

AKSF NEWSLETTER

Issue 1 - June 2021



Association Kangourou Sans Frontières



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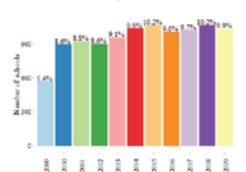
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Hello and welcome to our first Association Kangourou Sans Frontières Newsletter

Joanna Matthiesen
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My name is Joanna Matthiesen, and I am humbled to serve as Editor-in-Chief of The Association Kangourou Sans Frontières (AKSF) Newsletter. My goal for The AKSF Newsletter is to offer reliable, informative articles for everyone's reading pleasure. Featuring articles written by our distinguished Math Kangaroo members, I am both honored and proud to serve alongside Meike Akveld and the rest of the AKSF leadership team.

I envision the AKSF Newsletter as a source of quality articles that are relevant and worthy of attention. This first newsletter has many interesting articles written by our AKSF members; I hope you are just as excited as I am to read them. I want to assure all of you that our newsletter welcomes contributions and writings from all members of the AKSF family. Remember, you do not have to be an aspiring journalist to make a contribution. Do not worry about your English language abilities to shine through, just write what you think is important to you and what others may find interesting and leave the language polishing and editing to me.

This said, I am looking for 2-3 AKSF native English speakers who would like to volunteer to join me on the editorial-advising committee. It would be a 2-year commitment. The responsibilities would entail proofreading submitted articles, polishing them, and contributing ideas on newsletter reception and optimization. Please email me, I would love to hear from you.

I close this message by inviting everyone to submit their exciting articles, findings, or research to the AKSF newsletter. All papers receiving a high degree of enthusiasm in the peer-review process will find a home in this AKSF newsletter. Therefore, we are committed to publishing all discoveries, methods, resources, and reviews that significantly advance the outreach of Kangourou Sans Frontières in the world. Ultimately, this newsletter will function to improve our AKSF communications and information-sharing for the benefit of our members.

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Once again, I welcome you to this AKSF Newsletter – your newsletter. With your support as authors, reviewers, and editors, I see a bright future for this publication in serving both science and mathematics - as well as our AKSF Mission in the future.
”

If you have any questions, suggestions, or concerns, please address them to me directly, joanna@mathkangaroo.org. I hope to hear from you soon, and I welcome your feedback.

Sincerely yours in the Spirit of Math Kangaroo,

*Joanna Matthiesen, M.S.
AKSF Newsletter Editor in Chief*

News from The President

Meike Akveld
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Dear Kangaroo Friends,

It is my great pleasure to write the first “News from the President” in our first AKSF Newsletter.

First of all, I would like to thank all our members who contributed to this Newsletter and I would like to encourage all of you to contribute with articles to our future Newsletters. This Newsletter is for our members and from our members.

I would like to thank Özgür and his team in Turkey for doing the lay-out of this Newsletter. It is wonderful. And finally I would like to thank our chief editor Joanna for all the work she did and for all the positive energy she invested in this new project. Thank you so much!

Let me first tell you a bit more about the history of this Newsletter. AKSF is growing constantly, and the number of the members will soon get close to 100. This means the organisation has to be more efficient and more professional. For this reason, the Board institutionalised a couple of years ago the Annual Spring Board Meeting and also the quarterly News from the President for the Board written by the Secretary. This way all Board members are regularly updated about what happens in the organisation of AKSF and it is easier to discuss things and make decisions at the Board meetings. The Board members very much appreciate this and from here the question arose: Why don't we set up something similar for all our members? Our members would be more informed about what is happening within AKSF (and be therefore better prepared for the General Assembly and the decisions that need to be taken) but we would also get more insight into what other members are doing.

In the past countries could speak up at the General Assembly and report about what had happened in their countries in the past year. We are too many now. We cannot do this at the General Assembly anymore and we are even so many people that it is hard to talk to everyone at the Annual Meeting.

“
The Newsletter could be an alternative way to find out what is happening in other countries so that we can continue to learn from each other and to share our experiences and to exchange ideas and opinions.

”

I hope that this Newsletter will be a success within our Association (it can also be found on our external website).

So, what has happened since our virtual Annual Meeting in October? The first major act was the phase of the finalisation. Many people, from the working groups and from the finalisation team, worked on the problems after the meeting, so that a final version was produced in which both the wording was turned into proper English everywhere, the mathematics was made correct, often solutions were included, and all the pictures were produced in such a way that we could all use them. Thanks a lot to all the people who helped here!

After that life in AKSF became a bit quieter. We had the usual dealings with the authorities, but everything has been set up well and the organisation runs smoothly.

In the New Year the first mails started to arrive about how people are planning to run the competition in 2021. Some unfortunately still had to cancel the competition due to the Pandemic, some of us could run it almost in a normal way and many of us were creative and found new solutions for the competition using modern technology or by postponing the date. This again shows the diversity within our Association and the many creative minds at work. And this is the true power of Kangaroo. We are many, and we are different, but we are creative and clever and willing to help and support each other!

At the time of this writing the Board is preparing for the Spring Board Meeting which unfortunately will also be held virtually: We have many applicants at the moment, some already for a longer period (also due to the Pandemic), some new ones and we need to discuss all of them. We need to talk about this year's Annual Meeting, which still carries a lot of uncertainties. We will need to talk about future Annual Meetings. We will need to plan the Board elections which will take place in the Fall. Did you know the Board officially consists of five elected Board Members, three Board Members that are in the Board because they are organising the Annual Meeting and a President? Right now, we are missing one elected Board Member. We will see if all current Board Members will run again. I can only say that we have a wonderful Board now; a Board that works very hard but in a very friendly spirit and in a very professional way.

