

# CODING & ROBOTICS BOOTCAMP PROJECT REPORT- 2024

## Problem Statement and Summary of the Report

The world is moving towards coding and robotics, with organizations and companies in just about every field and industry looking for employees with these skills and knowledge. Coding and robotics are multidisciplinary fields that extend far beyond building robots and developing digital solutions to the world's problems. Therefore, it is paramount that learners are prepared for the jobs of tomorrow, regardless of which career path they choose to follow.

Furthermore, a learner who has had exposure to coding and robotics during their school career stands a better chance of exhibiting and developing a keen interest in furthering their studies in STEM-related programs at tertiary and post-school education.

Amis Bk hosted the Holiday boot camps in robotics and coding to benefit learners from disadvantaged communities and poor households in and around Cape Town and its inner city. The learners were from refugees, migrants, and South Africans communities from Grades 4 to 12 who show interest and are committed to participating in the program during the full duration of the boot camps.

In addition to the educational and career benefits the program offered, it served as an opportunity for integration and cohabitation between refugee, migrant, and South African learners. In this regard, it encourages learners to get to meet and know someone who is not from their community or nationality and create an opportunity to build lifelong friendships.

It is worth noting that, as a holiday program, the boot camp offered a sense of purpose to this downtime period for learners. This often increases the risk of negative behaviors when there is nothing meaningful to do or look forward to. The program has, therefore, channeled the energy, time, and intellect of the participants away from the streets to focus on the education and career opportunities the boot camps expose them to.

## Background

In order to improve students' problem-solving skills and deepen their understanding of mathematical concepts, Amis BK's Mathematics and Science project provides additional classes aimed at integrating coding and robotics into the educational framework. Computer literacy is essential in today's society, which is why Amis BK sought to engage students who often say that math is boring. The goal is to create an interactive learning environment in which mathematics is experienced through the exciting lenses of robotics and coding.

Amis BK believes now is the perfect time to change the narrative surrounding mathematics education. By leveraging robotics and coding, we can make math an engaging adventure, making it educational and fun. The prospect of learning math while constructing a robot and addressing real-world challenges exemplifies the dynamic duo that is revolutionizing math education globally.

To bring this vision to fruition, Amis BK sought a partnership with EdTech Global Africa, an organization that had been encountered through previous initiatives in Cape Town. This collaboration emerged from a shared commitment to enhance educational experiences and foster a love for learning among students. Together, we organized a holiday camp for learners in January 2024, aimed at providing them with hands-on experiences in coding and robotics.

[EdTech Global Africa](#) is dedicated to building creative learning experiences that empower African educators to effectively utilize technology in teaching and learning. Their mission is grounded in the belief that meaningful technology integration is essential for 21st-century education and serves as a vital pathway toward achieving educational equity for all. Through this partnership, we aim to inspire and equip learners with the skills necessary to thrive in an increasingly digital world.

## The purpose

This report aims to highlight the key outcomes of the boot camp conducted in January 2024.

- Improved critical thinking and problem-solving skills
- Developed logical, computational, and analytical skills
- Improved proficiency and enthusiasm for STEM
- Created a space for inclusive learning and integration
- Enhanced teamwork abilities
- Created a sense of purpose and enthusiasm for a STEM career in the future
- Enabled fun whilst learning

It seeks to inform our partners, affiliated organizations, and members about the program's complexities and successes. By showcasing the impact we have made and the diverse audience we have reached, we hope to inspire further collaboration and support for this initiative, enabling us to expand our reach to a broader range of learners in future cohorts.

## Recruitment process

The process of recruitment started a month before the due date of 11 January 2024. This invitation was distributed through the Amis BK platforms to the rest of the organizations working with us and EdTech Global Africa. There was the identification and selection of learners and volunteer tutors/mentors. A Google sheet form was created and shared to enable parents and guardians to send their child's name and contact information to follow our recruitment process. This list was shared with our partner for transparency and to enable the quotas required. There

was a mixture of gender (male and female) as well as a mixture of nationalities, and the locals to create at the same time the network, collaboration, and the atmosphere of social and cultural integration.

