

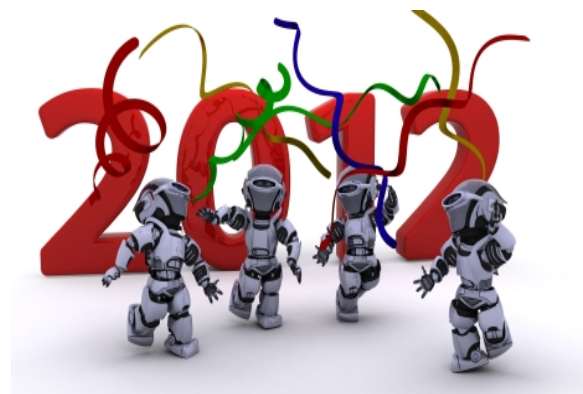


Innovation - Kids and Cool Robots

Dr. Liam Pender

A key ingredient for the innovation that leads to prosperity is innate human ingenuity. My recent experience of a children's robotic competition gives me great optimism for our science and technology future.

Research and problem solving are integral skills for every innovative product development team. Children often demonstrate these qualities at play with their imagination and inventions. Recently I attended my first *FIRST*® *LEGO*® Robotics Competition -- a program designed to help kids learn critical thinking, team-building and presentation skills while they have fun discovering the excitement of science, technology and engineering.



As the rookie coach of a rookie middle school team, I didn't know what to expect. What I witnessed in the preparation for the tournament and what I saw on competition day lifted my spirits immensely and gives me great optimism for the future.

Business professionals, politicians, educators and parents all agree that investing in our children's education is essential. Science and technology leadership is vital to a prosperous society. We need the next generation of scientists and engineers to achieve this, however, in the last generation the number of students choosing these career paths has been declining. The *FIRST*® *LEGO*® Robotics Competition aims to inspire children to embrace these life paths. While helping out as a coach, I observed all the natural ingredients of our future innovators.

- 1) First, the young people exhibited an astounding ability for **creative problem solving**. They would:
 - systematically analyze technical problems and challenges,
 - propose design solutions that were original and unique,
 - mentally test those solutions against the game constraints, and
 - proceed to build and program the most compelling and likely design.

These children were innovating and engineering although not yet knowing the meaning of these

very words. The practice, inbuilt and natural, showed up as structured play and discovery.

This is quite different from kids eagerly explaining to their parents the workings of a consumer electronics gadget because of their instinctive affinity for new technology. In the robot challenge the children are not just users of technology - they are creators of it. To be successful, invention requires a far greater degree of understanding, analysis and discipline.

2) Next, the innate tendency exhibited by these young inventors was to **work as a team**. In everyday situations many children are primarily focused on themselves. However, to complete the required challenges, the participants recognized the need to cooperate. They:

- organized the work to be done
- divided the tasks, and
- constructively critiqued their team members' contributions and solutions.

Collaboration, roles and responsibilities and accountability for the result is a necessary part of contemporary technology development. These children embraced it.

3) Third, the **desire to compete and to win** was strongly evident. While there are many facets to the robotics challenge that are subjectively judged and reward core values, in the competitive tournament

points are scored for successful missions and lost for unsuccessful ones. The scoring is black and white, like a football game. There are winners and runners-up.

On competition day, the teams exhibited the focus and execution of athletes. These children had prepared diligently, were showcasing their designs and wanted to win. In the spotlight, in front of their parents and peers, the work of the five eleven-year-olds' fertile minds was put to the test. In the cauldron of competition, any shortcomings of unreliable mechanics or fragile programming had nowhere to hide. The points on the scoreboard showed whose design was best. Similarly, in the technology marketplace, the best innovations thrive while second-place designs struggle to survive. The drive to be best was an inspiring quality in these young people.

Eleven-year-olds showing qualities of creative problem solving, constructive team work and a desire to win are factors that help me believe that we have a future full of technology innovation ahead.

As you dwell on the expectation that today's robot-building children will become our next generation of scientists and engineers, consider your current product development challenges. Take action and call Egret Technologies. Our work with clients is about "Turning Innovation into Profit" and we look forward to hearing from you.

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