

90Drone Program at NxtGen Labs



Youth at NxtGen Labs getting a broad introduction into STEM fields and robotics



Youth at NxtGen Labs seeing how terrestrial robots operate

OVERVIEW	
Flying Labs	Malawi Flying Labs
Location	Lilongwe, NxtGen Labs
Date	On a rolling basis Students get on board for general STEM activities and then have the opportunity to select advanced course
Length (number of days)	3 months - 2 - 3 times a week (90 minutes session)

Sector program (optional)	YouthRobotics
Format	In-Person
Co-organizer if applicable	No
SDGs	GOAL 4: Quality Education GOAL 5: Gender Equality

SCOPE & OUTCOMES	
Type of training	<ol style="list-style-type: none"> 1. Introduction training to drones 2. Youth/STEM training
Goal of the training	<ol style="list-style-type: none"> 1. Create drone and STEM fields awareness 2. Train and empower youth and the workforce of the future
Expected outcome for participants	<p>Participants are expected to take time and familiarize themselves with the different tools and kits that are being used to introduce them to the world of drones and robotics as a whole. On a weekly basis, they are expected to complete certain projects, either in groups or on their own and present their results to their parents. Once participants have gone through the general program and become aware of the material, they get the opportunity to choose which pathway they would like to dive deep into. Here is where NxtGen Labs proceeds with the participants into the advanced section of the program with AI, coding, drone swarming, etc.</p>
Confirmed outcome after training	<ul style="list-style-type: none"> ● Project-based learning where students are encouraged to work on their team working, critical thinking, presentation, and problem-solving skills. ● Resources for the curriculum are created and updated regularly
Eventual next steps	Looking into expanding the program and curriculum to incorporate racing drones.

PARTICIPANTS	
Profiles and number of	For each cohort, we have:

participants	<ol style="list-style-type: none"> 5 x STEM Instructors - trained and certified remote pilots 2 x Interns - University students 20 x School children (9 - 15-year-old)
Name of participants' organizations	<ul style="list-style-type: none"> Mt. Sinai International High School Paramount Academy Bishop Mckenzie International School
Gender ratio	<p>50 : 50</p> <p>Girls : Boys</p>
Who paid for the training?	Parents of the student's
Participant fee rate (if applicable)	\$100 USD for one spot in the cohort
Scholarships offered?	Yes, currently offering 5 scholarships to students in the program

CONTENT	
Training components	<p>Introduction to Drones</p> <ul style="list-style-type: none"> Hardware Components Software used Real-world Applications Troubleshooting <p>Manual Flights (Tello and Mavic - Controlled Spaces)</p> <ul style="list-style-type: none"> Safety - Pre Flight Checklists Crew Safety Manual Flights <p>Autonomous Flights (Tello only - Controlled Spaces)</p> <ul style="list-style-type: none"> Flight Planning Autonomous flights <p>Coding Exercises</p> <ul style="list-style-type: none"> Block-based programming - Scratch Text-based programming - Python
Training resources used	<p>Software</p> <ul style="list-style-type: none"> Scratch coding

	<ul style="list-style-type: none"> ● Python <p>Hardware</p> <ul style="list-style-type: none"> ● Tello drones ● Mavic 2 ● Google Chrome Book ● Lenovo laptops ● iPad Air <p>Brochure - STEM Programs at NxtGen Labs</p> <p>Website - NxtGen Labs</p>
<p>Approaches and methods used</p>	<ul style="list-style-type: none"> ● We have updated and adapted the program to different cohorts of participants by making the curriculum more practical/hands-on based rather than theory-based ● We are also encouraging project-based learning with no tests or grading systems. This is to ensure that the participants don't feel pressured into doing activities in a predefined manner and actually enjoy themselves while learning. ● We have also made sure that participants are able to put the theoretical knowledge into practical exercises. One way in which we have achieved this is by having exercises where they take pictures with the drones and use these to understand how drone experts use them for their work.