

# AKSF NEWSLETTER

Issue 5 - September 2022



Association Kangourou Sans Frontières



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Kangourou sans Frontières Newsletter**

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## *Hello and welcome to our fifth Kangourou sans Frontières Newsletter.*

I am pleased to write this short introduction to our fifth edition of the AKSF newsletter. I assume some of you are still enjoying the summer break and some of you are back to school teaching and working hard. In this edition of our Newsletter, I want to thank all the contributors for writing and informing us about things that matter and are interesting.

I want to thank Meike for continuously looking for ideas of new topics and new authors to engage in our information sharing collaboration. Without her help the newsletter would be thinner for sure. I liked Darcy's article about the idea to join forces to convince more teenage girls that math is fun, and that STEM topics are cool. Her article – Kangaroo Goes Science - celebrates girls' successes in our Kangaroo competition in a very festive way. Have you heard of Bebras challenge (Beaver in English)? Valentina herself shares the story of this exciting competition. Did you know that the Bebras challenge is based on the Kangaroo contest model? I didn't but was happy to learn more.

Congratulations to Jelena Milkowich from Montenegro who received the UPCG Award for the BEST female managers in Montenegro. I share her opinion that many things can be started by enthusiasm, knowledge, and effort and a group of people oriented towards the same goal. I was happy to learn there are new ways of engaging students in mathematics. Read Gregory's article about the 1st Special Mathematical Summer School aimed at school students with high levels of mathematical ability that launched this Summer in Cyprus.



Joanna Matthiesen  
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Ozgur and his team put this newsletter together and please read his interesting technical report of Kangaroo in Turkey. And last but not least we thank Professor Francisco Bellot Rosado (friends call him Paco) for his amazing contribution in starting Kangaroo in Spain. Thank you and we hope to keep in touch.

I look forward to seeing most of the AKSF members in Cervia and hope we may find time to connect in person with everyone drinking Italian coffee, eating Italian Risotto and Italian Gelato. I can't wait.

I would like to hear from new members that have not written before to propose a topic for the next AKSF newsletter.

Wishing you a wonderful Fall season,

Joanna

## News from The President

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Dear Kangaroo friends,

Let me start by expressing my hope that you all enjoy reading our AKSF Newsletters and that I am honoured to write the by now almost traditional article “News from the President”. Did you know that this year we are celebrating the 30th Annual Meeting of the Association?

I am so proud and so happy to celebrate this with you, see our website for the details of the counting – it is interesting – and more generally our history section to read more about the history of AKSF.

Well, what has happened in AKSF since our Board meeting in Istanbul? We have some new applicants that want to become members of AKSF and their supervisors are working hard to explain them all about AKSF and how the competition could be set up and run in their country. And remember, at the Annual Meeting in Belgium we voted for many new provisional members.

Each one of them has a supervisor in the Board and together with him or her they have set up the Kangaroo competition in their country and have gathered first experiences. Hopefully we will get to know many of them in person at our Annual Meeting in Italy, which unfortunately will still be in a hybrid form. No one knows how Covid will develop over the next weeks and months and the Italian team decidedly wisely to plan with a hybrid meeting. Right now about 140 people are planning to participate as in situ participants, the registration for on line participation is still open. Let’s hope many of us will meet in Cervia and enjoy each other’s company and not to forget the Italian food! Don't forget it is the 30th Annual Meeting of our Association and I am looking forward to celebrating this together with many of you.

As announced and in accordance with the following article from our Statutes

The Association will establish friendly relationships with other organizations or international associations having similar goals

We will have some guests in Italy:

- Valentina Dagienė, the president from Bebras, coming from Lithuania, will pay us a visit and hopes to get to know us a bit better. I attended the Annual Bebras Conference in May in North Macedonia and got to know their community and their way of working. Many things are very similar, some are different; it was a very interesting experience and I learned a lot. I can tell you much more if you are interested.
- Kiril Bankov, the president of the WFNMC (World Federation of National Mathematics Competitions) will also join us so that we can exchange thoughts and ideas with him. Together with some other Kangaroo members I attended the Annual Conference of the WFNMC this summer in Bulgaria and learned a lot about the work of the WFNMC. Kiril will also give a short presentation and we will have plenty of time to exchange with him too.

Thanks, Kiril and Valentina, for coming to our Annual Meeting and sharing your experiences with us!

And that's it for now. I wish you a good time reading this Newsletter and I am looking forward to seeing many of you in Cervia in Italy and some of you on line.

Don't forget to rate the many beautiful problems that have been submitted and don't forget to complete the report – it's important for AKSF to know how the competition is developing around the world.

Let me finally use this opportunity to thank all authors who contributed with articles and in particular Joanna and Özgür and his team who are behind the scenes and make everything work. Thanks a lot!