Continuity within the Board is important and at the same time it is equally important to me that the Board represents the Association i.e. I would like to see people there from all ages, from all genders, from all continents etc. Being a Board Member is a lot of work, but the work is interesting, it gives you an insight in the running of an international organisation and it is done together with a wonderful group of colleagues that I call Friends now. I hope many of you will consider running for the Board or manage to convince others to do so.

Traditionally we will send you the minutes of the Board meeting as soon as they are approved, and we will keep you informed about the Annual Meeting in Belgium and all other important matters.

It now remains for me to wish you a wonderful reading of the manifold articles of this Newsletter.

Take care and stay healthy!

*Yours,
Meike Akveld
AKSF President*



XXIX Annual Meeting of the AKSF November 3rd - 7th

Bart Windels

bart.windels@telenet.be



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While COVID still has the world in its grip, Antwerp is preparing to welcome as many AKSF members as possible for the XXIX Annual Meeting of the Association Kangourou Sans Frontières. Unfortunately, not everyone will be able to travel to Belgium. Therefore, we will make the next Kangaroo meeting a hybrid meeting.

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The meeting will be held in Antwerp from Wednesday 3rd November 2021 (arrival day) to Sunday 7th November 2021 (departure day) for the in situ participants who are able to travel to Belgium. Those participants who cannot travel to Belgium will participate online from Thursday 4th November 2021 to Saturday 6th November 2021.

The meeting includes the preparation and selection of problems for the Kangaroo challenge 2022 and the General Assembly of the Association Kangourou Sans Frontières. A provisional programme can be found at www.ksf2021.be.

The meeting will be held at the Radisson Blu Astrid Hotel. Accommodation will be provided in the same hotel.

Participation fee

The participation fee for in situ participants per person in single accommodation is € 580 (1st and 2nd person), € 880 (3rd and 4th person) or € 1180 (others and accompanying persons). The participation fee per person in double accommodation is € 300 (1st and 2nd person), € 600 (3rd and 4th person) or € 900 (others and accompanying persons). Please be advised that due to Belgian COVID-19 legislation, for most in situ participants it will be required to use single accommodation.

There is no participation fee for online participants. The fee also covers meals, coffee breaks and refreshments for in situ participants from the evening of 3rd November to the morning of 7th November, transfers to and from Brussels Airport on the official arrival and departure days, and meeting materials.

Participants will be asked to pay for any additional accommodation and food requirements, and for transfers apart from 3rd November and 7th November, for most personal drinks and for additional services in their rooms. All participants are expected to have their own accident, health and travel insurance.

Registration of participants and payment

The financial risk for the organizers is enormous. And the number of in situ participants is limited due to COVID-19 regulations. Therefore we need to set up a strict registration procedure.

You can register the participants of your delegation online at www.ksf-support.org from 1st June until 30th June, 2021. After 30th June, it will neither be possible to register extra participants nor to cancel a registration. The organizers are committed to welcome as many in situ participants as possible. Nonetheless, there might be practical and legal limitations. Therefore, on 1st July 2021 the organizers will determine the maximum number of in situ participants, taking into account the expected COVID-19 epidemiological situation and the Belgian legislation. If the number of registered in situ participants exceeds the maximum number, the organizers will need to prioritize participation according to the following criteria.

1. Participants who assume a vital responsibility at the meeting, such as the chairs, the vice-chairs and the elected Board members.
2. The co-opted Board members.
3. Up to twenty applicants who have not yet had the opportunity of taking part in situ in an Kangaroo meeting.
4. One participant per AKSF member (not taking into account the people mentioned under 1).
5. Other participants.

After confirmation of an in situ participation, the conference fee must be paid by bank transfer before 10th July 2021. The conference fee is not refundable. We kindly ask you to call on your personal travel insurance, should the meeting be cancelled or should the number of participants need to be further limited. Nonetheless, one can substitute a participant the conference fee was paid for by another person.

More details about the Kangaroo meeting can be found at www.ksf2021.be. Please watch our invitation video.

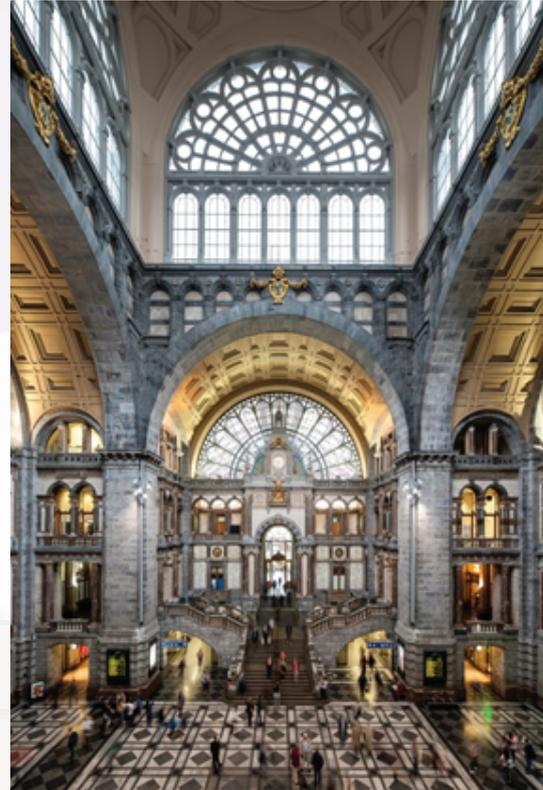
We very much look forward to welcoming you in Antwerp.

Bart Windels

Organizer

Stefaan Vaes

Chairman of Vlaamse Wiskunde Olympiade VZW



Antwerp Central Station



Antwerp city centre dating from the 16th century

Math World

Daniel Bernoulli, Pioneer of Mathematical Models in Medicine



In 18th century Europe, an epidemic killed one in 8 people. A treatment from the Far East killed one out of 200 people. Is it right to treat everyone and kill one in 200 of the population, or is it right to wait for another treatment and try to control the disease? The two mathematicians, Dainel Bernoulli and d'Alembert, differed. You can find a detailed article on Bernoulli's calculations on the subject here.

