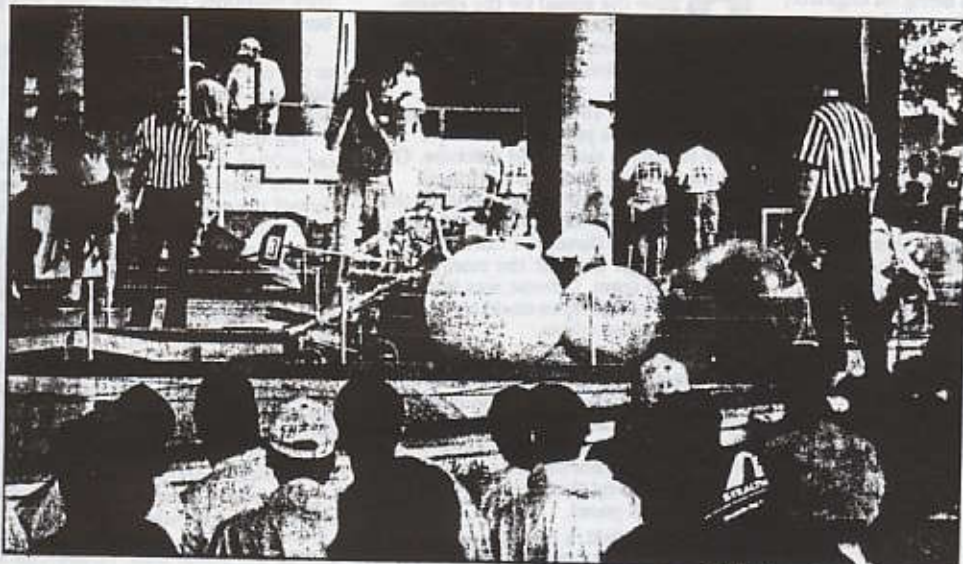


# Children's Express

THE INDIANAPOLIS STAR

MONDAY, JULY 3, 1995



**ASTONISHED SPECTATORS:** Many teammates and Epcot tourists cheer on the teams and their robots as they compete for a chance to advance to the final round at the national U.S. First competition.

## MATH AND SCIENCE

# U.S. First engineering contest teams companies with kids

■ Working with pros is just one of the benefits of an effort to build a better robot.

### Children's Express

**A**t Kokomo High School, the math and science classrooms contained beakers, books and desks. However, these were not the biggest challenges to the students gathered at school one Saturday this spring.

In the gym was a robot the size and shape of a baby walker with arms. Approximately 35 students and 10 engineers were working on it, seeing if it would carry a ball up a ramp and over a goal post.

These students and engineers from Delco Electronics were working on their entry in the U.S. First national competition.

Children's Express followed the exploits of two U.S. First teams. In addition to the Kokomo team, we visited Walnut Hills High School in Cincinnati, where 17 students were working with Procter & Gamble engineers on their robot.

The Walnut Hills robot was more compact than Kokomo's model. It resembled a box with long arms, which would grab a ball with both arms and then swing it, in an arc, over the uprights.

Both teams had the same six-week timetable and basic kit to build their

robots, and both were limited to spending \$425 on extras.

Each team had its own standard of choosing participants. Most team members were chosen based on an application or essay. The teams also required that the participants be new to the program, yet prior participants were welcome to help.

All members were dedicated to the completion of their robots. Time requirements for the teams varied — Kokomo students were expected to meet a 30-hour minimum overall requirement, while Cincinnati students worked approximately 15 hours a week. However, members from both teams surpassed the minimum requirements.

Students from both schools described the challenges and rewards of the program.

### WHAT U.S. FIRST MEANS

**ARIANNE SPACCARELLI, senior, Walnut Hills:** U.S. First is awesome. You learn about engineering and about working with people.

**PAUL GROSSMAN, sophomore, Walnut Hills:** U.S. First is friendship. Before, I didn't know anybody on the team. We were all strangers. Then, somehow we became real good friends.

**JENNIFER HERONEMUS, sophomore, Kokomo:** The most important thing is cooperative learning and learning how to work with different people.

**JAMES KLING, senior, Kokomo:** This program is also a cooperation between businesses and/or universities with a high school team. The idea is conveying engineering methods from one place to

another so students get an idea of what is going on in the work force.

**NANCY JACKSON, junior, Walnut Hills:** I've been involved in the math team and Odyssey of the Mind, but these are not as competitive as U.S. First.

**JENNIFER:** It's so different from any other group because you have actual engineers. If you go into another extracurricular activity, there's basically just one thing to do. But in this, there are various things to do. I don't see why anybody couldn't find something appealing in it.

