EDUCATIONAL ROBOTICS IN SOUTH AFRICA

Presenter: Pieter Pretorius
Robofest 2014

INTRODUCTION

After a decade of robotics in South Africa, 90% of all competitions and tournaments are still linked to LEGO Robotics. No other robotics platform has been introduced in SA with any margin of success up to today.

In fact most of the growth of robotics can be attributed to FIRST LEGO League and the organizers behind it.

We should also keep in mind that the slow growth of robotics in South Africa is linked to cultural and socio-economic issues. Even now, the government still prefers to promote arts and culture above science, engineering and technology.

The government has changed legislation last year to remove technology as a stand alone subject and combine it with science up to grade 7 level. While it is not totally removed, it is second to science.

Therefore when we look at the historical development of robotics in South Africa, we need to keep these 2 facts foremost in our minds, because it has a huge influence on leaners attitudes.

A SHORT WALK THROUGH HISTORY

Robotics – time period – 1999-2002.

Lego Robotics which were introduced into the South African school scene in 1999-2002 by the LEGO Educational Division and at that stage the Rand Afrikaans University. (RAU, later to be renamed as the University of Johannesburg (UJ))

At that stage UJ started to create "Techno Labs" at various schools and private schools which could afford it. However this effort did not really meet with great success at the time. LEGO Educational division in South Africa did a lot to try and stabilise the school market during this time.

Robotics were not viewed as a necessity, it was rather a "nice to have" for schools who could afford it.

During this time there was no formal competitions or exhibitions concerning robotics at all.

The period 2002-2007

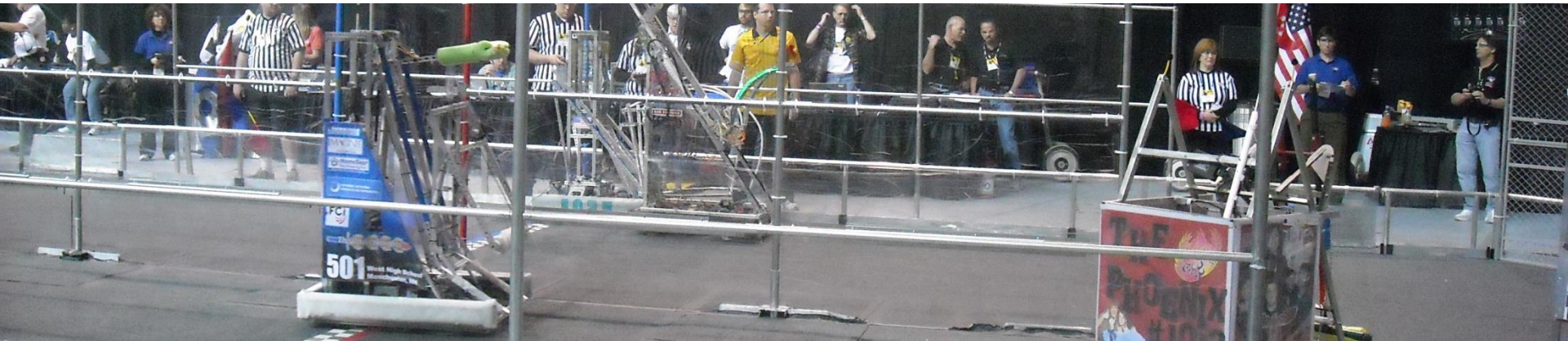
During this time a privately own Computer business (Trophy Computers) decided to expand their activities to robotics also as robotics was seen as a logical progression from computers.

The first robotics clubs were created in 2002 and the first robotics club competition were setup, which culminated in a joined inter continental competition at the end of 2003 with NASA.

The EARLY (Engineering and Robotics Learned Young) competition were broadcast live between South Africa and Houston Texas. This was really the first big robotics competition ever setup in South Africa.

This competition enabled Trophy Computers and Robotics to secure the international contract for FIRST LEGO League, which quickly became the only robotics competition for middle schools in South Africa.

At this stage the organizers identify another problem, the gap between middle school and university. What we have gained in FLL during the middle school years, we basically lost during the last 3 school years again.



