Fly for the Future: Morocco Flying Labs Equips Students for Future Careers Through Drone Training

Practical training in action

Drone mapping training outcome

A theoretical session of drone mapping training

OVERVIEW	
Flying Labs	Morocco Flying Labs
Location	Oujda, Morocco
Date	15th and 27th of June 2022 and 18th of March 2023
Length (number of days)	3 days

Sector program (optional)	YouthRobotics
Format	In-Person
Co-organizer if applicable	Mohamed First University
SDGs	GOAL 4: Quality Education GOAL 5: Gender Equality

SCOPE & OUTCOMES

Type of training	1. Introduction training to drones 2. Youth/STEM training
Goal of the training	1. Create drone awareness 2. Develop drone data acquisition skills 3. Develop drone data analysis skills 4. Develop data literacy/interaction skills 5. Train and empower youth and the workforce of the future
Expected outcome for participants	Participants expected to gain hands-on experience in drone technology, develop skills in drone operation and data processing, and cultivate a sense of responsibility in using drones for social good.
Confirmed outcome after training	Following the training, the participants' expectations were met. They engaged in hands-on sessions, developed their skills in various areas of drone operation and data processing, and demonstrated a sense of responsibility in drone use.
Eventual next steps	The program aims to expand to more schools, foster drone expertise in youth, and create innovative solutions.

PARTICIPANTS

Profiles and number of participants	65 university students between 21 and 25 years old
Name of participants' organizations	Mohamed First University

Gender ratio	60% Female : 40% Male
Who paid for the training?	This was a free training
Participant fee rate (if applicable)	Not applicable
Scholarships offered?	Not applicable

CONTENT	
Training components	The training incorporated both theoretical and practical components. The theoretical component equipped the participants with knowledge on drone technology, safety measures and ethical considerations. The practical component allowed the participants to gain hands-on experience in manual drone flying, autonomous flight programming and data processing.
Training resources used	● **Hardware** 1. Data projector 2. DJI Mavic 2 Pro 3. Laptop 4. WorkStation computer with Nvidia GEFORCE RTX GPU ● **Software** 1. DJI Fly 2. DJI Go 4 3. ODM 4. QGIS 5. PIX4Dcapture 6. PIX4Dreact
Approaches and methods used	The Fly for the Future project was tailored to the specific audience of students from the National School of Applied Sciences in Oujda, Morocco. Here's how the training was adapted and made hands-on for them: 1. **Adaptation to Audience** - *Tailored Content:* The training sessions were structured to cater to the age group (21-25 years old)

and educational background of the participants.
- *Relevance:* The project aimed to resonate with the students by choosing mapping their school as the practical task. This made the content directly relevant to their environment and studies.

2. **Hands-On Training**

- *Practical Sessions:* The training involved both theoretical and practical components.
- *Manual Drone Flying:* Each student had the chance to control a drone manually for about 10 minutes, giving them hands-on experience in piloting drones.
- *Autonomous Flight Programming:* Participants were taught how to program automatic missions using the PIX4Dcapture app, allowing them to plan and execute autonomous flights for mapping purposes.
- *Data Processing:* After flying the drones and collecting images, students learned how to process this data using mapping solutions like PIX4Dreact and OpenDroneMap. They were also taught how to visualize and analyze the results using QGIS software.

3. **Application of Theoretical Knowledge**

- *Theoretical to Practical Transition*: The sessions seamlessly transitioned theoretical knowledge into practical application.
- *Understanding Drone Technology:* Theoretical sessions covered basic concepts, principles, and various applications of drone technology, which were immediately put into practice during the mapping exercise.
- *Safety Measures and Ethical Considerations:* The theoretical training emphasized safety measures, ethical considerations, and aligning drone projects with local needs. This knowledge was practically implemented during the manual and automatic flight sessions, ensuring responsible operation of the drones.