And please do not hesitate to contact Joanna if you think you have something to write about, or even if you are not sure and want to discuss it with Joanna. We are always looking for interesting articles and in an Association as big as ours it is not always possible to talk to every one, but the Newsletter allows every one to read about what others are doing and perhaps inspires, starts a conversation, collaboration, or who knows....

Take care and stay healthy!

Yours,

Meike

AKSF President

# XXX Annual Meeting of the AKSF, October 5 - 9, 2022



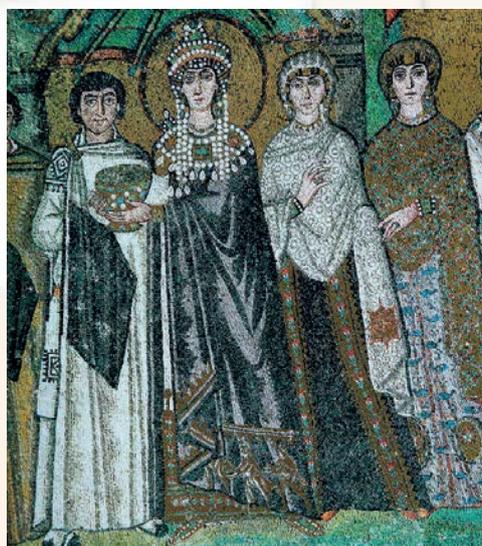
Angelo Lissoni  
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## Latest news from the XXX Kangourou Conference

- We will be over 160 in situ and over 55 online for now;
- We prepare two reception sites, one at the airport in Bologna and one at the central station of Bologna;
- For any problem upon arrival, here are two telephone numbers, MATTEO in English (0039 377 133 1313) and ANGELO in French (0039 335 720 46 55);
- Please complete on the WebSite your arrival and departure details as soon as possible;
- In October you can swim in the sea of Cervia;
- At the table there are always selections of vegetables, water and wine that are included in the hospitality package;
- If you arrive on other dates you can always take a train from Bologna railway station towards CERVIA. The train can pass from RIMINI or RAVENNA;
- Cervia is important for sea salt, you will have evidence of it in your shopping bag.

We look forward to seeing you soon!





*EMS Education Committee Mathematics  
Summer School for high ability  
school students 2022*

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The 1st Special Mathematical Summer School organized by the Education Committee of the European Mathematical Society and aimed at school students with high levels of mathematical ability is hosted in Cyprus by the Cyprus Mathematical Society and the THALIS Foundation in collaboration with the Department of Mathematics and Statistics of the University of Cyprus and other organizations.

It is a fact that progress in all sciences often comes from individuals with high-level abilities associated with increased abilities in Mathematical Science.

This action contributes to the evolution of sciences, technology, creativity and related innovation, since it is expected that these school students will evolve into creative scientists of the future contributing not only to Mathematics but through them in many other sciences such as technology, medicine, engineering, economics, etc.

The special school was organized in Agros between July 25-30, 2022. Volunteering Academic trainers came from Germany, Poland and Cyprus. 20 students have been selected from a set of international applicants after an evaluation process by the Education Committee of the European Mathematical Society. Accepted students come from Abania, Belgium, Bulgaria, Cyprus, Spain, Pakistan, Germany, Greece, Jamaica, Information about the program and content as well as names of participating students and instructors can be found at the link;

[https://thalescyprus.com/?page\\_id=3287](https://thalescyprus.com/?page_id=3287)

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## Techinal Report for Kangaroo Math Turkey

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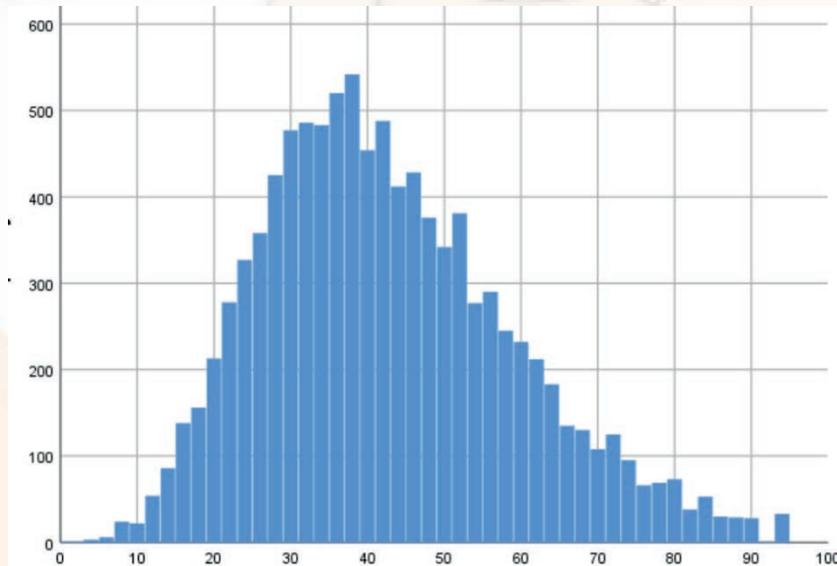
Kangaroo math questions are eagerly awaited and solved by a large number of students every year. In Turkey, as in most countries, the answers to the questions are collected, analyzed, and evaluated by Kangaroo Turkey. The analysis is not only limited to the number of correct, incorrect, or omitted responses of a student and the score received, we also conduct test and item level psychometric analysis to check the reliability, validity and relevance of the competition questions we apply. In this context, based on Classical Test Theory, we reported test-level statistics such as average item difficulty, average item discrimination, Cronbach's Alpha, and item-level statistics such as item difficulty and item discrimination. Additionally, for each grade level a histogram for the total scores and, the item response curve for each item was plotted.