<http://bit.ly/bernoullimodels>

Pop Math: Math Outreach Events in Europe

Pop Math's goal is to gather all the POPular events on MATHEmatics in Europe on a single map. Eligible events are both live and online events focused on mathematics aimed at a general audience and those targeted to an academic or professional mathematics communication audience. This includes commercial and non-commercial math communication and outreach events and mathematics engagement of all types (talks, workshops, exhibitions).

www.popmath.eu

PlayingCards – Association for Women in Mathematics



The Association for Women in Mathematics has begun to prepare a deck of cards to honor the most successful female mathematicians in their field. Among the cards is Lenore Blum, who works in the fields of complexity and algorithms theory and is also one of the founding a chair of the association.

<http://bit.ly/womenmathdeck>



EvenQuads Celebrating Women in Math Deck

*The European Mathematical Society (EMS)
and The Association Kangourou Sans Frontières
(AKSF) Join Forces in favor of Mathematics*

Prof. Gregoris A. Makrides
greg@thalescyprus.com



On 1st September 2020, the European Mathematical Society (EMS) and the Association Kangourou sans Frontières (AKSF) have signed a Memorandum of Cooperation. The MOC has been signed between the two presidents Volker Mehrmann, President of EMS and Meike Akveld, President of AKSF.

1. The main goals of AKSF, shared by the EMS, and became part of the MOC are including:

A. The popularization of mathematics among children, so that:

- they don't have prejudices towards mathematics (and can develop a positive attitude towards mathematics): Children and teenagers unfortunately often develop a negative attitude towards mathematics because of bad grades in school or more generally because of non-inspiring teachers, teaching or even curricula. Mathematics Kangaroo goes in a different direction and tries to show that mathematics is much more than dull calculations but that mathematics is useful, it can be fun and it is everywhere.

- more of them decide to study mathematics or something related (and do e.g. research in mathematics): Mathematics Kangaroo can be an eye opener for talented students. They may on the one hand realize that they have a special talent for mathematics and they may on the other hand also realize that mathematics is fun, that mathematics can be applied and is useful which may motivate them to either study mathematics or a mathematics related STEAM (Science, Technology, Engineering, Arts, Mathematics) subject which is much needed in current times.

- a lot of them have a good experience with mathematics (and later as policy makers will look favorable towards mathematics): Even if students do not turn in the direction of STEAM subjects Mathematics Kangaroo may give them a life lasting positive experience. And these young people will be the policy makers of the future so it is crucial that they realise the importance of mathematics. By being open about this and having had positive experiences this is more likely to happen.

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The fact that the Math Kangaroo Competition is the largest international math competition in the world in terms of number of participants makes it attractive for many students who would otherwise not take part in a mathematics competition. Many of the students become an awardee and that becomes a part of their biography.
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B. The popularization of mathematics among wider population/society

- with so many children taking part in the competition their parents are appreciating positively the subject of mathematics: Mathematics Kangaroo, being as popular as it is right now, often reaches much further than the classroom. Children talk about it at home, parents and other people look at the questions and see the enthusiasm of the children and hence realize that this competition is first of all obviously very enjoyable but secondly also an important step in the development of so-called skills of the 21st century, e.g. critical thinking, analytical thinking, problem solving, strategies, decision making, etc.

Needless to say that the mathematics in Kangaroo has an impact on parents also as they get involved in the process of supporting their kids. In addition, teachers, especially at primary level (grades 1-6) find Kangaroo problems a nice tool to use in class.

C. The popularisation of mathematics in developing countries, e.g. Afghanistan, Iraq, some African countries, etc

Promoting mathematics learning in developing countries may come through competitions and awards for it. The competition requires more involvement of teachers and gives support to teachers with items they can use in classroom teaching. It also allows them to build up a network of interested and engaged teachers.

2. Cooperation brings networking, creativity, innovation and benefits:

Networking nowadays is becoming the driving force for change and development and both EMS and AKSF are investing in this through this collaboration. Sharing and circulating ideas through the large networks can bring solutions, creativity and innovation in boosting the shared goals of EMS and AKSF. Some of the important impact elements and available windows for networking are listed.

Prof. Gregoris A. Makrides,

President of THALES Foundation and member of the Education Committee of the European Mathematical Society

greg@thalescyprus.com

2.1 AKSF has members from more than 80 countries; these members form an enormous international network with a lot of knowledge about the position of mathematics in the societies of the members' countries, about different curricula, about school systems, about university practices, about financing of education etc.

2.2 AKSF has access to more than 6 million pupils

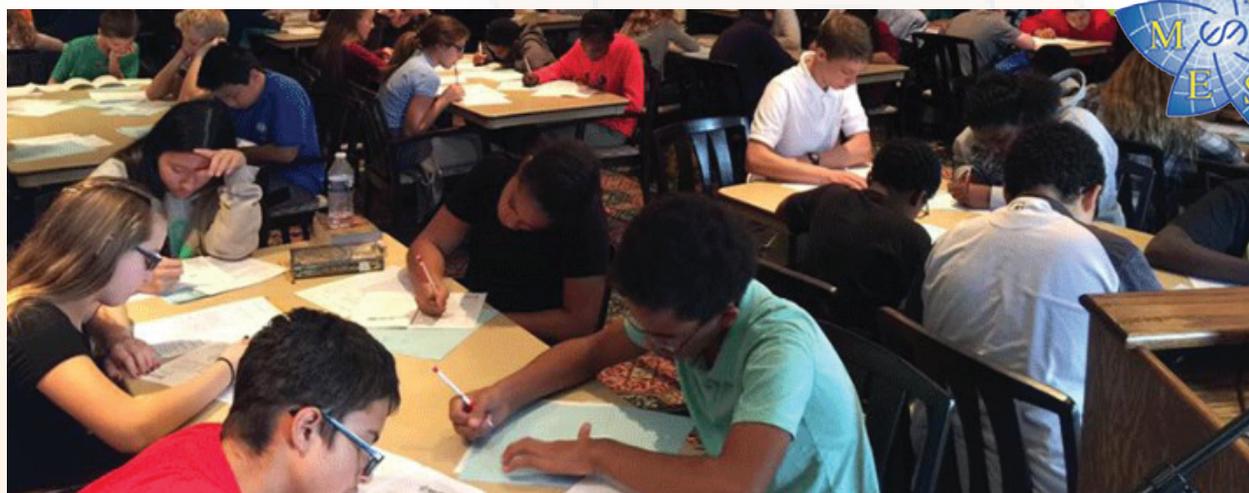
2.3 Promote talent and giftedness in mathematics (minimize drop outs of gifted students)

