

Robofest 2005 Official Report

Total of 527 students from 164 teams, from 3 countries participated in the 6th Annual Robofest, which had 10 regional competitions in Nashua New Hampshire, Houston Texas, Melbourne FL, Ann Arbor, Canton, Flint, Northville, Clinton Township, Ansan Korea, and Alberta Canada, one video submission exhibition site, and one final World Championship. Robofest that focuses on Science, Engineering, and Technology education has grown rapidly since the first in 2000 as shown in Figure 1.

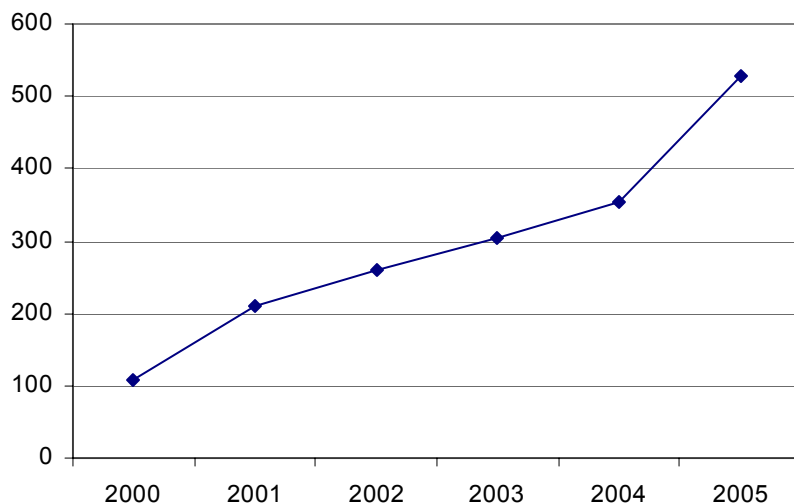


Figure 1. Number of Robofest student participants since 2000

Robofest would not be possible without the help of many dedicated people. Robofest requires a lot of experienced professional technical resources. Table 1 shows the total number of all officially registered people for 2005, which is more than 1,100 individuals.

Site	Number teams	Coaches	Student players	Team sponsors	Team volunteers	Event site volunteers	Total number of individuals
USA	93	78	345	81	128	226	858
Canada	10	5	39	11	11	2	68
Korea	61	31	143	33	n/a	n/a	207
Sum	164	114	527	125	139	228	1133

Table 1. Total number of registered participants in Robofest 2005

We have analyzed the data regarding gender of students participating in Robofest 2005. As shown in Figure 2, for this year, 23% of the participants are female. These numbers do not include the 143 students participating at the Korean site.

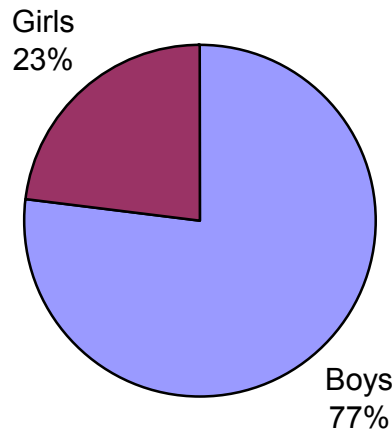


Figure 2 Gender ratios of Robofest 2005 Students

Robofest has grown to include a culturally diverse student participant base. Almost one quarter of all Robofest student participants are of cultural diversity. Specifically, 11% of those students are African American. Robofest is working hard to encourage students from different ethnicities. During 2005, Robofest developed an outreach program to encourage Detroit inner city student participation. Robofest worked to educate and train teachers and 5 teams of students from Detroit Schools, in the areas of robotic programming technology and design. These teams of students were first year participants in Robofest. Robofest would like to continue and expand this outreach for 2006, but it requires manpower and funding. Figure 3 shows ethnicity data, this data excludes the 143 Korean students.

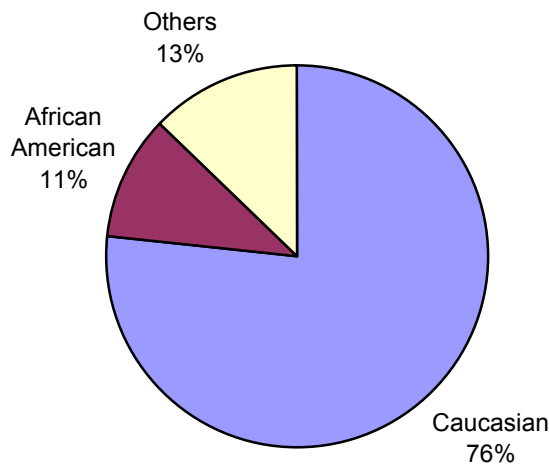


Figure 3 Robofest 2005 ethnicity data

Robofest reaches students in grades 5th – 12th. 18% of Robofest 2005 student participants were in 5th grade; 39% of Robofest students were in Middle School; and 43% of the Robofest student participants were in High School. Figure 4 below does not include the 143 Korean students.