For twelve grade levels of competition 2022, the average item discrimination values ranged from 0.34 to 0.49, and Cronbach's alpha values ranged from 0.69 to 0.90. These results indicated that the test-level statistics were very good. Item-level statistics also confirmed that the items worked as intended. Further psychometric analyses, such as Confirmatory Factor Analysis, Differential Item Functioning Analysis, and item analysis with Item Response Theory, are planned for the near future. The sample test-level and item-level outputs are presented below.

### 4<sup>th</sup> Grade Test-level Reports

Number of students	Number of items	Average item difficulty	Average item discrimination	Cronbach's Alpha
10 237	24	11.17	0.40	0.77

### 4<sup>th</sup> Grade Histogram



### 4<sup>th</sup> Grade Item-Level Reports

Item	Item difficulty (p)	Item discrimination (Rit)
X1	0.84	0.31
X2	0.29	0.41
X3	0.45	0.44
X4	0.63	0.24
X5	0.66	0.47
X6	0.36	0.39
X7	0.80	0.49
X8	0.79	0.37
X9	0.81	0.40
X10	0.40	0.49
X11	0.55	0.42
X12	0.66	0.41

p: item difficulty; Rit: item-total correlation;

Item	Item difficulty (p)	Item discrimination (Rit)
X13	0.46	0.26
X14	0.53	0.53
X15	0.37	0.49
X16	0.21	0.30
X17	0.31	0.45
X18	0.49	0.45
X19	0.21	0.42
X20	0.17	0.29
X21	0.20	0.42
X22	0.34	0.47
X23	0.39	0.25
X24	0.24	0.35

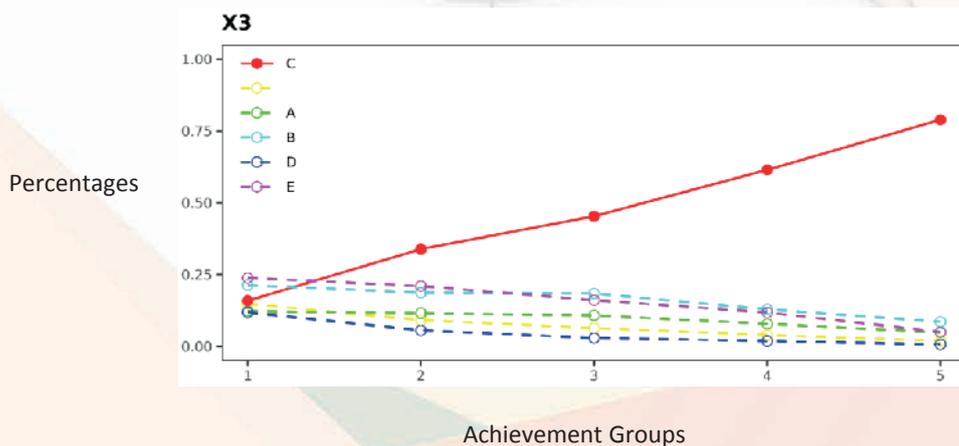
p: item difficulty; Rit: item-total correlation;

### 4<sup>th</sup> Grade Item3. Item Analysis

p	Rit	Option	Group1 <sup>a</sup>	Group2 <sup>a</sup>	Group3 <sup>a</sup>	Group4 <sup>a</sup>	Group5 <sup>a</sup>
		Omit	0.15	0.09	0.06	0.04	0.02
		A	0.12	0.12	0.11	0.08	0.05
		B	0.21	0.19	0.18	0.13	0.09
0.45	0.44	C*	0.16	0.34	0.45	0.61	0.79
		D	0.12	0.06	0.03	0.02	0.01
		E	0.24	0.21	0.16	0.12	0.05

p: item difficulty; Rit: item-total correlation; \*: key; a: percentage correct for the achievement groups

4<sup>th</sup> Grade Item3. Response Curve



*Many thanks and best wishes to Paco,  
who set up Kangaroo in Spain!*

Article by Josep Grané  
Retired professor at the  
Polytechnic University of Catalonia

Here it is a letter written by Josep Grané, retired professor from the Polytechnic University of Catalonia and a good friend of Paco Bellot and other members of the Kangaroo Commission of Catalonia. Josep worked with Paco for a long time in the mathematics Olympics.