Below is the list of major activities to be carried out for the success of the project. These will not necessarily be carried out successively; some of them will happen concurrently or will be ongoing.

## **Criteria**

The first criteria was to be residing in the city of Cape Town. The target was to recruit two categories of learners who are currently in various schools of the environment we operate in and especially those coming from disadvantaged backgrounds in both the local and the migrant communities. There was a mixture of gender and there was a huge need to equal the numbers. The learner from grade 4 to grade 12. There was one group of adults trained as trainers and these adult learners came from within the organisation.

In this context, we had learners from South Africa, Zimbabwe, Nigeria, DR Congo... all coming from different schools and areas of Cape Town.

## **Process**

The camps were running from 09h00 to 13h00. The learners drop off was 08h45 and the pick up was 13h15 by either their parents or the assigned transports. There was one break for a meal for 30 minutes. The location for the camp was the Observatory Community Centre.

The learning environment was conducive for the learning process from day one to the end of the training. There was an internet connection where every learner had their own computer to learn and practice during the sessions and tablets were used in group work to operate the robots. We created the consent forms to ensure safety for the learners, tutors and the parents and to reinforce trust in both parents and Ed-Tech Global Africa.

### **Funding**

The program was funded 70% by EdTech Global Africa. Amis BK however hired the venue, the internet connection, the transport and human resource to make sure the training ran according to plans.

## **Outcomes**

### **Direct impact**

57 learners successfully completed the 7 days of bootcamps and 47 certificates were handed to learners. Learners created stories through coding and each learner was able to manipulate the robot available during the practice both individually and in the groups.

### **Indirect impacts**

Around the number of 215 learners and parents were impacted indirectly with the program. During the handing of the certificates, parents, siblings and friends came to witness the achievements of the learners. Parents, relatives and fellow learners from various schools became very interested to enroll for the upcoming intakes or send via our social networks their requests to enroll.

### **Social economic impacts**

Some learners were selected based on their conducts and assimilations in order to become the tutors for their fellow learners. These learners were incentivized by EdTech Global Africa. Also they received each a material such as laptop and tablet to continue their exercises and help those in need in the community. Some volunteers from Amis BK were also trained to carry over these training after the support of the Ed Tech Global Africa.

Additionally, Ed Tech Global Africa donated 30 used laptops to Amis BK in order to continue this project. Unfortunately Amis BK has not yet managed to ship these laptops from the USA to Africa.

Therefore, this is a note of request to a volunteer or organisation that can help in the shipping or any cost kind.

## **Monitoring and Evaluation**

In order to evaluate the capacity, the impact made and to keep the learners refreshed, Amis BK organises each month a session where learners come to share the experience of the stories created through coding after their training and there is exhibition of the robots operating.

Additionally, a baseline is established to test learners before joining the program.

They are tested on basic math and engineering principles that will be taught in the coding and robotics curriculum.

Assignments will be given during each semester. Final projects and competitions will help determine the overall learning of each student.

An endpoint will also be established after the second boot camp, during which learners will once again be tested on basic math and engineering principles.

Furthermore, learners will present their final projects/assignments to their peers and community members at the end of the second boot camp.

A register will be signed by learners for the two boot camps to confirm their full participation during the program.

Certificates of participation are given to those who attend, complete and participate in the program.

# Conclusion

Amis Bk hosted Holiday boot camps in robotics and coding to benefit learners from disadvantaged communities in Cape Town. The program, involving refugees, migrants, and South Africans aged 4 to 12, aimed to improve problem-solving skills and mathematical understanding. Partnered with EdTech Global Africa, the camps ran from 09h00 to 13h00, with 57 learners completing the 7-day program and 57 certificates handed out. Around 215 learners and parents were indirectly impacted.

Amis BK believes that without the support of everyone, this would not have been a success and therefore thanks every member, parent and the learners who participated in this program directly or indirectly. And encourages further everyone to keep involved for the future programs in order to support our communities. The sky's the limits ' Amis BK's Motto: *"Friends do not part even in tough times". Together! We are strong. Do not forget to visit our [Amis BK Facebook](#) for pictures*