



First Lego League in Slovakia

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FIRST® LEGO® League (FLL) is an international competition with educational value for young people [1]. Each season many teams from all countries, consisting of 3 – 10 members of age 9 – 16, can join this competition on regional tournaments. Successful teams pass to higher level international tournaments until the final FLL World Festival. In season 2016-2017 one team from Slovakia made success with 2nd place in selected competition category at FLL World Festival in St. Louis/USA. This team came from city Košice and they passed successfully through international tournaments in Hungary and then Germany until St. Louis. The principle of competition is to design, build and program your own robot, using exclusively the LEGO® MINDSTORMS® building kit. The core of kit is an easy programmable control unit, connected up to 4 sensors of variable kind and up to 4 actuators – electric motors of various power and control possibilities. The rest of construction are LEGO components of many kinds. Each season, the FLL competition starts with new slogan and new task set for your robot. The season 2016 – 2017 came under the slogan “Animal Allies” and new season 2017 – 2018 is coming as “Hydrodynamics”.

Competition robots must try to complete various mechanical tasks on the standart game table and success tasks are counted by judges – one game round takes two and half minute. There are several tentative rounds for each team in several levels until final round for best teams. Robot can be modified throughout the game round, except the programming unit and no remote control is allowed. All tasks to complete together it is not a trivial challenge at all. Tasks (various obstacles and tracks for robot) are made from special LEGO kit dedicated for particular FLL season and placed on the competition table. This dedicated kit is called *The challenge set*, it is issued at the end of august and it is send to every registered team together with current document of game rules. After three months of preparation, regional tournaments are running in December - January and international tournaments are running after until May.

The robot competition consist of two categories: *Robot Game* – trying to complete tasks (Figure 1) and *Robot Design* where the team must explain the construction and software to get evaluation points from jury (Figure 2).

Besides, there are two other categories, not necessarily technical: *Research Project* and *Teamwork*. The research project category (Figure.3) has optional content under current competition slogan. Under the last slogan “Animal Allies” young people created various own solutions for real local problems with animal protection or to support better relationships between people and animals. The teamwork category contains secret game or task, where the jury is testing how members of team are able to collaborate (Figure 4).



Figure 1. Contest category *Robot Game* (all pictures taken by author).



Figure 2. Contest category *Robot Design*.



Figure 3. Contest category *Research project*.



Figure 4. Contest category *Teamwork*.

The contribution of FLL competition can be summarized as follows:

- very young people learn their technical abilities in mechatronical wholeness: mechanical hardware, sensors and software acting together to complete a task
- members of team are learning to collaborate with work and ideas together, under adult coach who should lead them patiently to find their own solutions
- official presentation of work results is trained, in game, in technical communication, in project presentation – best teams at the international level in English

- an interest of further technical studies and work is supported
- last but not least: all movement of FLL is raising societal relationships among children, adults, parents, teachers, supporters and any local management bodies

In our European region of FLL (see the Euro-regional webpage [2]), the number of local competition tournaments in season 2016 – 2017 was set to: 2 in Czech Republic and 2 in Poland, 5 in Austria and the same number 5 in Hungary, in Germany 39 local tournaments and in Slovakia 7. Local tournament (basic regional level of FLL competition) must incorporate minimal 10 competition teams or more. On fig.5 there is a comparison how many competition teams were found in different countries. The number increases every year a bit. Every country has its own local regional webpage of FLL, where competition teams can register, get informations and communication in their own language (in Slovakia see the webpage [3]). Added pictures were taken in two different local tournaments in Bratislava, Slovakia, in December 2016 and January 2017. First of them was managed by Comenius University (fig.6) and the second was managed by Pan-European University [4] (fig.1-4,7).

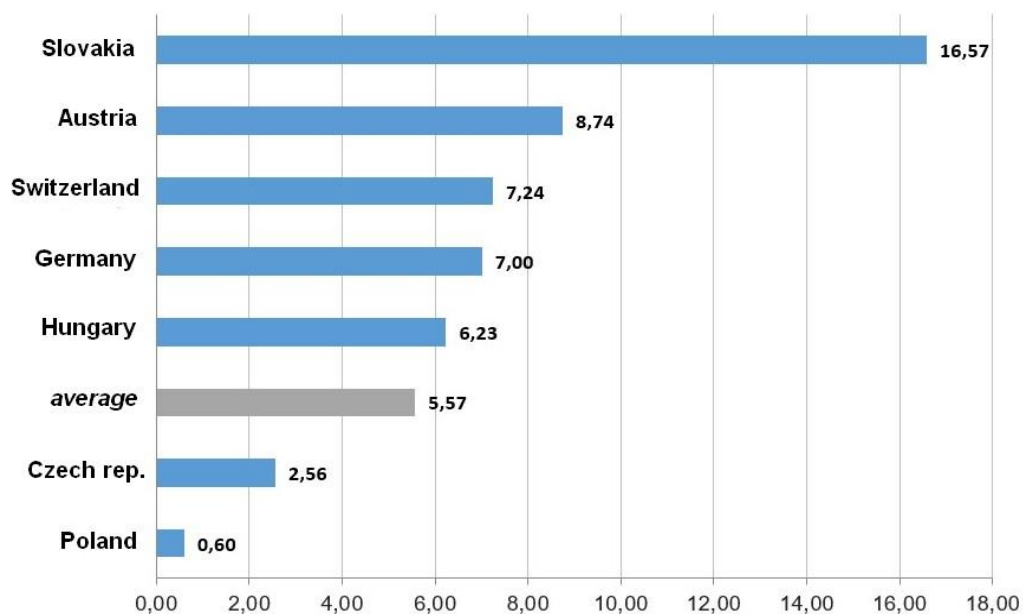


Figure 5. Number of competition teams in local tournaments in proportion to one million people of given country (source: FLL regional board Slovakia)



Figure 6. Robot game at the Comenius university in Bratislava, December 2016



Figure 7. Awarding ceremony at the Pan-european University in Bratislava, January 2017

References

- [1] Webpage of the whole First Lego League organisation:
<http://www.first-lego-league.org>
- [2] Webpage of our European region:
<http://www.first-lego-league.org/en/fll/regions.html>
- [3] National webpage in Slovakia, in Slovak language:
<http://www.fl.sk>
- [4] Short presentation video from Pan-European University in Bratislava:
<https://vimeo.com/200318900>

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