The Team
The Team retained its members (20 students), as well as its distribution (50% female) within an age range between 16 and 17 years old. Three of its members received their high school diploma on May 26th, 2010. Two (2) of them, male students, were admitted in engineering programs at private universities and the other one, a female, in archeology at a public university. One of the students was admitted to Universidad del Turabo and will continue connected to the High School Enterprise Program as mentor in the period from August – December of 2010. This is a pilot strategy to enroll students in the Turabo’s Enterprise Program and create entrepreneurial skills in these students. The teacher mentor of the group is Mr Juan Serrano, also he is professor of Universidad del Turabo.

In addition, the Team kept its organizational structure with a CEO, a finance director and an activity coordinator (students). The parent’s committee worked actively in fund raising activities to raise funds for the students’ participation in the MTU expo enterprise 2010.

Operations
Last year, the enterprise built two Remotely Operated Vehicles (ROVs), underwater robots to be used in marine inspections, equipped with mechanical devices adapted with motors and an images system to inspect underwater environments. This semester the teams focused on optimizing them to participate successfully in the MTU Expo Enterprise.

The participation in the Expo was the main motivation of these students to meet twice (4 hours) or more in a week to finish their projects. Two robots made of PVC tubes were optimized: the THROV- (Trash Hunter ROV) and the EVO (Evolution) (Pictures 1 and 2). They were tested in fresh and salt water (see picture 3, 4 and 5), disassembled and constructed again to improve them. By the end of the process, the team prepared two prototypes that were presented in the MTU Expo Enterprise in April 15th, 2010. Pictures 1 through 6 presented in the report show the final products and specifications for each robot.

Picture 1. THROV (Trash hunter ROV)  Picture 2. EVO (Evolution) ROV
**Picture 3.** The EVO-ROV tested in salt water.

**Picture 4.** The FROV-ROV tested in salt water.

**Picture 5.** Tests of ROVs in San Juan – Puerto Rico.

<table>
<thead>
<tr>
<th>The FROV Fusion ROV</th>
<th>The EVO Evolution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td>23”</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td>12”</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>15lbs</td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>20”</td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td>PVC, Motors, cameras, wires, straps, foam, plastic grills</td>
</tr>
</tbody>
</table>

**Picture 6.** Specifications for the FROV-ROV.

**Picture 7.** Specifications for the EVO-ROV.
Activities

The main activity for this semester was the participation of Manuela Toro High School team in the MTU Expo Enterprise. The student’s and Parent’s committee raised $3,800 for travel to the activity. Two thousand dollars ($2,000) was donated by the municipal government of Caguas and the rest was raised through fundraising activities. Finally, 10 students traveled to Houghton (MI) on April 13th, for most of them it was the first time they have flown and traveled so far. They participated in activities organized by the HSE program; such as, the visit to Hancock High School, where students from Puerto Rico shared experiences with students from Michigan. This was an excellent opportunity to let our students practice English and learn about a different culture. The pictures 7 and 8 shows the several activities developed in Michigan.


The students participated in two additional activities: the UT Expo Enterprise and the HSE closing ceremony. In the first activity, students showed their projects to an audience composed of professors, UT undergraduate students and guests. In the closing ceremony students showed their advances to their parents, friends and teachers of the school, a certificate of participation was given to each participant (see pictures 9 and 10).

Picture 9 and 10. Manuela Toro High School closing ceremony.
Plans
This semester the Team will plan to optimize the robots and begin a new project. In Puerto Rico renewable energy is a pertinent topic, so the enterprise is studying two options to be developed in the program. A Gantt chart with the activities of the next semester will be developed this summer for the staff of the program. Several hours including programming, design programs, entrepreneurship and leadership will be part of the calendar.