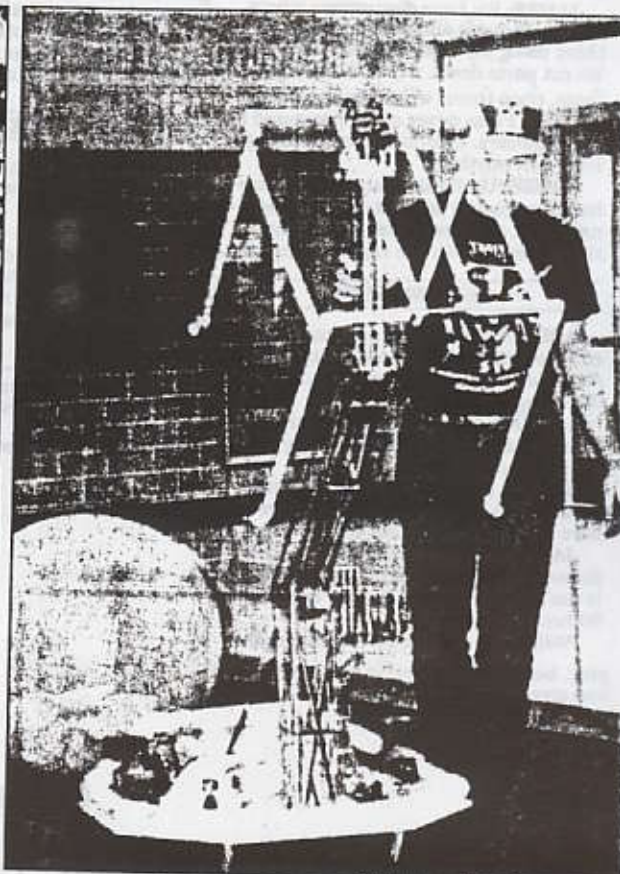
### WHAT THEY HAVE LEARNED

**JAMES:** I like the idea that anybody can do this. It's not just for the smart ones or for those who want to go into engineering.

**JAGUAN JENKINS, senior, Walnut Hills:** When I saw the kit I thought, "I ain't gonna do that, ain't no way." I had taken a course in electronics during the summer, so I didn't feel like I couldn't do it, but I really didn't know all the answers, like putting the wires together.

**JADON SMITH, freshman, Kokomo:** When I saw the box of materials, I thought, "Oh, no," but it really has not been as difficult as I thought it would be.

**JAMES:** No high school student is going to be able to design a robot all by himself or herself... but by the time you leave U.S. First you will be able to do that.



**OFF TO EPCOT:** Testing the robot before the national contest is a vital part of preparation.



## HOW THEY DID IT

**JAMES:** The idea was: You design a vehicle and we'll work around it. We said, "Forget about the parts. Forget how it will work. Use your imagination, brainstorm."

no limitations on your ideas. If you want to build a wrapped, coiled helicopter-powered doohickey, we'll build it."

**ARIANNE:** The engineers did a lot of the work, but we got to watch everything. Whenever there was a problem, we were involved with the solution.

**JAMES:** We have discussions where we'll go through and prototype the machine using plywood, cardboard, et cetera. We cut parts down, weld them, melt them, chop them, whatever is needed.

**PAUL:** I was never really pressured by the engineers. They are always willing to help with anything.

**JAMES:** Until this year, the machine had been mostly student-designed, engineer-built at Delco. This year, it was student-built, with the engineers helping.

## REQUIREMENTS

**ARIANNE:** This year our team accepted 50 people and three alternates (who also work on the machine). We don't discourage people from coming.

**JAQUAN:** We come here two or three days of the week, some of us every day. It's fun, but it is time-consuming.

**NANCY:** We come here twice a week for about five hours, and then we are here on Saturday for five hours.

**JAMES:** The minimum requirement for Kokomo is 30 hours. For most people that is not a problem; like, I've got well over 80 hours in.

**PAUL:** You can't be on a team every year, but I plan on coming back to help and give ideas.

## SUPPORT

**PAUL:** My friends were at first asking about the program, because we have signs all over school saying Pulp Friction (the name of our machine). So every day I end up explaining what we do and they all find it to be pretty cool.

**NANCY:** My parents are supporting me. They know it is a big time commitment, but they still pick me up every night when I am here. They think U.S. First is good because I plan on being an engineer, so they know it will affect my future.

