NextGen Restyling
UGANDA LIMITED

Report

Open Africa Championship

Cape Town South Africa

5th -11 th May 2025

Coderina
EDTECH

https://nextgen.ug
info@nextgen.ug
@NextGen Ug
+256 772 657 985

Foreword

At NextGen Innovators, we believe that innovation is not a privilege but a necessity. It is the spark that drives progress in every field, from science and technology to education and social development. Through initiatives like the FIRST® LEGO League, we are not only fostering technical skills but also nurturing a mindset of problem-solving, teamwork, and resilience among our youth. We thank Coderina Education Technology Foundation for trusting us to implement the programs.

This trip would not have been possible without the incredible support of our sponsors parents and school support. Allow me to extend my heartfelt gratitude to **Green Hill Buwate Administration**, **Head Teacher Mr. Benon Takirambudde, Patron Robotics Mr Pius, Club Lead Tr Fabian, support teachers and our dear Parents**, who selflessly supported the entire journey. I also wish to acknowledge the invaluable parents who financially, and holistically supported their children from the rigorous training and competition week. Your commitment to STEM education is not only paving the way for a brighter Green Hill, but Uganda at large.

To our participants, you are the heart of this event. Each robot you built, each program you created, and each challenge you tackled brought us closer to unlocking the incredible potential that lies within you. I know you were competing for the first time travelling for the first time or second, the food was different, weather was terrible to the known, you worked hard for a trophy, I want you to remember this: Every step of this journey is a victory in itself. Well done Aqua innovators

To the parents, teachers, coaches and relatives thank you for supporting these young innovators and investing in their dreams. Your guidance & encouragement are the cornerstones of their success. The best is yet to come. As we were awed by the creativity, collaboration, and resilience displayed over the week, let us remember that the impact of this competition goes far beyond the trophies and medals. It is about nurturing a generation that can think critically, solve problems, and inspire change in their communities and beyond.

I leave you with this challenge: We must continue to build bridges between education, technology, and opportunity. Let us champion innovation not just as a tool for success but as a means to uplift our nation. Remember the CHANGE YOU DESIRE BEGINS WITH YOU. Together, we can ensure that Your child and country become a beacon of innovation in Africa and the world. Thank you all for being part of this journey.

Together, we innovate. Inspire, and build a better tomorrow.

Mellon Kenyangi
CEO
NextGen

Content

Executive Summary

NextGen Restyling Uganda Limited, in partnership with Green Hill Academy Buwate, proudly represented Uganda at the FIRST LEGO League Open Africa Championship held from 7th to 9th May 2025 in Cape Town, South Africa. The team, named Aqua Innovators, comprised 13 learners, one teacher, and three coaches under the leadership of Ms. Mellon Kenyangi. This prestigious event welcomed over 80 teams from 38 countries across 5 continents, providing a valuable platform for cultural exchange and STEM innovation.

During the event, the Ugandan team showcased their creativity through an innovation project focused on using a submarine model to clean microplastics from water bodies. Their robot game performance reached a high score of 195 points, placing them above 14 other teams. Judges commended the team's problem-solving strategy, their understanding of real-world environmental issues, and their energy during team presentations and alliance collaboration.

The learners also participated in the cultural exchange, proudly representing Uganda through traditional attire and language, although a scheduled performance of their cultural poem was missed due to time limitations. Core values such as teamwork, inclusion, and curiosity were consistently demonstrated throughout the event. For many of the children, this was their first time traveling outside Uganda, which brought both excitement and challenges in adjusting to new environments.

Several important lessons emerged. The experience highlighted the need for early preparation, discipline, and personal responsibility among students. It also emphasized the importance of empowering teachers to take proactive leadership roles and support learners both academically and socially. Cultural and behavioral readiness are just as important as technical skills when preparing students for international platforms.

Overall, the trip was a remarkable success for team Aqua innovators and Green Hill being the first time on an international robotics stage. The learners returned with new global perspectives, enhanced confidence, and a deeper passion for STEM. NextGen Restyling Uganda remains committed to scaling such programs across the country, building a generation equipped to solve real-world problems through innovation, creativity, and collaboration.