FIRST LEGO League started in Vaalpark in the Northern Free State with 19 teams in 2004. We also send our first team to the Robotics World Festival in Atlanta in 2005.

In 2005 the number of teams participating in FLL grew to about 60 teams. But the program were plagued by lack of sponsorships. However at this time the MTN Science Centre in Cape Town decided to support the robotics drive and also host a competition for us.

Trophy Robotics as main sponsor for the FLL in South Africa during this time were mainly responsible for expanding the program, training teachers and coaches, judges and referee's.

By the end of 2007 the number of teams has grown to 70 and the program became to big for a small Company like TCR to handle. We were in search of a new partner for FLL, which came in the form of the Tshwane University of Technology.

During this time SAP became involved in robotics in South Africa, primarily through team sponsorships. During this year they sponsored about 7 teams.

The Time period 2008- 2014

The Tshwane University of technology took over the Operational partners responsibilities from TCR in 2008 and the program .

Also during this time, National Instruments started a competition for students, a type of intervarsity. I think that about 5 universities participated. This competition later became the RobMech competition for students under the care and management of the CSIR.

This was also the year when Sci-Bono Discovery Centre in Johannesburg came on board and hosted its first competition for FLL.

Again, please note that FLL at this time was still the only robotics competition in the country. This was the only choice for learners up to 2010.

However in 2010 we hosted the first World Robotics Olympiad competition in Pretoria.

Now for the first time there were really a choice of competitions for the learners.

During 2011 the number of FLL teams jumped to about 120 teams and by the end of 2013 we had about 190 teams in South Africa.

Since 2010 the number of parties involved in FLL in South Africa has grown:

The Department of Science and Technology has started to show some interest in FLL and other Robotics programs

The Following universities are also now involved in the program:

UNISA, NMMU (PE), NWU (North West University), UP (University of Pretoria), Cape Town University of Technology and Central University of Technology.

The following Science Centres are currently involved :

Cape Town Science Centre, Sci-Bono Discovery Centre and Kwa-Zulu Natal Science Centre.

The growth of FLL during this period can be attributed to the efforts of the people of SAP and the Tshwane university of Technology.

ROBOTICS CLUBS

While Trophy Robotics is basically still one of the only robotics club systems in the country, a lot of schools are now setting up their own clubs through the help of parents and teachers.

Some schools like the Curo schools are also now introducing robotics at junior primary level. But all of this clubs are basically using only LEGO Robotics and no other platforms.

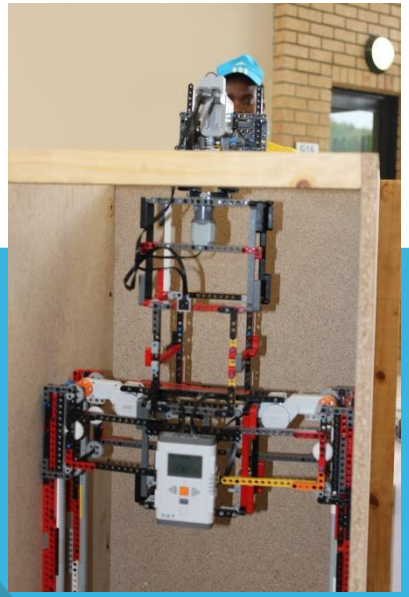
Universities like NWU and UNISA are also setting up programs to train teachers and coaches in a more formal manner and these universities are also getting involved in sponsoring teams, mostly from townships to get involved in robotics

ROBOFEST 2014

By now it should be clear why we have introduced Robofest in South Africa. We are of the opinion that FLL as a group activity is a fantastic sport and we believe that the World Robotics Olympiad is also great, but what caught our attention was the "openness" of Robofest.

Any platform and any programming language. This makes it a whole lot easier for many learners and schools to get involved as computer programming is part of our high school curriculums, they can now use C or Java to program their robots which is an extension of the work the kids are doing in class.

While we only did the parade and the exhibition this year, we hope to introduce the gameplay and bottle sumo next year as well.



TRENDS

As you can see, robotics is South Africa has had a slow start during the previous decade, but through the introduction of various other programs we hope to increase the number of participants significantly over the next few years.