2.4 EMS goals, activities, announcements can reach more recipients through AKSF members and through AKSF Newsletter

2.5 EMS will have access to prospective new members

2.6 The competition activities can support the creation of teacher networks and cooperation for different type of initiatives and projects.

All of the above are expected to bring new realities in the learning of Mathematics throughout the world with more engagement of stakeholders, both teachers, students and competition organizers.



AKSF and the WFNMC: A Deepening Cooperation

Robert Geretschlaeger
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As AKSF sets its sights on intensifying collaborative efforts with partner institutions that share its goals, an obvious candidate for such strengthened ties would be the World Federation of National Mathematics Competitions (WFNMC). Several people active in AKSF have taken part in activities of the WFNMC, and perhaps this brief introduction will whet the appetites of others.

First of all, let us begin with a brief explanation of the purpose and activities of the WFNMC.

The World Federation of National Mathematics Competitions is an international group providing a common forum for anyone working in mathematics competitions for students at a national or international level. This includes, but is not limited to, teachers, professional mathematicians, mathematics education specialists, and publishers of mathematical books or magazines.

The WFNMC is an Affiliated Study Group of the International Commission for Mathematical Instruction (ICMI), and was founded in Adelaide, Australia in 1984. Its main objectives are to serve as a resource for the exchange of information and ideas on mathematics competitions and related activities through publications and conferences and to create and enhance professional links between mathematicians and others involved in competitions and related activities all around the world. Toward these goals, the WFNMC organizes an international congress every four years. Also, in even numbered years between congresses, the WFNMC holds mini-conferences in conjunction with ICME (International Congress on Mathematical Education) as well as sessions as a part of the official ICME program.

Unfortunately, the last such mini-conference, which was planned for ICME-14 in Shanghai, China in 2020 had to be first postponed and then cancelled due to the Covid pandemic, but one result of the preceding ICME-13, which was held in Hamburg, Germany in 2016 was the collection *Competitions for Young Mathematicians: Perspectives from Five Continents*, published by Springer in 2017.

The WFNMC also publishes a journal titled "Mathematics Competitions". This peer reviewed on-line publication is produced twice annually, and the content discussed in its pages includes such topics as the mathematical background of specific competition problems, organisational aspects of competitions, the relationship between competitions, mathematics and the intellectual development of students and the relationship between mathematical research and mathematics competitions.

Recent issues are freely accessible at <http://wfnmc.org/journal.html>, and you will find an article about the Kangaroo competition in Vol. 33 Nr. 2 from this year.

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Furthermore, the WFNMC recognizes excellent work by teachers and mathematicians prominent on an international or national scale in mathematical enrichment with its Paul Erdős awards. Three such awards are generally awarded every two years.
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Members of the Working Group on Mathematics Competitions at ICME-13 at the University of Hamburg, Germany in 2016

You may well ask yourself, why anyone active in AKSF should be interested in participating in the activities of the WFNMC. One reason may be to engage more deeply with the mathematics of competition problems. This could be with respect to the theoretical aspects, but it may also relate to didactic aspects of the competition problems or connections between competition problems and research mathematics. Of course, there is also the social aspect of connecting with people working on other competitions or in other closely related fields. There are countless opportunities for cooperation in new projects, common research or simply exchanging experiences. Also, anyone active in AKSF is invited to give a talk at one of the WFNMC's congresses, submit a paper to the journal, or nominate a candidate for the Erdős award.

The next congress of the WFNMC is planned for Bulgaria in the summer of 2022, and it would be wonderful if many people active in AKSF could take part.

If you are interested in the talks of the last such meeting, which was held in Semriach in Austria in 2018, you can read the two volumes of papers that resulted from the congress under the title Engaging Young Students in Mathematics through Competitions – World Perspectives and Practices, published by World Scientific in 2020. It is planned for the current president of the WFNMC, Kiril Bankov, to participate at the next AKSF meeting in Antwerp, and there should be plenty of opportunity to talk during the meeting. Of course, as Senior Vice-President of the WFNMC, I am always more than happy to tell you anything you may like to know.

For now, you are invited to take a look at the Federation website at www.wfnmc.org. It would be wonderful if the cooperation between AKSF and the WFNMC could grow and bloom in the next few years.

Robert Geretschlaeger

WORLD FEDERATION OF NATIONAL MATHEMATICS COMPETITIONS

WFNMC



Privacy

Angelo Lissoni
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Introduction

This article is about the importance of protecting the privacy of people we engage with and the privacy protection act experienced in Italy. Since the year 2020, we, in Italy worked with consultants to put the Italian Kangourou Association in accordance with the laws in force. Here, in my writing, I will address my concerns. I will divide my address into two parts, European privacy legislation and how the “Kangourou world” (from national managers to the Board) could / should organize its work to comply with privacy regulations.

Part one

1. Why: Two years ago, the accountant of Kangourou Italia reported to me that Italian Police were visiting several companies and associations to check that the privacy provisions were always respected. I would like to point out that the sanctions envisaged are very onerous and I imagine that many national leaders have already taken action for some time.