Introduction

Overview

In Uganda, the FIRST® LEGO® League (FLL), implemented by NextGen Innovators Uganda Ltd in collaboration with Coderina EdTech Foundation, has become a transformative platform for engaging youth in Science Technologty and Engineering (STEM) education.

This programme is designed to enhance STEM education through integration of robotics which significantly enhances learning experiences and outcomes for learners. To Broaden their training programme, the FLL Robotics Competitions that are held annually through which outstanding teams from National to International winners are identified.

This report is for the Second (2nd) National First LEGO League competition that was held on Saturday 14th 2024 at Kabojja International School.

Our Robotics Training Programme

FLL is implemented through a structured programme that includes holiday bootcamps, after school clubs, robotics competitions, innovation challenges, mentorship, and capacity-building workshops.

Our robotics programme provides a hands-on learning environment where our learners are actively engaged with using LEGO Technology and Arduino for their innovation projects from as early as four (4) years.

The programme is classified into four categories according to the age: Discover (4 – 6 years), Explorer (6 – 10 years), FIRST® LEGO League (9 – 16 years) and FIRST® Tech Challenge (12 – 18 years)

> *Our training programme subjects learners to real life challenges in line with SDGs, emphasising problem solving while preparing them for The National and International First LEGO League robotics competitions.*

The FLL robotics competitions allows learners to design, create, build, and program robots which fosters development of their critical thinking skills as they analyze problems and devise effective solutions.

Seasons FLL Competition

Theme and Objectives

The 2024/25 season's competition was on the theme "**Submerged**" which focused on exploring the complexities of ocean ecosystems. Teams were tasked to use LEGO® technology to investigate various layers of the ocean, which fostered creativity and critical thinking as they developed solutions to real-world problems related to marine environments.

The overarching goal for the season's competition was to encourage participants to "bring their learnings and ideas to the surface" as they actively engaged with the challenges presented by oceanic ecosystems.

Competition Missions Challenges

In the Robot Game, Teams were faced with **15 Missions** namely: Coral Nursery, Shark, Coral Reef, Scuba Diver, Angler Fish, Raise the Mast, Kraken's Treasure, Artificial Habitat, Unexpected encounter, Send Over the Submersible, Sonar Discovery, Feed the Whale, Change Shipping Lanes, Sample Collection, Research Vessel.

Teams were also required to come up with Innovation projects aligned to the theme and career sparks.

Career Sparks: **Oceanograpers** conduct research in the deep zones of the ocean; **Marine Biologists** work in the Sunlight Zone; **Submarine Pilot** work in the Twilight Zone; **Marine Researcher**; **Photographers**; **Ecologists**

Open Africa Challenge

The Open Africa Championship (OAC) is a premier event in South Africa uniting the worlds brightest young minds in the fields of STEM, particularly focusing on robotics and coding. The Championship is envisioned not just as a competition but as a platform that highlights the technological potential of African youth, contributing significantly to the continent's visibility in the global Robotics and Coding landscape. The OAC is based on *FIRST*® advancement policy and therefore by invitation only.

Green Hill academy Robotics club took part in the OAC on their first participation in an international competition.

Objectives for Participation

Select members in the GALB robotics club took part in the OAC so as to:

i) Expose the learners to global STEM innovation platforms.

ii) Foster hands-on learning through FLL project based approaches and as well as the problem based using the innovation project

iii) foster hands on learning and cultural exchange with teams from across the world.

iv) represent Uganda and showcase the nation's talent and creativity in robotics.

Participants

The event had over 80 teams from across the world and to precise 38 countries. Where Green Hill Academy Buwate fully represented the country Uganda on the global scene.