**JAMES:** My parents tell me how much I've contributed to the program. Two years ago, I would not touch a power tool.

## FUTURE PLANS

**JAQUAN:** Next year I am going to be in college and I am planning on majoring in engineering.

**NANCY:** I will be a senior next year and then I will be in college, where I am planning on going into engineering.

**JAMES:** I'm going into aeronautical engineering, so this is hands-on experience for me.

**EDITED BY:** Katie Bell, 15.  
**ASSISTANT EDITORS:** Robert Hornberger, 16, and Michael Seats, 14.  
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# Robots from 20 states strut their stuff in nationals at Epcot

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**R**eady, set, go!  
As the master of ceremonies gave the signal for the elimination matches to begin, three teams revved their robots at the U.S. First national championships at Epcot Center in Orlando, Fla.

By March 31, 48 teams had arrived from 20 states to prove they had the power to build a successful machine. Of that number, 15 went home winners.

The competition this year required that each team build a robot that could carry or catapult balls through a football-like goal. The bigger the ball, the more points awarded the team. Defense was important, too — competitors could try to knock over other robots.

The robots were composed of various materials such as plastic, metal, old engines, etc. They could weigh no more than 70 pounds and measure no more than 36 inches by 30 inches. Each was controlled by a team member, called a driver, who moved the machine via a remote-control panel.

The playing field, a 30-foot raceway, led to three ramps. The ramps led to a platform where a 9-foot field goal sat.

During a two-minute match, three teams raced to get their robots to pick up a ball, travel down the raceway and up a ramp, then push or shoot it over the field goal.

While the drivers frantically worked

the controls to get their robots to score, the fear of malfunction or injury to the machine was a reality. The robots varied in size and shape, but no matter how they contained the heart, soul and bone of every team.

Children's Express followed two teams to the competition — Walnut Hills High School in Cincinnati and Kokomo High School in Kokomo. So how did they do?

The Walnut Hills students didn't go as far as they wanted, but they still went further than some other teams. Their lack of playing success had little effect; their spirit kept them alive. When bumped out midway in the competition, they came back the next round not on stage, but down the aisle with pom-poms in their hands, cheering on all the teams left in the final rounds.

Kokomo's robot was injured the first day of competition. Although team members repaired the machine, they failed to dominate their opponents after that.

However, Kokomo also scored well on team spirit: It started a pin-trading tradition — participants trading pins with their team's logo with other students.

**EDITED BY:** George Srour, 11, and Katie Bell, 15.

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## BACKGROUND

# Concerned inventor decided we needed Olympics for minds as well as for muscles

■ Given a goal and materials to reach it, student/engineer teams fight it out to the finals.

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**S**everal years ago, inventor Dean Kamen asked a group of high school students to name a single living scientist.

They couldn't. However, they could name numerous athletes and musicians. "I saw so many kids that just didn't seem to have much respect anymore for how powerful the human brain can be and how much fun it is to be creative," he recently said in a telephone interview with Children's Express.

In 1989, he founded U.S. First, which he says does for "math and science what the Olympic Committee has done for sports."

"It's important to show kids that there's more to life than developing the muscles that hang off their arms or their legs," he added.

U.S. First (which stands for United States For Inspiration and Recognition of Science and Technology) is an engineering competition that teams up interested high school students with area companies that can offer engineers, money and expertise.

The partnership takes many forms.

Together, students and professionals develop a machine that can perform a task assigned by U.S. First, such as shooting balls into a basket or forcing balls through a maze.

Each team must build its device from material contained in a kit furnished by U.S. First. Kits include such items as blocks of aluminum, steel, wood, plastics, motors and radio controls.

Kits and assigned tasks change yearly. "We don't make a lot of rigid rules," Kamen states. "We just say, 'Here's your kit,' and then the partnership between company and students is left to figure it out."

The program culminates in a national competition in which teams pit their machines against others. This year, U.S. First had more than 60 teams compete at regional competitions in New Hampshire and North Carolina, with the final competition March 31 and April 1 at Epcot Center in Orlando, Fla.

"Competition isn't important," Kamen said. "What is important is making things exciting enough that people put effort into them. And the things that our culture



Dean Kamen

uses as a way to get people to work hard and develop themselves is competition."

The main purpose is to expose kids to the fact that engineering is exciting.

"U.S. First is not an educational program," Kamen pointed out. "It really is an inspirational program to get kids to see things in a light they might not otherwise see it."

Inspiration has figured highly in Kamen's life. While he has a strong background in physics, chemistry and engineering, he never graduated from college, although he did receive an honorary doctorate in science for his technical achievements.

These have been many. He has built medical equipment, data acquisition systems and control equipment for large buildings, as well as building and flying helicopters. He holds more than 30 patents.

He got his start as a teen-ager, when he was hired one summer to wire relays for a company that put on audio-visual shows. He soon figured out a better way to control electricity. By the end of the summer, he had built and sold a new system to his boss.

What's ahead for U.S. First?

"It's always a secret until we give out the kits. I can say that next year's kits will be even more sophisticated and the goal should be even more challenging."