2. How: We contacted consultants and they immediately invited us to read the provisions included in the GDPR 679/2016 (General Data Protection Regulation). The provisions require a global presentation of the activity (in our case the organization of the Kangourou Mathematics game-competition) and the complete articulation of the activities, of the people, of the means necessary to achieve the declared objective of the association. And if some parts are not organized internally, but require contacts with external companies or people, it is necessary to mention these too (for example the advice of a lawyer for all legal matters). In each phase where data relating to persons are cited (name, surname, date of birth, scores obtained, ...), authorization must be requested to publish them from the person concerned if he is over 16 years old or from their parents if he was under 16.

3. Where: The GDPR 679/2016 was developed, discussed, and approved in Europe and is in force in all European countries. I don't know all the laws in the world, but I believe that the "privacy problem" has been faced by many nations.

4. What to do: According to a survey of May 2017, carried out by the Global Privacy Enforcement Network (Gpen), which also includes the Italian Guarantor, to verify compliance with privacy in IT:

- A. 59% of the devices do not offer adequate information on how the personal data of the interested parties are collected, used and communicated to third parties.
- B. 68% do not provide appropriate information on how data are stored.
- C. 72% do not explain to users how to wipe data from the device.
- D. 38% do not guarantee simple methods of contact to customers who want clarification regarding the respect of their privacy.

Since in 2021 there could be about 30 billion devices connected to the Internet, it is understandable that the biggest problem of this electronic age concerns privacy. In fact, more and more ways of communicating, knowing and learning are digitizing, and our being part of society is often configured or rather confused with being connected, present and visible on social networks, or in any case on the web. Digital “visibility” presents a very blurred boundary between what we want to be public and what we cannot keep “private”.

Fortunately, this is not true for all people and it is not true in all parts of our increasingly globalized world, but the trend of our Western societies appears to be marked by an advancement of technology far faster than the ability of men to adapt to new tools.

And to the new ideas and possibilities that these offers, especially as regards the ability to grasp the risks that these innovations bring with them. Ignorance towards the technologically new, understood as non-knowledge, that is, ignoring what the use of a new App or a new Social means or entails, exposes all of us to dangers or risks that are absolutely unexpected and even less understandable in their consequences. Faced with all this, the individual user alone cannot manage and protect himself from the risks that are known and even more so from those that develop unpredictably for the entire community, just think of the consequences on the activities that cyber can have - crime or the social consequences of cyberbullying. It is the national and supranational organizations that must take charge of foreseeing, protecting and informing people and productive activities from what the new social or technological context can determine or is already determining. The need for rules and controls on private and professional activities is therefore a common need that is absolutely necessary to fulfill. The new European Regulation "GDPR" 2016/679 has collected the need of the entire European community to protect itself in a homogeneous and shared way with regard to everything related to the concept underlying privacy, namely the right to data protection and information of the natural person for the protection of the privacy of each individual. This regulation further defines, compared to what is already present, the rights of individuals and the guarantees so that these rights are protected by all those who may have to do with their information. The protection of rights arises from checking that all possible entities involved in the management of personal information comply with the rules provided for by the GDPR.

When will the Regulation be operational?

The EU regulations are immediately enforceable and do not require the need for transposition by the Member States and ensure greater harmonization throughout the EU.

What rights must be guaranteed by companies / associations under the GDPR? The GDPR allows residents of the European Union to control data through a series of "data subject rights". These include the right to:

- I. Access ready and simplified information on how to use personal data.
- II. Access your personal data.
- III. Have personal data deleted or corrected.
- IV. Have personal data corrected and deleted in certain circumstances ("right to be forgotten").
- V. Restrict or object to the processing of personal data.
- VI. Receive a copy of your personal data.
- VII. Refuse to process data for specific uses, such as marketing or profiling.

How will the GDPR affect my Association?

The GDPR includes numerous requirements on the collection, storage and use of personal information. This not only includes how you identify and protect personal data in your systems, but also how you comply with new transparency requirements, detect and report personal data breaches, and raise privacy awareness among staff and employees. Given the multitude of elements involved, you shouldn't have to wait for the rulebook to take effect to prepare. You need to start reviewing your data management and privacy practices right away. Failure to comply with the GDPR could cost you dearly: companies that do not meet the required requirements and obligations risk serious penalties and damage to reputation.

“ Companies are liable to penalties of up to € 20 million or up to 4% of global annual profit, whichever is greater, for failing to enforce certain GDPR requirements. Additional individual remedies can increase the risk if you fail to adhere to the requirements of the GDPR. ”

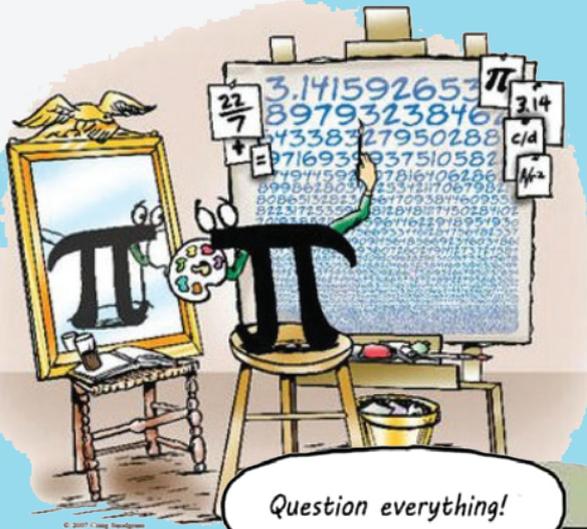
The purpose of these lines is only to present a document and to invite colleagues to contact privacy consultants in order to protect themselves from large penalties.

