

# ROBOTICS

## A PATH TO SUCCESS!

*How students become involved in Robotics and Engineering at the Lenawee Intermediate School District in Lenawee County, Michigan.*

When I was preparing my article for *Robot* magazine on a competition held in 2014 (World Robofest Competition, "Avoid Meltdown"), which was held at Lawrence Technological University, in Southfield, Michigan, I wondered how these great student competitors became involved in Robotics and Engineering. One of the teams that entered was from the LISD in Lenawee County, Michigan and as a result I thought it

would be interesting to hear about how students get involved in Robotics and Engineering.

I contacted the LISD and took the opportunity to visit with instructor, Bob Jones, and his students to discuss how they became interested in robotics and where they thought this adventure would take them in their future.

The course offered by the LISD is titled

"Alternative Energy and Robotics", instructed by Mr. Jones. In an interview with Bob, he provided me with some history regarding this course which I found fascinating.

**ROBOT MAGAZINE (RM):** When did the LISD first get involved with Robotics/Engineering?

**BOB JONES:** About six or seven years ago this program was going through a transition. This center had been in operation for about 40 years and was originally dedicated to electronics and mostly electronics repair, which at that time was a viable industry. I came on board about 20 years ago and saw that the migration was underway from doing regional repairs to no longer repairing anything. I wanted to transition the students into something that led to a more viable industry. I needed to find something that students would find interesting. My research told me that students need subjects that would be interesting and attractive to them and which would then draw them into a new technical program.

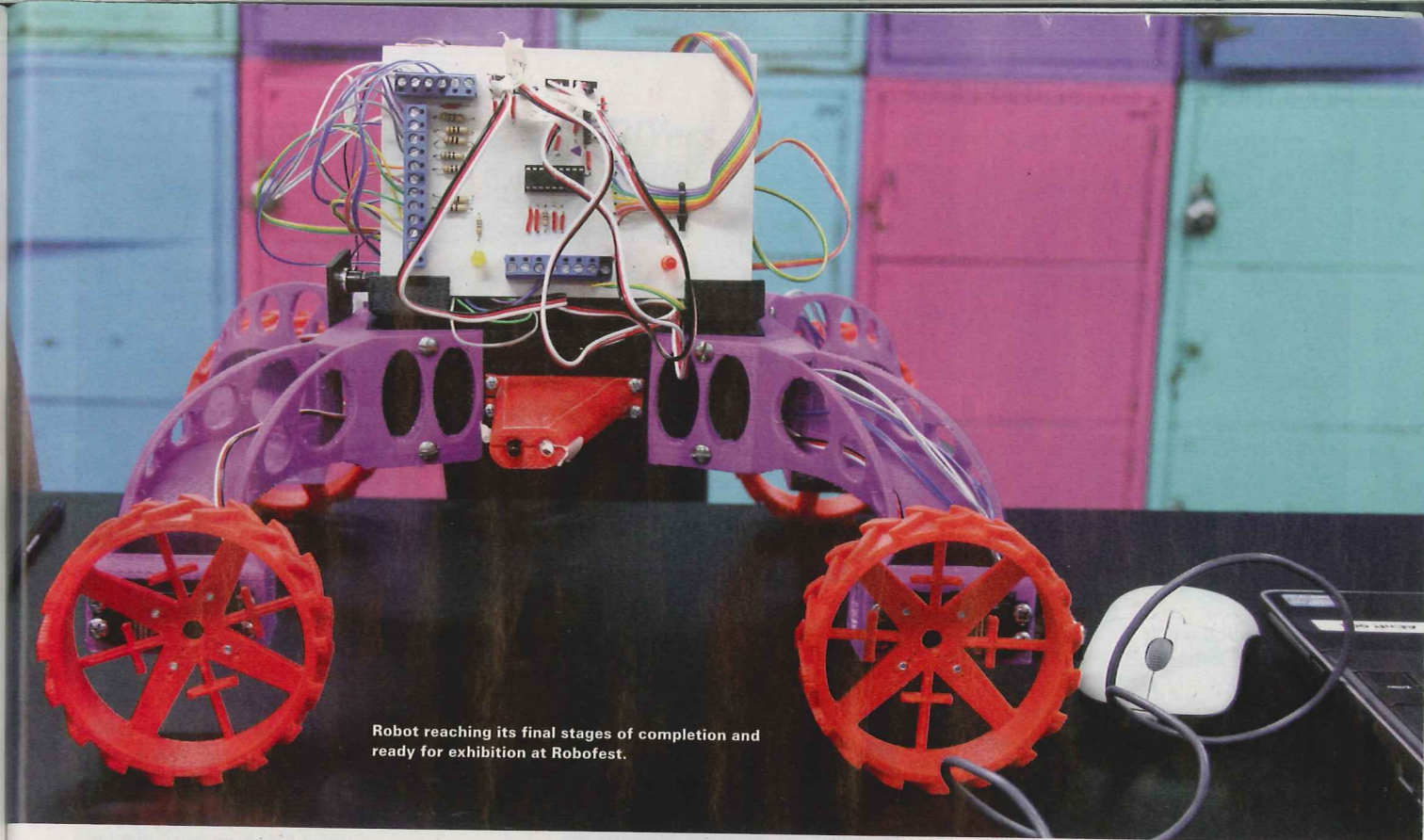
Novelty is important. It is an emotional attachment. Having taught summer camps where we had robot kits, I saw the impression that robots had on our students. I looked into the robotic kits, but the cost was prohibitive and once built, that was the end of the project. "Project Lead the Way" allowed us to obtain a CNC milling machine and a 3D printer which would allow us to design and then build custom robots.

Robotics is the sales pitch, but as in the



Kendra Williams working on her robot in preparation for Robofest 2015.





