

## Hands-on Workshop on Drone Assembly with Practical Applications using Data Analysis



*Group photo from the session at Bangabandhu Sheikh Mujibur Rahman Agricultural University*



*Photo from the session organized at Naf Technology*



*Photo from the session at NITER*

OVERVIEW	
<b>Flying Labs</b>	Bangladesh Flying Labs
<b>Location</b>	Dhaka, Bangladesh
<b>Date</b>	The whole of 2022

<b>Length (number of days)</b>	12 months
<b>Sector program (optional)</b>	<a href="#">YouthRobotics</a>
<b>Format</b>	In-Person
<b>Co-organizer if applicable</b>	None
<b>SDGs</b>	<a href="#">GOAL 8: Decent Work and Economic Growth</a> <a href="#">GOAL 9: Industry, Innovation and Infrastructure</a>

SCOPE & OUTCOMES	
<b>Type of training</b>	Introductory training on drones
<b>Goal of the training</b>	Introducing drones and drone applications to college, and university students
<b>Expected outcome for participants</b>	<ul style="list-style-type: none"> <li>● To learn how to pilot drones</li> <li>● To learn how to program drones using either Scratch or Python so that they execute actions and maneuvers as instructed.</li> </ul>
<b>Confirmed outcome after training</b>	Drones are relatively new tools, both for students from urban areas as well as rural areas. Our workshops were met with great enthusiasm from the students as well as the administrative bodies of the nine institutions that we covered. The students were adequately responsive to questions asked by the instructors throughout the sessions. All nine institutions expressed their intent to reach out to us for future workshops and possible collaborations.
<b>Eventual next steps</b>	Many schools, colleges, and universities have approached us informally to arrange our hands-on workshops at their institutes for their students. We plan on acquiring more drones and training more instructors to reach out to these institutes as soon as possible. We plan on expanding our activities across all the 64 districts of Bangladesh.

PARTICIPANTS	
<b>Profiles and number of participants</b>	421 students from 9 educational institutions
<b>Name of participants' organizations</b>	<ol style="list-style-type: none"> <li>1. University of Asia Pacific</li> <li>2. Barisal University</li> <li>3. Crescent Kindergarten Girls' High School</li> <li>4. Hajee Mohammad Danesh Science and Technology University</li> <li>5. Vangura Jarina Rahim Girls' High School</li> <li>6. National Institute of Textile Engineering and Research (NITER)</li> <li>7. University of Dhaka</li> <li>8. Daffodil International University</li> <li>9. American International University Bangladesh</li> </ol>
<b>Gender ratio</b>	55% male 45% female
<b>Who paid for the training?</b>	ICT Ministry
<b>Participant fee rate (if applicable)</b>	The training was free for the student participants
<b>Scholarships offered?</b>	Not applicable

CONTENT	
<b>Training components</b>	<p><b>Interactive PowerPoint presentation:</b> The workshop began with an introductory session going over the physics behind the flight of a drone.</p> <p><b>Hands-on:</b> After the introductory session, we discussed the electronics and computing units used in a typical consumer-grade drone using a First Person View (FPV) drone.</p> <p><b>Group work:</b> The participants are then divided into groups. College and university students were given FPV drone assembly kits to assemble an FPV drone. There was some special training on 3D mapping for university students. As for school-going students, they were given DJI Tello Edu drones</p>

	<p>due to their user-friendliness. The sessions concluded with the students learning to pilot the drones and how to program them in either Scratch or Python so that they execute actions and maneuvers as instructed.</p>
<p><b>Training resources used</b></p>	<p><b>Props for display:</b> DJI drones (Mavic Air, Tello Edu), FPV Drones  <b>Presentation tools:</b> Laptops and projectors  <b>Photographs:</b> Camera</p>
<p><b>Approaches and methods used</b></p>	<p><b>Interactive PowerPoint presentations and hands-on learning opportunities</b></p> <p>We kept the session as engaging as possible by allowing the students to ask questions throughout. They were also quizzed to assess their comprehension of the sessions. The groups that were then handed the drones were also assigned instructors who rotated around the groups to guide them with the drones and answer any queries that they may have had.</p>