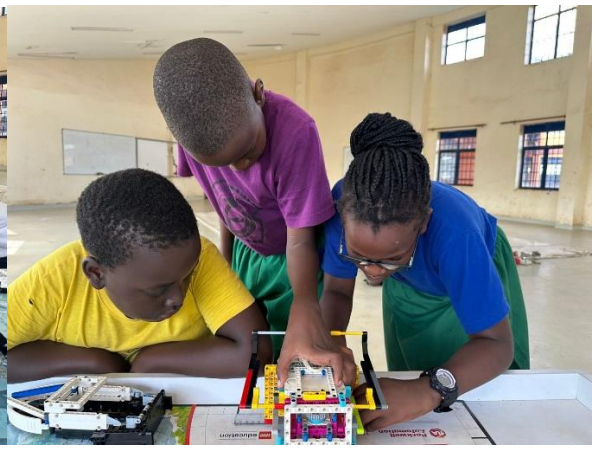
Continent	Participating Countries	# Team
Africa	Uganda, South Africa, Nigeria, Lesotho, Eswatini, Zimbabwe, and Congo.	12
Asia	China, Honduras,Türkiye, Serbia, Honduras , Japan	19
UAE	United Arab Emirates	3
Europe	Germany, Spain, Luxembourg, Hungary, Belgium, Australia, Norway, Slovenia, Slovakia, Romania, France, Switzerland, Italy, Netherlands, Poland, Spain, Greece, Sweden	32
North America	USA, Kazakhstan, Canada	6
Latin America	Paraguauy, Mexico, Brazil , Chile, Vietnam	12
		84

The Aqua Innovators Team

The Ugandan team from Greenhill Academy Buwate was called Aqua Innovators. It composed of 13 participants that with roles assigned for the Innovation Project and Robot Design as follows.

Preparation of the team for the AOC Competition

Training of the team followed our termly robotics training program. In order for the team to gain in-depth understanding of the season as first timers, we had a dedicated extra one-week training carried out.



With limited time at hand, the children were divided into two groups, that is, innovation project and robot game as indicated in the table below,

Sn	Name	Role	Group
1	Lucas Nganda	Project Manager	Innovation project
2	Mukibi Bright	Team Leader	Robot Design
3	Edson Katalo	Ass Team Leader Project	Innovation project
4	Nahabwe Gabriella	Team Coder	Robot Design
5	Ssenkungu Taylor	Team Coder	Robot Design
6	Aineamaani Kieran	Team Coder	Robot Design
7	Ssekabira Jesse	Designer	Innovation project
8	Aber Kenisha Flavia	Materials Manager	Innovation project
9	Katende Andrea Nicole	Researcher	Innovation project
10	Aaron Katende	Ass material manager	Innovation project
11	Alinaye Foster	Material Manager	Robot Design
12	Cuthbert	Communicator	Innovation project
13	Abila Rapha Manzi Ongom	Researcher	Innovation project

The Event

Innovation Project Presentation

The team presented a creative solution around the season theme "SUBMERGED", focusing on building a submarine that can remove micro plastics from the water using low-cost materials. Judges praised the team's understanding of real-world problems and how they applied engineering design to address them and advised them to always carry their prototypes.

However, they were advised to work with professionals and other mentors, parents and maybe local universities to beef up the data collected and build authenticity of their research and findings.

Overall performance in the innovation project, Aqua Innovators ranked 75 of 82.

Aspect	Score
Identify - Define	2
Identify - Research (CV)	1
Design - Plan	1
Design - Teamwork (CV)	1
Create - Innovation (CV)	1
Create - Model	1
Iterate - Sharing	1
Iterate - Improvement	1
Communicate - Impact (CV)	2
Communicate - Fun (CV)	2

Robot Game Challenge

Aqua Innovators team competed in the robot performance challenge using their custom-programmed LEGO robot, which completed multiple underwater-themed missions on the challenge mat and were able to score 195 points as their highest in the first and second round managing to defeat 14 teams with gradual improvement from practice rounds. The team demonstrated problem-solving, iterative programming, and strategic planning and it was a job well done as first timers.