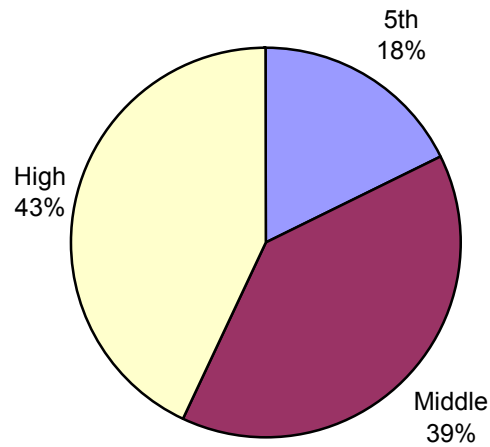


Figure 4 Student Participant School Grade

The Programming languages used for the World Robofest Championships was reviewed and categorized as follows in Figure 5. Student teams continue to use advanced and varied forms of programming languages. This is a unique feature of Robofest, allowing students to use any programming language. Robofest provides opportunities to learn professional programming languages, and helps to prepare our students for future career paths.

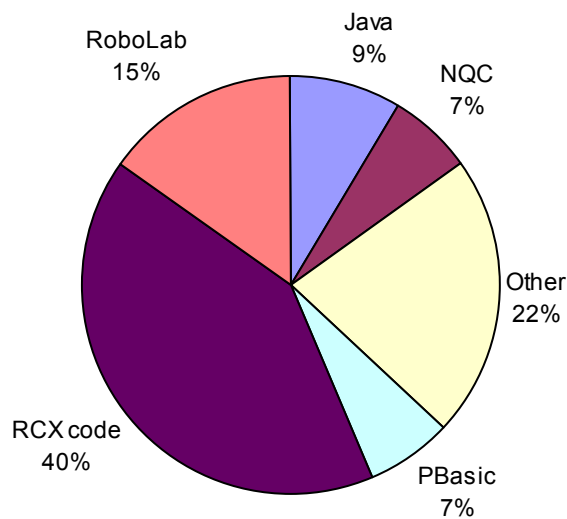


Figure 5 Programming Languages

Robofest 2005 Notable Achievements

Robofest 2005 will be remembered as the first international event culminating in the first ever World Robofest Championship. Ten teams came to Detroit from out of the Michigan area, including teams from other countries, other states, and the upper peninsula of Michigan.

Unknown missions were well established during World Robofest since no direct adult help was allowed, or noticed during the competitions. We added Judging Proctors to each site to maintain the integrity of the student team pit area. We plan to continue this unique aspect of unknown missions and proctoring for 2006.

For the first time, personalized individual trophies were given to each student participant at the World Robofest Championships. This was possible since we were using a web-based team registration system that included individual student team member names. We thank all the coaches who entered their student names correctly and uploaded team/robot photos.

A new facet of competition for 2005 was the addition of the Public Presentation for Competition. The Public Presentation required every team member to introduce themselves and tell the audience and judges what their participation was on the team. Each team had one minute to make this presentation using a microphone. (How they contributed to the team, what they did, etc.) This addition was a big success. Parents especially liked the Public Presentation portion of the competition. We plan to continue this for 2006.

2005 Source Code Inspection was done due to the help from many professional software developers. This is an important and new addition to the contest Judging.

Robofest was blessed this year to find nine sponsors. We thank Lori Birman, Robofest coordinator, for helping to secure Robofest sponsors. MPC laptop computer awards motivated all the Robofest teams to work much harder. 9 teams at regional qualifier sites and 12 teams at World were able to get perfect performance scores at least once. This means about 15% of teams were able to do the perfect performance at least once. The total number of competition team is 82 without considering Korean teams. Korean teams were not able to do Robofest RoboRelay game, since they needed to select teams early in February to get US visas.

This year, there were many creative robot exhibition teams (21 teams, 13%). We have succeeded in promoting and growing this very unique aspect of our contest.

Another exciting addition to Robofest 2005 was the presentation of two \$500 Grants by the Michigan Council of Women in Technology Foundation, MCWTF. The grants were presented to all girl teams in Michigan. These grants helped Robofest to attract more all-girls teams. Robofest plans to continue grant development for teams for the 2006 competition.