Part two

It is important to take privacy issue seriously and think about what we, as members of Math Kangaroo do in our own countries to be compliant with our countries' privacy rules and regulations. It is obvious that every member must operate in their own country and respect the privacy of competitors, teachers and the entire structure that operates for the Kangourou competition game in their country. Furthermore, we should pay attention to our own AKSF Math Kangourou organization and make sure we operate with the privacy respect during our virtual or in person meetings or conferences. I believe it is a good thing for the privacy regulations to be reviewed or addressed in the Kangaroo Sans Frontières in the years to come.



Angelo Lissoni



Question everything!



Math World

Portrait of a Mathematician - Vladimir Voevodsky



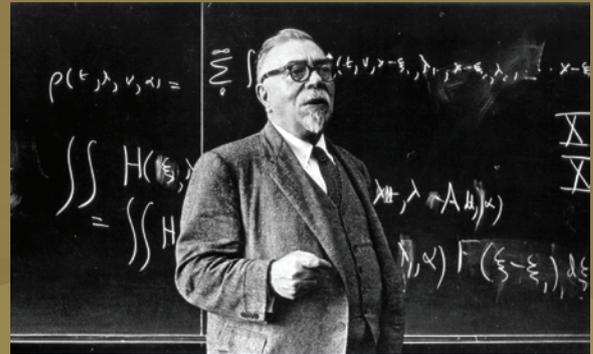
Vladimir Voevodsky was an algebraist with a deep understanding of topology who found novel ways to apply topology to algebraic geometry and to the foundations and formalization of mathematics. His work on foundations was interrupted by his sudden death in September, 2017. This web site commemorates his work and his life and serves as an archive of his works, both complete and incomplete, for those wishing to examine and to extend his work.

<http://bit.ly/voevodsky>



Vladimir Voevodsky at the Heidelberg Laureate Forum

Norbert Wiener Stories



Norbert Wiener was an American mathematician and philosopher. He was a professor of mathematics at the Massachusetts Institute of Technology (MIT). A child prodigy, Wiener later became an early researcher in stochastic and mathematical noise processes, contributing work relevant to electronic engineering, electronic communication, and control systems.

Mathematician Norbert Wiener will move to a new house with his family. Knowing that he is very distracted, his wife reminds him that they will move out that day. She gives his new key and carefully writes the address of the new house on a piece of paper and puts it in his pocket. However, when Wiener is talking to someone at noon, he gets distracted and draws something on that paper and throws it away when he's done. As for the time of returning home, he keeps his way to his old addresses due to his habit, but there is no one at home. His belongings have also been lost! In a panic, Wiener calls out to the girl she sees across the road: "Please help me! My house is empty, my key is not working." The girl replies calmly: "Do not worry, father, my mother guessed that you was going to lost and sent me."

You can find more stories via the link below.

<http://bit.ly/norbertwiener>

China's Story with Math Kangaroo

Y i c h a n Y u a n

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My first encounter with Math Kangaroo goes back to 2016 while reading an article by a Canadian Math coach. The article focused on this math competition with unique problems that the coach had been using to grow math interest among his students. After researching further and realizing that Math Kangaroo China did not exist yet, there was no doubt that ASDAN China had to introduce it to the millions of Chinese schoolers.

ASDAN China is the organization that I have founded with the aim of inspiring skill-based learning. The ASDAN acronym stands for Award Scheme Development and Accreditation Network. Since our start in China, 10 years ago, we are committing every day in helping every learner achieve their highest potential. Although ASDAN China is not the biggest math education platform in China, it is however the largest international STEM competition platform in the country. ASDAN China is honored to become an official Math Kangaroo applicant in 2019. I had the firm belief that ASDAN would be the most suitable organization to bring Math Kangaroo in China but I never expected to also have the opportunity to be coached by Prof. Meike Akveld. Our interactions have further reinforced my dedication as I realized that Math Kangaroo and ASDAN China share a common vision for mathematical education.

Math Kangaroo is very different from any other math competition held in China. Most national competitions are with multiple progression rounds and focus heavily on results rather than learning process as top performers are usually rewarded with a guaranteed entry to the best Chinese schools/universities. ASDAN China thus understood it had to capitalize on Math Kangaroo's unique approach to mathematical education and worked on a localized strategy to grow this competition in China.

The first ever Math Kangaroo China held amid a COVID 19 pandemic, had 20,000 entries and led it to be one of the top international math competitions in China's city areas, such as Beijing, Shanghai and Guangzhou.

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With 2020's challenges, the road to launch Math Kangaroo China was not the easiest one but all the efforts have rewarded us with a solid foundation for further development of Math Kangaroo in China. In hindsight, we believe there are 3 main aspects that have greatly contributed to this firm start: Culture, network and virtualization.

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MK Culture. ASDAN China wanted from the start to build a strong brand and focused on the feelings we wanted people to associate to the Math Kangaroo brand. Before telling schools and parents about Math Kangaroo, we wanted to create a strong visual identity starting with a unique logo (see picture 1). We chose to include the abacus to represent China and designed a Math Kangaroo mascot (see picture 2). We are now collecting students' suggestions of a name for the mascot. As from 2021, we are going to send all top scorers a Math Kangaroo mascot plush and encourage them to share their stories with us while showing their mascot. We hope this mascot will contribute to the culture we are building in China as well as act as an ambassador to encourage more and more student to join Math Kangaroo.

Network. The Math Kangaroo network is such a close knitted community that I am able to get answers even before asking a question. We were pleased to work with Math Kangaroo Malaysia on translation and hope to collaborate with more regions in the future. Learning from Math Kangaroo International, we also built up a Math Kangaroo Community in China. This community currently has 50 math teachers who use it as platform to discuss math problems. We hope that as this community grows, it would also contribute to Math Kangaroo questions. In January 2021, we hosted the ASDAN Math Teacher virtual forum for an audience of 800 teachers. The presentation made by Prof. Meike Akveld and Luis F. Caceres sparked interest in many teachers who are now very interested to know more about Math Kangaroo and its community.

