

Report on the mathUganda project

Sergiu Moroianu

Between January-July 2019 I conducted a project aimed at supporting the participation of Uganda in the 60th IMO (International Mathematical Olympiad) in Bath, England, July 11-21, 2019. The webpage of the project is [here](#).

The target group was the IMO team of Uganda coordinated by their team leader, Jasper Okello, and by former IMO participant Andrew Tugume (Honorary Mention, IMO 2017). The institutional organizer of IMO in Uganda is the Uganda Mathematical Society.

The contributors were mostly mathematicians, their friends and family, generally from Romania, but also from France, USA, Switzerland, Brazil, Luxembourg, Austria and UK.

Our intended actions were:

- 1) To facilitate the logistic effort of transporting Uganda's team to England. We aimed to raise up to 10,000 USD towards the plane tickets, and to persuade the UK embassy to waive the visa fee for Uganda's Olympic team.
- 2) To train the Uganda team for the IMO competition through interactive lessons and advice.

Fundraising

Between March-May 2019 we transferred to the Uganda Mathematical Society USD 7,914, of which 60% came from 80 individual donations. I collected the donations in my personal bank accounts and through PayPal, and along the way I listed them on the project page. The remaining 40% was donated by a company, Frame Film, producer of world-famous TV show *Las Fierbinti*. Frame Film's donation was directed to Societatea de Stiinte Matematice din Romania, who agreed to sponsor the Uganda Mathematical Society for the same amount. I still hold in my bank account USD 832 coming from donations received after the end of June 2019. They will be directed to the UMS next year for IMO 2020.

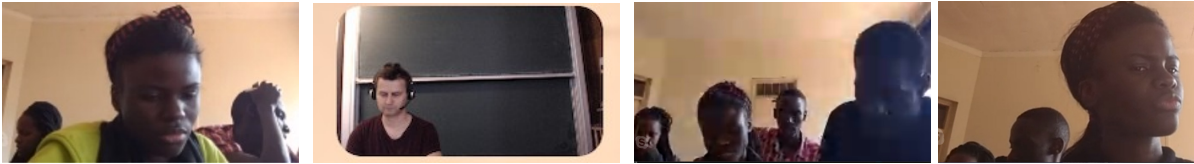
Visa fee waiver

There was absolutely no way of communicating with the UK Embassy. In fact, the UK does not even maintain an embassy in its former colony Uganda. Visas are processed through a private company at the UK Embassy in South Africa. Each visa costs 127 USD, plus a last-minute interview fee of USD 25.

Training

We delivered 13 interactive lessons through Skype between March and June 2019. Five trainers were involved: Radu Bumbacea (4 lessons), Sergiu Moroianu (6 lessons), and Lucian Turea, Liviu Paunescu and Flavian Georgescu (1 lesson each). The lessons usually lasted for 3 hours, but the quality of the communication was not always entirely satisfactory. Problem 1 of IMO 2019, where Uganda collected 4 of its 5 points, was similar to the well-known functional equation $f(x+y)=f(x)+f(y)$, a subject I covered in my first lesson. However, I was not able to finish it properly, and I am not sure how much the students really grasped from my presentation, because the video kept interrupting and I could not really get their feedback. Subsequent lessons went generally better, but we should focus on the technical aspect if we are to do this again in the future.

On our side, I had a Jabra Evolve 65 UC Bluetooth wireless headset, high-speed internet cable, and a Zeiss high-definition webcam focused on the blackboard of the IMAR conference room. In Kampala, they used a tablet or a smartphone, and projected the trainer's image on a widescreen. I could see the students on my laptop and hear them in my headset, but I could not see their writing in real time. This was a serious drawback for the effectiveness of our lessons.



My personal interaction with the students was incredibly rewarding. They are fun, eager to learn, and extremely proud to represent their country in an international competition like the IMO. I do encourage every Olympiad-savvy mathematician to volunteer for an online training session!

Uganda's results in IMO 2019

Thanks largely to our project, the UMS was able to send a full team of 6 students to the IMO 2019 in Bath, England. They collected 5 points (out of a total possible of 252). This is a weak result compared to 2017, when Andrew Tugume alone collected 8 points. Nevertheless, the country's ranking among the participating countries increased from 6% last year to 9% this year. (In IMO 2018 in Romania, they were able to send only 4 participants). Their best score this year was Eva Kakyo's 2 points. Eva joined the team only in April, when another student withdrew. It seems likely that without our support, she would not have made the trip to

England.

It is worth mentioning that this year Uganda had a “star” contestant, Reagan Yuggu, who had previously obtained a bronze medal in the 2019 PAMO (Pan-African Mathematical Olympiad). It is very unfortunate that he did not perform in the IMO up to his true potential. It seems that he had a sort of illness in the weeks before the IMO. Another strong contestant, Hagar Namubiru, equally bronze medal in the PAMO, is the only one on the Uganda team to get a point in problem 2 (IMO problems are ordered by level of difficulty). We all expected Hagar and Reagan to reap more points than they eventually did.

Besides Eva and Hagar there was another girl on the team, Gloria, and among the three of them they brought home 4 out of the team’s 5 points (this cold fact is however somewhat unfair for Reagan, as explained above).

Uganda and North Macedonia were the only two among 112 participating countries to send a gender-balanced full team of 6 to the IMO 2019.

The absolute result of Uganda (5 points) is extremely weak if we compare it to teams like China (227), Romania (155), South Africa (106) or Morocco (80). Those countries have a much stronger tradition in math competitions than Uganda. Nevertheless, in relative terms, Uganda performed better than its larger and richer neighbors Tanzania and Kenya. In fact, Uganda also surpassed Angola and Botswana, countries considerably wealthier in terms of GDP per capita. In my view, this aspect reflects the great impact of a few dedicated individuals at the Uganda Mathematical Society on their country’s performance in sciences.

In the news

[Six students to represent Uganda in math competitions](#)

[Romania aids Ugandan students for global mathematics competition](#)

[Societatea de Stiinte Matematice din Romania \(.pdf \[here\]\(#\)\)](#)

What follows?

We will continue to support Uganda’s IMO team in various ways:

- Are you good in Olympiad-type mathematics? Then you may want to volunteer for a skype lesson with Team Uganda!
- I already mentioned the money dormant in my bank account, to be used for IMO 2020.
- We should try to get funds from foundations, international bodies like the IMU, and maybe even public money marked for international cooperation. Any help, personal contact or ideas in this direction would be very much appreciated!
- If you wish to donate (again!), the sums thus collected will be posted on the project’s page.
 - o My paypal address is sergiu_moroianu@yahoo.com.
 - o My bank accounts are:
RO34BTRLEURCRT0231629101 (in EUR)
RO84BTRLRONCRT0231629101 (in lei).
 - o You may also want to donate directly to the [SSMR](#), either specifically for the Uganda cooperation project, or for its other important works in the field of mathematical education, like for instance [Gazeta Matematica](#).

***Thanks a lot for your support!
Let us keep up the good work!***

Prof dr. Sergiu Moroianu
sergiu.moroianu@imar.ro
<http://www.imar.ro/~sergium/>
<http://www.imar.ro/%7Esergium/mathuganda.html>
+40740 609 547

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