Areas of Improvement for the Robofest 2006 Contests:

There are several areas of the contest that we would like to enhance and improve for 2006.

- Expand the number of international participants and countries that participated in the qualifying sites and during the World event. One specific country that we plan to invite is Europe.

- Robofest has grown the Exhibition Category to the level where it needs to be split into two divisions, a Junior Exhibition Division and a Senior Exhibition Division, just like the Robofest Competition Divisions.
- Award recipient rules/calculations, except the 1st place performance for the World Robofest, were not pre-announced. We will define all award calculation methodology prior to contests for 2006
- Information and files about the the Robofest contest were scattered on our web site. It was difficult for new teams to find all the needed information. We will work on a 2006 coach/team manual over the summer and publish it early.
- We must enhance our web system. Navigation on the Robofest main page is not user friendly. We must improve our navigation mechanism, add more data collection mechanism such as student gender and ethnic info. We should also capture GPA information to find whether robotics programs really help student's science and math education. As a side note, the web server was down several times and our web application had some system and logic errors. One such example was the automatically generated name tags, they were printed with the wrong organization name for some team volunteers. We will work to correct these errors for 2006.
- Judging errors and confusion occurred mainly because Competition rules were not clear or complete. We will work had to simplify and clarify all competition rules for all participants in 2006.
- We must have a Judging Leader on site for all contests. (We can not rely on volunteers to serve as the leader or organizer.) The Judging Leader must organize and make certain that all judges are prepared and ready. Judges training must be more comprehensive, we will work of developing a judging manual. In addition, we will test all Excel scoring sheets prior to each event, there were some Excel fomular problems at some regional competition sites.
- Student Participation Medals must arrive early for 2006 qualifying sites. This year, 4 qualifying sites did not have medals at the competition due to a vendor shipping error. Students from these 4 sites received their medals at the World Robofest Championships or we shipped them to each coach.
- Shipping expenses incurred for 2005 were extensive. To reduce shipping costs for 2006, Robofest has asked hosts to keep their playing field materials for next year's contests.
- A few Robofest teams did not pay registration fees, or were no shows at qualifying sites. We plan to enhance the registration process for 2006 so coaches must pay the registration fee prior to entering student names.
- Event timing is an important issue for Robofest, it was almost impossible to finish the World Robofest Championship event on time as planned. World Robofest ended 90 minutes after the official planned end time. The time length of the larger qualifying sites was also an issue. We must work harder to fine tune the contest schedule to be ensure that judging starts on time, and that exhibition teams are participating during any competition down times.
- Although there were Robofest articles in several publications, Robofest was not well publicized in major media outlets. Robofest stories appeared in the Alpena News, Birmingham Eccentric, Dexter Leader, LTU Campus Connections, Observe & Eccentric, Olive Branch Press, Korean Michigan Weekly, LTU Tech News, Michigan Science Teachers Association Newsletter, Northville Journal, Northville Record, and the Milford Times. Unfortunately, no major news print media or televeision media attended World Robofest. This is a shame, as students were doing very advanced competitions and their achievements should be well publicized. We hope to improve media coverage for 2006.

- The complexity, size, logistics, and the cost of hosting outside Michigan teams was apparent for 2005. No public transportation in this Metro Detroit area brought us into panic. As a Founder and Director of Robofest, I strongly feel that Robofest needed more administrators in order to make continuous growth.
- Due to my required teaching load and pure research duty as a professor, it is my heartfelt wish to have additional administrative and technical support to prevent from repeating the same problems we experienced this year.
- We need to change the calendar dates of Robofest due to the overlap with other robotics events (FIRST, FLL World). After asking our participants, it has been suggested to have our qualifying regional competitions in late April and the World Robofest Championships in May or Early June.
- We would like to have Robofest professionally taped for DVD distribution. We have done this work each year and it is extremely time consuming. We need to have DVD's to educate teachers, students, parents, and sponsor prospects about the benefit of Robofest. We will seek support for 2006 services. I am currently working on the production of 2005 video, but I have many hours left to complete the project. I will let you know through Robofest Newsletters when the DVD is ready to ship.
- There are many other things that should be improved. Please give us feedback. I am planning an anonymous online survey in October, 2005.

I deeply thank everyone who has sponsored Robofest, volunteered for Robofest, gave advice to me, and participated in Robofest 2005. Especially, I thank Lori Birman, Robofest Coordinator, Dr. David Bindschadler, MCS Department Chair, and Dean Dr. Maria Vaz, College of Arts and Sciences at Lawrence Technological University for their dedication and support.

Respectfully,

CJ Chung
July 26, 2005 (revised version)