Virtualization. The COVID 19 pandemic has forced us to think differently and adapt. We have learnt so much through this crisis and might have actually found a better way by virtualizing the competition.

Firstly, social media. We used a targeted approach to promote Math Kangaroo through social media platforms. We wrote many articles about Math Kangaroo and interviewed school teachers, students and parents about their experiences. This has proven to be very efficient at a time when China was in complete locked down and social media usage was peaking.

Secondly, virtual exam. It was certainly a challenge for us to run a 20,000-entry competition virtually. To ensure problem security and fairness, we required all students across China to take the competition at the exact same time while being invigilated through their webcams. This required a very stable platform and considerable logistical arrangement for virtual invigilation. We are very proud to say that ASDAN China is the first one to have held a virtual competition of this size in China. This acquired experience has also led us to share our experience with many other organizations and schools to run their own successful virtual competitions.

Thirdly, virtual teachers' events. We have also been surprised by people's increasing acceptance of virtual programs. We are planning to host and fund more virtual forums for math teachers in the hope to enlarge and tighten the community. Virtual events have proven to be an ideal alternative to in-person events being cost efficient and more importantly, accessible by anyone with an internet connection. Our virtual math teacher forum in January 2021 was a successful model and the first one to many more.

As Math Kangaroo has already established its presence in China's biggest cities, we have decided for 2021 to focus on bringing Math Kangaroo to small town and rural areas. Our Go rural plan is echoing the rural development strategy of the Chinese government. We hope to get more data to further research on math education differences across China and understand how ASDAN China can contribute in bridging the gaps.

Math Kangaroo has the potential to become the top math brand in China. We are really proud be part of this network and bring such a unique competition to Chinese students. ASDAN China has set itself on a mission to not only run a math competition, but to get students on this math exploration journey called Math Kangaroo.

Yichan Yuan

Founder of ASDAN China

Math Kangaroo China Coordinator



Ayb Contests' Analytical Dashboard

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Introduction

Ayb was founded in 2006 by visionaries who believe education has played a paramount role in their professional and life achievements and who want to help improve the educational environment in Armenia through joint efforts. The objective of the Ayb Educational Foundation is to shape a culture of excellence in learning and support education development in Armenia. Our community directs all its efforts and investments to the development of a creative generation that would be competitive in the 21st century and ready for changes. Since its foundation, the Ayb Educational Foundation has initiated several projects, one of which is the creation of Ayb Contests' Analytical Dashboard.

The link to the analytical dashboard:
<https://datamotus.shinyapps.io/Contests/>

Ayb Contests' Analytical Dashboard was created in collaboration with Datamotus LLC and the American University of Armenia. As part of this collaboration we also agreed to conduct a gender gap analysis.

It is a unique tool for data collection encoded in a way that ensures data integrity and safety at all levels.

The analytical dashboard combines encoded data from three contests organized by the Ayb Educational Foundation: the Kangaroo math contest, the Meghu Armenian language contest and the Russian Bear Cub Russian language contest. The data included in the dashboard are represented in visual interactive graphs and tables, which compare the different regions, grades, years of contests, gender, and community types.

The analytical dashboard also provides a separate section for analyzing the gender gaps for each of the mentioned contests; it provides with a separate tool for comparing the contests in terms of their subjects. This dashboard is unique because it also provides relevant and useful data on correlation and causation.

Usefulness of Analytical Dashboard for Research

As it has already been mentioned, the dashboard combines different types of contests, i.e., diverse subject-related data, which give researchers a good basis for comparing the existing data with each other. As the data range is from 6 to 15 years, it allows the research to be valid and significant for planning the future contests.

The data not only show links between natural sciences and languages, but also can be compared and linked to other types of data and provide some useful insight on different subjects of interest.



Development of New Research Ideas Through Cooperation Between Different Participant Countries

Data included in the dashboard compare the different regions of Armenia with one another. For example, these maps show how participants' living place or region can influence test results for math or languages. Based on these data, our scientists also identified a correlation between different results of contest participants in relation to the sea levels of their respective regions.

