

Through our innovative program like Mobile Digital labs, Her In STEMpreneurship, after-school STEM clubs, bootcamps, mentorship, and innovation challenges, we equip learners with practical experience and digital skills.

We focus on reaching those left behind—girls, children with disabilities, and rural learners—by making STEM education accessible, inclusive, and engaging. FUES also trains teachers in modern, learner-centered pedagogy and collaborates with schools,NGOs, universities, industry, and communities to align STEM education with real-world opportunities.

By integrating technology, promoting inclusivity, and nurturing young innovators, FUES empowers Tanzania's youth to not only participate in the digital age but to lead it—driving innovation, economic growth, and sustainable development

THEMATIC AREAS

INCLUSIVE EDUCATION

STEM EDUCATION & INNOVATION

GENDER EQUALITY AND WOMEN EMPOWERMENT

CLIMATE & ENVIRONMENTAL SUSTAINABILITY

VISION

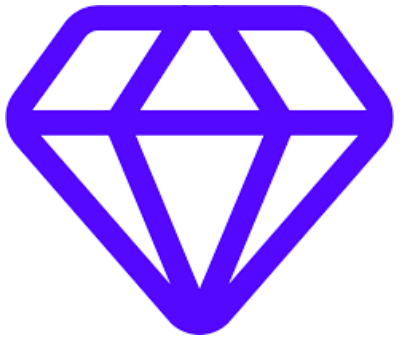
Empowering the next generation to innovate and excel in STEM fields by equipping them with problem-solving skills to address real-world challenges, driving global progress and sustainable development.

MISSION

To provide inclusive, high-quality STEM education that empowers youth with problem-solving skills, fosters innovation, and promotes sustainable development.

Through hands-on learning, mentorship, and community engagement, we equip the next generation to tackle global challenges and drive meaningful progress

CORE VALUE



INCLUSIVITY

SUSTAINABILITY

COLLABORATION

TRANSPARENCY

ACCOUNTABILITY

INNOVATION

TARGET BENEFICIARIES

We primarily serve students from **low-income backgrounds**, **youth**, **disabilities**, **girls** and **women, marginalized communities**, and **those attending under-resourced schools**.

TANZANIA

GEOGRAPHIC REACH

Our NGO currently operates in urban and rural areas across Tanzania, targeting communities with limited access to quality education

PARTNERSHIPS AND COLLABORATIONS

FUES recognizes that strong partnerships are essential for achieving lasting impact. The organization collaborates with local schools, government agencies, communities, corporate entities, and non-profit organizations to enhance program delivery and outreach.

Strategic partnerships also extend to universities, technology companies, and educational institutions that provide technical expertise, mentorship, and resources to strengthen STEM education, digital inclusion, and environmental sustainability initiatives. Through these collaborations, FUES continues to expand its reach, foster innovation, and build a more inclusive and sustainable future for young learners in Tanzania.