Aspect	Points
Practice 1	150
Practice 2	170
Round 1	195
Round 2	195
Round 3	80

Core Values

Aqua innovators team valued diverse perspectives and demonstrated an inclusive environment where every member's input was solicited and appreciated, resulting in a solution that reflected the strengths of the entire team. Before the judges, the team mentioned that the coach helped them to overcome their challenges as they focused on creating real-world impact. Their solution clearly addressed the key issues, and they had data to show how it could lead to significant improvements.

To bring out the 6 core values, in the project presentation, the project was not well explained as they did not have any drawing or prototype or a file so the solution did not come through. They injected energy and enthusiasm into the process, keeping morale high. Their positive dynamic made the collaboration enjoyable for everyone, and this was reflected in the energy of their final presentation before the judges.

Aspect	Score
Discovery (IP)	2
Teamwork (IP)	1
Innovation (IP)	2
Impact (IP)	2
Fun (IP)	2
Discovery (RD)	1
Inclusion (RD)	2
Innovation (RD)	1
Impact (RD)	1
Fun (RD)	1
Gracious Professionalism 1	3
Gracious Professionalism 2	3
Gracious Professionalism 3	4

Robot Design

The team effectively identified key robot game missions by thoroughly reviewing the challenge and prioritizing tasks based on potential points and difficulty. They strategically selected missions that aligned with their robot's strengths and made data-driven decisions, such as focusing on tasks with higher point values or simpler mechanics. Aqua Innovators came out good strategists and this explains their score in the game and design ranking 70 out of 82.

Aspect	Score
Identify – Strategy	2
Identify - Research (CV)	1
Design - Ideas (CV)	2
Design - Building/Coding	2
Create - Attachments	2
Create - Code/ Sensors	2
Iterate - Testing	1
Iterate - Improvements (CV)	1
Communicate - Impact (CV)	1
Communicate - Fun (CV)	1

Alliance Games:

FIRST LEGO League competition encourages alliance games to promote teamwork, collaboration, and gracious professionalism, while also adding an element of excitement and strategic thinking. Alliance games soften the intensity of head-to-head competition by focusing on achieving a common goal together

Team Hexadron from Slovakia and the Aqua Innovators from Uganda as they get ready for the Alliance game

Cultural Exchange

The team participated in the Cultural Night, where they showcased Uganda's rich heritage through traditional wear, language interaction, but unfortunately time cut the team short that they missed presenting a poem about Uganda.

Aqua Innovators displaying Uganda's spectacular traditional wear from different cultures.

Experience

Benefits

1. **Global Exposure**: Learners interacted with peers and coaches from countries such as the USA, Germany, Slovakia, Australia, Brazil, and Japan among others. The interaction was through the Bingo card games, signing auto graphs, sharing experiences through the innovation projects, gift exchanges, innovation project presentations before the judges, and with fellow children, among others.

   However, the children did not fully utilize the space and this could probably be attributed to first time travel to compete.

2. **Skill Development**: The trip reinforced hands-on learning in programming, teamwork, time management, personal management/independence and innovation. The children understood better the importance of working as a team, enhanced their leadership abilities, and problem-solving skills through robotics challenges as demonstrated during the 30 minutes judging session.

3. The learners had an eye-opening learning experience about team work and collaboration during the opening ceremony and throughout the three-day competition. They were actively involved in the wool network building, dancing Africa song and most especially the unforgettable visit to the aquarium where they encountered a number of seas creatures, they were working hard to save through their innovation project -Submarine to remove micro plastics. In short, they had a NatGeo experience with Marine life.

Learning from the other children, team aqua innovators acknowledged the need to manage time, and improve on the pace and reasoning to solve problems. Outstanding was Gabriella, Bright, Kenisha, Kieran, Taylor, Jesse, Edson, Foster who did their best to keep the team strong and better both at the practice, and robot game table through cheering. The remaining members will improve given opportunity to practice the experience acquired.

Challenges Faced

Children Exposure: Majority team members were first time travellers, first time to be away from their parents, no knowledge about personal hygiene which made the whole trip a baby-sitting experience for NextGen staff.