Robot reaching its final stages of completion and ready for exhibition at Robofest.

Wizard of OZ, we needed to get them behind the curtain. We were interested in the skill sets found in engineering which are mechanical, electrical and software. The robot was then used as the platform to learn these skill sets and it was the perfect fit.

The Robofest Competition offered an opportunity for every student to express themselves and present their strengths in a competitive environment. The LISD chooses to enter the "Exhibition" competition which allows our students to be able to express themselves in different ways.

By entering Robofest and other state robotics competitions we are demonstrating that our school system is very competitive... globally."

**RM:** When is "Alternative Energy and Robotics" offered, what grade levels are



Jay Maher using computer display to adjust a robot.



Robot component display with Kendra Williams.

included and how many students do you normally have enrolled?

**BOB:** We include 11th and 12th grade students with two classes composed of about 10 students per class. I also learned that many of the school districts in the Lenawee County system have traditional classes in technology or summer camps utilizing robot kits. These experiences are a conduit into the LISD system.

Now that I understood the basis for how the LISD students gain admittance into the Engineering/Robotics course, I wanted to find out what the students had to say about their journey to a possible engineering career.

I met with several students who provided me with insight into their "Path to Success". The first student I interviewed was a 12th grader, Kendra Williams, from Tecumseh High School.

**RM:** How did you get interested in this class?

**KENDRA:** It actually started from a young age. I have always been interested in technology... to see how things worked. So when I was in middle school my mom enrolled me in a summer class here at the LISD Tech Center that Mr. Jones was teaching. When I decided to do a tech program from my home school, I saw that Mr. Jones was the instructor of this class. I decided to give it a go and from there it just happened and it all fell into place.

**RM:** You attended Robofest in 2014. Do you plan on going again this year?

**KENDRA:** Yes, I would love to go to Robofest this year, it is fun a day. I can definitely see how I have grown in my experience since last year and it would be fun to give it a go.

**RM:** What do you think you are going to do when you graduate?

**KENDRA:** Well, I am enrolled at Michigan Technological University for the fall 2015 semester as an electrical engineering major. I then plan on specializing in biomedical engineering. It will definitely be fun to work on the programming, the electrical systems



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LEFT: Mr. Jones assisting a student with a problem. RIGHT: Volunteer, Mr. Ron Chinn, assisting a student in finding the correct part.



and the medical robots.

Next I spoke with Jay Maher, an 11<sup>th</sup>-grade student.

**JAY:** I was looking for something in the electrical area and this class was recommended. I came in and saw all of the interesting items and liked the description of the class, so I enrolled to see how I would like it.

**RM:** You are really early on in your pursuit of a career, but do you have any ideas of what you might want to pursue after you graduate from high school?

**JAY:** I haven't made a decision at this point but am thinking of something in the engineering field. Several other students indicated that they planned to pursue technology, robotics, electrical engineering and mechanical engineering in college.

I had the chance to attend two more classes with Mr. Jones and his students to discuss what they hoped to present at Robofest this year and also to find out if Mr. Jones had any information on his past graduating students.

This year's Robofest will have teams from



Volunteer, Mr. John Racklyeft, showing how they must also consider transportation to "First Robotics" in Michigan competition.

volunteers, Mr. John Racklyeft, who works with selected students on competing in "First Robotics" of Michigan and Mr. Ron Chinn who works closely with Mr. Jones on Robofest.

The "Alternative Energy and Robotics" course is being re-titled "Mechatronics" to more specifically define the course as

combining "mechanical" and "electronics" components. ©

### References:

LISD (Lenawee Intermediate School District) - [www.lisd.us/](http://www.lisd.us/)

Alternative Energy and Robotics "Mechatronics" - [www.lisd.us/instructional-services/tech-center/instructional-programs/alternative-energy-and-robotics/](http://www.lisd.us/instructional-services/tech-center/instructional-programs/alternative-energy-and-robotics/)

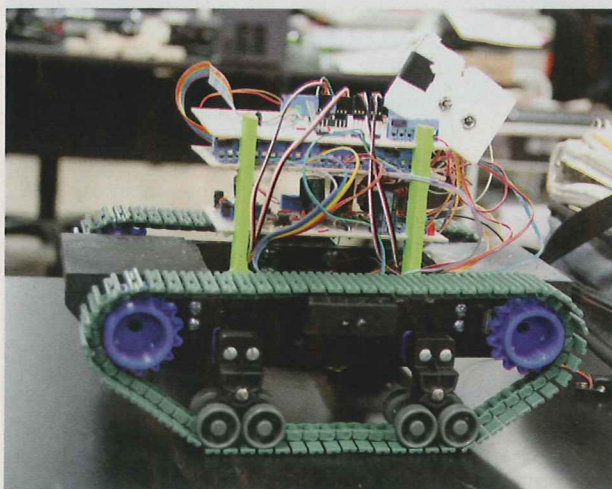
Robofest - [www.robofest.net/](http://www.robofest.net/)  
[www.ltu.edu/robofest/about.asp](http://www.ltu.edu/robofest/about.asp)

First in Michigan - [www.firstinmichigan.org/](http://www.firstinmichigan.org/)

the LISD presenting autonomous robots that exhibit the concept of "Platooning". This is where multiple robots work together to accomplish a task. Each team will be showing something different during the "Exhibition" competition.

Bob Jones indicated that, "It is difficult to follow up with graduates, but the LISD has been able to determine that 60-70 percent of the students enrolled in the "Alternative Energy and Robotics" course will stay in some type of engineering field. More importantly, it was typical that the class had no female students and now will have as many as 20-percent females in a class of 20 students."

Instructor Bob Jones is also assisted by two



LEFT: Another robot potential. RIGHT: Preparing for Robofest.