FUNDING SOURCES

Grants

Corporate sponsorships

Fundraising events

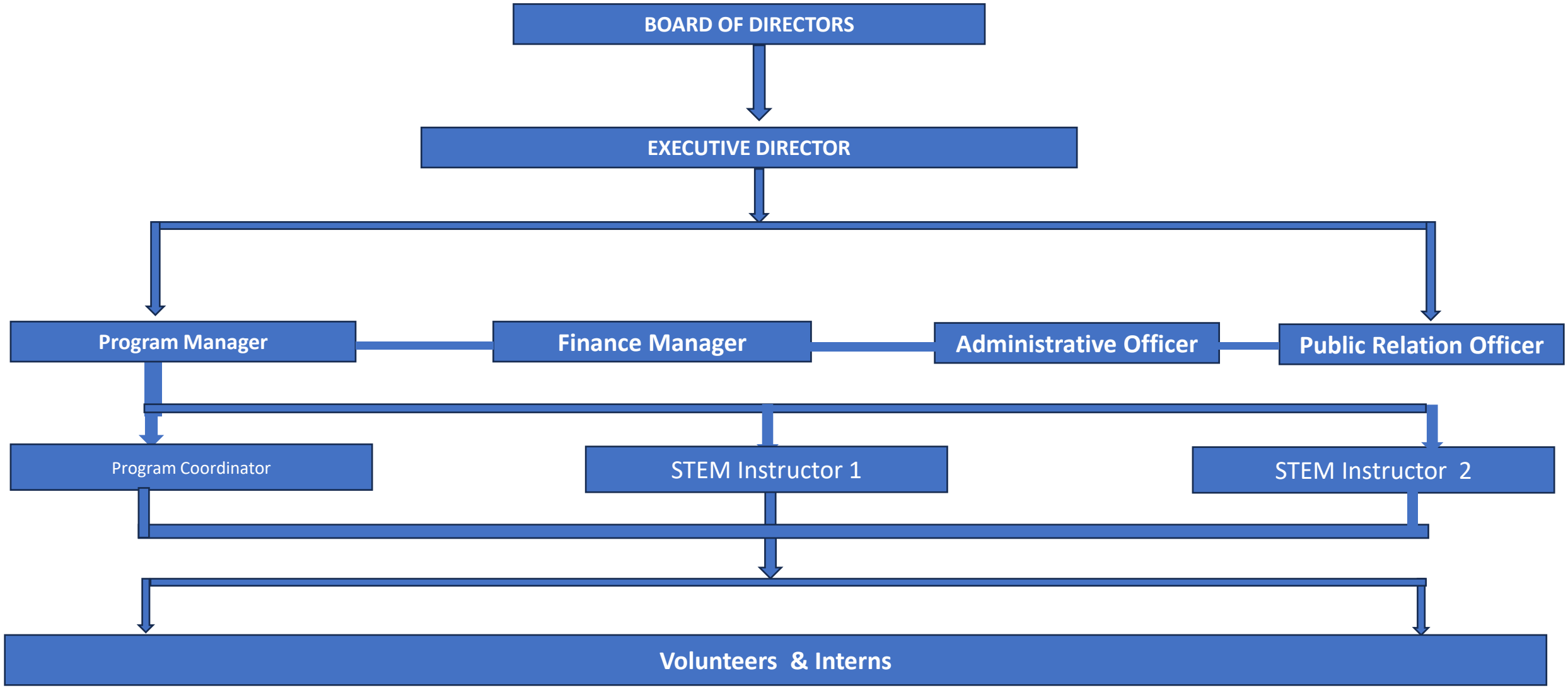
Individual Donations

Program Fee

GOVERNANCE AND ACCOUNTABILITY

We maintain transparency and accountability by following strict governance protocols and producing annual reports

ORGANIZATIONAL STRUCTURE



CHALLENGES & OPPORTUNITIES

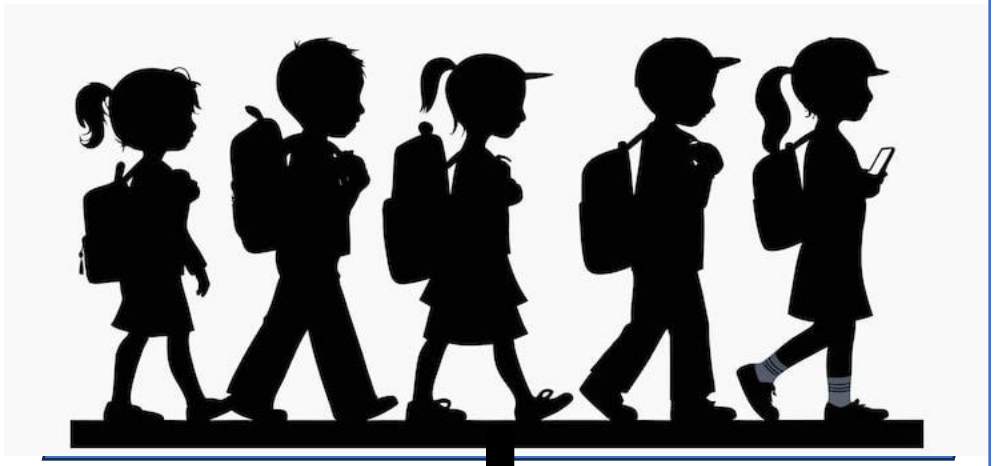
FUES faces ongoing challenges such as limited funding, shortage of STEM equipment, difficulty expanding to new regions (rurals) and ensuring long-term sustainability.

However, we see opportunities to leverage technology through mobile Digital labs and e-learning platforms, engage more funders, volunteers, and partner with national and international NGOs.

To build sustainability, we plan income-generating programs such as subsidized STEM training, innovation bootcamps, and community makerspaces.

These strategies will reduce donor dependency, strengthen partnerships, and ensure lasting impact for marginalized learners across Tanzania.

IMPACT AND ACHIEVEMENTS



Since our inception, FUES has directly reached over **35,000 +** students across Tanzania through STEM projects, events, seminar, bootcamps, after-school programs, mentorship, and innovation challenges. Our initiatives have led to measurable improvements in STEM achievement rates, with participating g scoring on average 73% higher in national STEM exams.