Children's behaviour generally was lacking as majority are big headed, they are full of lies and sluggish in all ways. This was also reflected in their teacher who is better known to them.

Food was exciting but majority had stomach upsets and could not even mention as they had portrayed that they had experience in tasting out new foods.

Most of the children are still developing in focus and concentration which made them easily distracted by the big crowds and many activities leading to most of them forgetting their roles and the reason for travel.

Lessons learned

Global Exposure Builds Confidence: Interacting with teams from 41 countries affirmed that innovation and excellence are possible at any age and in any context, seeing the young ones dress confidently before the panel of 7 judges to present, collaborate, and share ideas with pride and clarity will eventually transform the country to its very best.

Problem-Solving Under Pressure: The robot game taught us the importance of resilience, quick thinking, and calm teamwork even when missions didn't go as planned.

Communication: Whether it was presenting our innovation project or interacting during cultural night, we learned how clear communication and confidence can open doors and build friendships.

Diversity is a Strength: Every team had different styles, languages, and ideas. I learned to respect and learn from cultural differences, and celebrate our shared passion for STEM. The real idea of gracious professionalism came to life.

On the country level, **Uganda Has Global Talent**: The performance of our young learners proved that Ugandan students can compete globally when given the right tools, mentorship, and exposure. We just need more intentional schools, parents to Investment in STEM. Compared to some teams with advanced resources and funding, our country's limited access to robotics kits and training was evident. There's a clear need to increase national investment in STEM infrastructure and teacher training.

STEM is Key to Africa's Future: Seeing how other countries integrate STEM at national levels inspired a vision for Uganda to prioritize robotics, coding, and innovation from an early age. We are already on the first step.

Partnerships Are Essential: The event highlighted the importance of partnerships between government, private sector, and education providers like NextGen Restyling Uganda to scale STEM opportunities across the country. Most teams were funded by the government to participate in the championship.

As a School, real world application enhances learning and such robotics competitions show students how to apply classroom knowledge to solve real-world problems—enhancing engagement, teamwork, and critical thinking. Beyond academics, our learners gained skills in public speaking, cultural appreciation, leadership, and resilience.

Schools participating in global programs must start planning early to meet travel, technical, and academic demands without pressure and recommend the team registrations to be taken serious.

In all, Africa Open Championship was not just a competition — it was a life-changing journey. It reminded us that when given the opportunity, Ugandan children can rise to global excellence, that schools can lead the way in innovation, and that as individuals, we can dream bigger, think deeper, and act bolder. It is summed up as awesome learning experience for all.

Conclusion and Recommendations

Conclusion

The recently concluded Open Africa Championship in Cape Town marked a significant milestone for both NextGen Restyling Uganda Limited and the Robotics club team from of Green Hill Academy Buwate. The experience not only showcased Uganda's growing talent in robotics and innovation but also provided the young participants with an invaluable platform for global exposure, collaboration, and personal growth.

From presenting their innovation projects to competing on the robot game table and engaging in cultural exchange, the team represented Uganda with pride, resilience, and excellence as young as they are. Extremely proud of them. Certain that these learners carry with them not only international experience but also renewed confidence, inspiration, and a deeper passion for STEM.

NextGen remains committed to nurturing. such opportunities and building a future where Ugandan children continue to shine on the global stage. This journey is a powerful reminder that with the right support and vision, the future of innovation in in our younger generation is already being unearthed one at a time.

Recommendations

1. Increased involvement in the robotics lessons or other activities that require development of motor skills.
2. Maintain the children on the club and also open opportunities for them to explore and interact with other children from different back grounds.
3. Create activities at school that will involve children in basic hygiene and independence
4. Empower teachers to be teachers than docile as we noticed that the teacher was hesitant to correct and guide as he feared reprimand from school as portrayed a customer that children are kings because of their parent's status in society making the children behaviour decayed.
5. A humble request to administration not to deduct Tr Fabian's salary in compensation towards Green Hill T-shirts children wore at the competition as this has kept coming to our attention over and over.

Annex

Annex 1: Photo Gallery