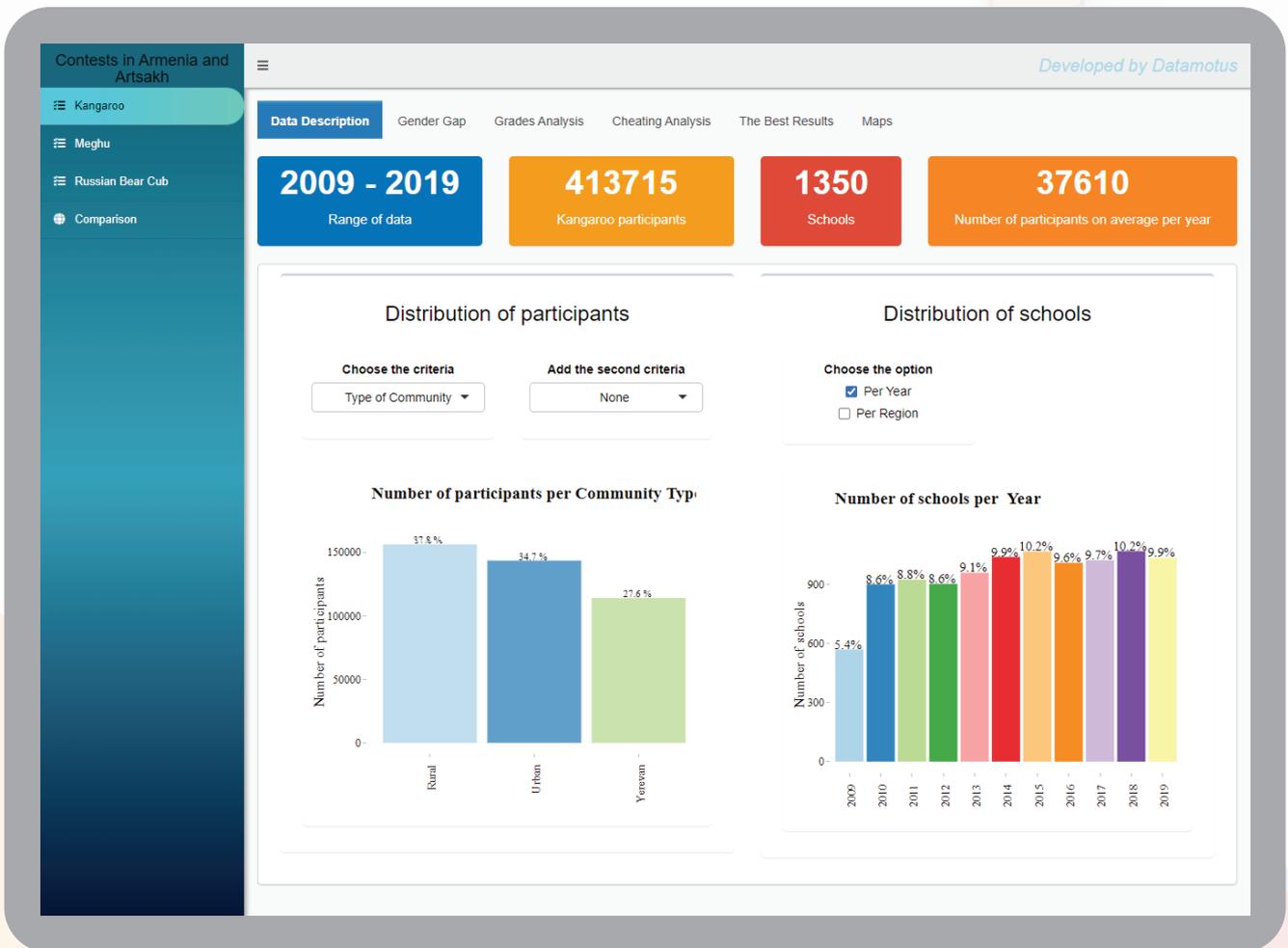
As a positive output of the dashboards, they allow us to compare the results between different countries, draw conclusions and address the national legislature through incorporation of the data into the national educational programs, thus bringing the change to the level of the country also.

Example of Research Based on Data from an Analytical Dashboard

As the first example of the research, the Ayb Educational Foundation together with our data scientists have initiated a gender gap analysis. Some key points also can be seen in respective parts of the dashboard.

“
The Ayb Contests' Analytical Dashboard is an effective and practical tool for data scientists and researchers to initiate a well-grounded research, incorporate new data, and discover specific and useful results for their further scientific work.
 ”

Tatevik Adamyan



Participant data of Kangaroo Contests on Analytical Dashboard

Social Media, Daily Problems and Puzzles

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Although social media habits vary from country to country, it cannot be denied that it has an important place in our lives. The use of social media has increased even more in our country, especially since the beginning of the epidemic. In the past, education and school subjects, which took a small place in this field, started to take a large place. Students started to watch the subjects from this area and find different learning channels. This area has also been an important way to be aware of and follow some original events and content. We, as Kangaroo Mathematics, have decided to take part in this field as both an interesting and original content producer and a new learning channel. Since our area of interest and competence is mathematics, we focused on original productions in this field. We have been publishing original content and announcing our events every day for almost a year. And the number of our followers is around 40 thousand and increasing day by day. Social media is an important tool to announce our particularly interesting questions to more students and to encourage more participation in the Kangaroo Mathematics Competition. The more we became known on social media, the more we felt the difference. The feedback we received especially from our students and parents brought a more dynamic working pace for us.

In this way, we have been able to reach some people who are interested in mathematics but we have not been able to contact until now.

Another important aspect of using social media actively is that it allows you to be more aware of the activities in your country in the field of mathematics and to support the development of mathematics in every field by contributing to these activities.

In short, let me try to answer 2 important issues based on our own experience:

- 1- What have we used as "creative" and "original" content?
- 2- Since social media is not just an area to display content, in which areas and how did we intervene?



Daily inspirational and motivating posts



Our “social distance” post: distance between you and someone should be at least as much as the size of an adult kangaroo.

“As Kangaroo Math, we brought our "creative" and "original" questions to social media. While doing this, we tried to produce visually impressive content.”



Mystery of numbers: 203rd day of the year.



Daily Kangaroo Math problems!



Important dates from Math History

Our "Kangaroo Mathematics Question of the Day" publications attracted great attention and a significant number of students and parents started to follow us on social media. In addition, we wanted to show mathematics in daily life and attract attention by adapting some of our creative questions according to current important issues. Another important publication was under the title "The Mystery of Numbers". We published important mathematical information about the date of that day every day. This especially attracted the attention of our teachers. Inspired by these publications, boards were made in schools and new questions were produced. Most importantly, we showed students a more fun way to relate numbers. In addition, our publications on some important problems, puzzles and people from the history of mathematics have also attracted great attention.

By giving place and support to the studies in the field of mathematics education and mathematics in our country, we aimed to bring this issue to the agenda more and to increase the interest in this field. In particular, we tried to announce national and international events in the field of mathematics organized by our academics. Thus, we showed that our social media channel is the voice of any positive work done in the field of mathematics.



Announcement of the Prof. Haluk Oral's presentation about "curious subjects from math".



Happy Mother's day!

We have seen that active use of social media has an important contribution to announce Kangaroo Mathematics. However, some points should not be overlooked. In order to be effective in social media, it is necessary to publish regularly and produce creative content. This production also brings significant energy and workload. But at the end of the day, the warm relationship with students and teachers makes you forget this burden.

Özgür Özdemir

AKSF TIMELINE 2021