We have sparked greater interest in STEM careers, inspired rural and marginalized learners, and supported girls and students with disabilities to access digital and renewable energy skills. Beyond classrooms, we have built a growing network of successful STEM professionals, university students, and young innovators who serve as role models and mentors for the next generation.

- 75.1%+ **Higher Exam Scores – students in our programs outperform peers in national STEM exams.**
- **400+ students with Disabilities Empowered – with digital and renewable energy skills.**
- **512+ Teachers Trained – in modern, hands-on and inclusive STEM pedagogy.**
- **52.3% Girls | 46.4% Boys | 1.3% Students with Disabilities.**

FUTURE PLANS

Over the next five years, FUES envisions scaling its impact nationwide, transforming STEM education into a practical, inclusive, and innovation-driven pathway for Tanzania's youth. We aim to reach over 1,000,000 students, with at least 55% being girls and 10% students with disabilities, ensuring equitable participation across all regions.

We will establish Tech Primary and Secondary Schools under the NGO to create sustainable centers of excellence in STEM and generate income for NGO to be sustained . Alongside this, FUES will set up Innovation Hubs in some regions of Tanzania, providing spaces for young people to design solutions, access mentorship, and collaborate on community-driven innovations.

To strengthen learning beyond classrooms, we will prepare and deliver online and offline STEM training, making high-quality education accessible to both rural and urban learners. Additionally, 10 fully equipped Mobile ICT & STEM Labs will expand access to underserved schools.

By training 20,000+ teachers in inclusive, hands-on pedagogy and launching income-generating initiatives such as STEM kits, innovation bootcamps, and teacher training services, FUES will ensure long-term sustainability.

By 2030, FUES will stand as a leading driver of inclusive innovation in East Africa, with tech schools, regional innovation hubs, and digital STEM platforms empowering a generation of Tanzanian problem solvers to shape the future economy and sustainable development.

FUES SWOT ANALYSIS

S STRENGTH	W WEAKNESS	0 OPPORTUNITIES	T THREATS
-Strong community reach -Proven STEM programs -Inclusive approach, -Recognized through grants/awards -Strong partnerships -Committed leadership -Integration of sustainability.	-Reliance on external funding -Limited STEM equipment & tools -Lack of permanent infrastructure -Limited M&E, and capacity challenges -Low visibility beyond pilot regions	-Rising demand for digital/green skills -Government & donor interest -Potential to scale nationally -Rural expansion via mobile ICT labs -Creation of tech-based schools -Youth eager for entrepreneurship and tech careers. -CSR partnerships	-Cuts in foreign aid economic instability -Rapidly changing technology that may outpace resources and training -Gender/cultural biases -Climate-related challenges that may disrupt community engagement and operations

BOARD OF DIRECTORS

Dr Eng.Juliana pallangyo

Chair Person

Marry shirima

Secretary

Prof. Verdiana Grace Masanja

Member

CONT……

…

BOARD OF DIRECTORS

Prof Hulda S. Swai

Member

Eng. Sumbu G. Meshack

Member

Dr.Janeth J. Marwa

Member

Frank O.Galus

Member

EXECUTIVE TEAMS

Eng. Sumbu G. Meshack

Executive Director

Marry Shirima

Executive Secretary

Tumaini I.Munuo

Finance Manager

CONT……

…

EXECUTIVE TEAMS

Herieth Mushi

Project Manager

Albert Joseph

Project Coordinator

Caroline Erasto

STEM Instructor

EXECUTIVE TEAMS

CONT……

…

Christina Mathayo

Administrative Officer

Regina O. Kimario

STEM Instructor

Musa E. Elia

STEM Instructor | Volunteer

Contact Information

PHYSICAL ADDRESS

COUNTRY : TANZANIA

REGION : ARUSHA

STREET/WARD : SEKEI

POSTCODE: 23101

WORKING HOURS

MONDAY - SATURDAY

8AM - 6PM

ORGANIZATION CONTANTS

www.fuesfoundation.or.tz

fuesfoundation@gmail.com or info@fuesfoundation.or.tz

+255765888522

SOCIAL MEDIA PAGES

@fuesstem **@fues stem** **fuestv**

CONTACT PERSON

NAME: ENG.SUMBU MESHACK
TITLE: EXECUTIVE DIRECTOR
ORGANIZATION: FUES

fuesstem@gmail.com