I met Professor Francisco Bellot Rosado, (friends called him Paco), when I started preparing for the Mathematic Olympiad, back in 1992. A student of that time and currently a professor, Ignasi Mundet, gave me all the stuff he had received from Bellot for his preparation. A pile of papers, photocopies, notes and booklets, loaded with problems. A pile in the literal sense, since all the papers gathered together reached a height of half a meter. I contacted Bellot by phone and asked for permission to use it. He gave it to me and put himself at my disposal to help me in everything I needed. Many times I asked him for advice, or consultations of very rare books, or historical data and photographs of past Olympics.

It must be said that Francisco Bellot has a fabulous library related to the Olympiads and mathematical problems. I don't think there is any other library in Spain similar in size or quality, neither public nor private.

I would also like to mention that he is the founder of the Mediterranean Mathematical Competition (Peter O'Halloran Memo-



rial) which in 2022 has celebrated its XXV edition and which he has chaired since the beginning uninterruptedly. He has been editor of the Revista Escolar de la Olimpiada Iberoamericana de Matemática (REOIM) until 2018 when its publication ended.

My relationship continued and on a certain day he suggested to me that Catalonia should join the Kangaroo competition, offering me from the beginning, once again, all the collaboration that was asked of him. If today in Catalonia, every year, there are 120,000 participants in the Kangaroo, it is because of the suggestion and the help that Paco Bellot gave us at the beginning. In recognition and gratitude, the Catalan organizers and the Catalan Mathematics Society awarded him the Silver Insignia of the Kangaroo, which was pinned on him at the solemn awards ceremony in May 2004.

The lectures he has taught in Valladolid are famous for their antiquity and continuity, and for the great variety of problems he has posed to the students. I am witness to the compliments and gratitude of many of

them, whom I also know because of the Olympiads. Some of the participants, after winning various prizes in the Kangaroo and in the Olympiad, are now parents, but they still remember the importance of those lectures in their future lives: solving problems not only helps to win prizes, which is also true, but also fosters mental discipline, the habit of work and the experience of facing something unknown that you are required to solve. I insist, the memory of your alumni is approaching in devotion.

My relationship with Bellot continued and we also met every year at the Spanish Mathematical Olympiad, which he attended punctually with his wife María Ascensión López Chamorro.

I must end with a warm greeting to Paco Bellot, and the wish that he may continue for many years teaching his preparation classes in Valladolid and that he may help, even if it is from a little further away, in the good functioning of the Kangaroo.

Professor Francisco Bellot Rosado: thank you, thank you very much, and a great hug.



*Article by Josep Grané  
Retired professor at the Polytechnic University of Catalonia*

## KANGAROO GOES SCIENCE

D r . D a r c y M o l n a r  
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At the Swiss Federal Institute of Technology (ETH) Zurich, in 2020 female students represented only 32.4% of the total student body, while in the mathematics department there were only 23% female students and in the mechanical engineering department this number was as low as 12.6% (see Figure 1). These numbers are not uncommon in STEM programs at institutes of higher education in Switzerland, and propagate up to the professional workplace (see Girls in Tech Switzerland “The role of Education in Bridging the Gender Gap in STEM”).

In early 2018, Meike Akveld, a Mathematician, and Darcy Molnar, an Environmental Engineer, met at a 500 Women Scientists Zurich gathering and the idea to join forces to convince more teenage girls that math is fun, and that STEM topics are cool, was born. In Switzerland, at age 13 or 14, children have to select a profile to follow for the last 4 years of high school. Although girls do just as well as boys in primary school Kangaroo math competitions, the majority of girls in Swiss high schools do not chose to follow a science or math profile. Meike and Darcy decided that they would like to change the girls’ perception of math and science before they select their profile, and Kangaroo Goes Science (KGS) was born. Kangaroo Goes Science is an annual event that has been taking place since 2018, whereby the 100 top scoring teenage girls from the 7th class Kangaroo math competition in Switzerland are invited to spend a day at ETH Zurich in June.

The purpose of the Kangaroo Goes Science



*program is to celebrate the girls’ success in the Kangaroo competition, expose them to a wide range of female mathematicians, scientists, and engineers at ETH, and inspire them on a multitude of STEM topics. The day’s program includes math and science inputs, testimonies by female students on how they got to ETH, as well as hands-on activities at science and engineering labs. ETH BSc and MSc female students act as guides to small groups of girls during afternoon lab visits. This creates a unique opportunity for the ETH students to serve as role models for the teenage girls. The girls’ parents are also invited to the event, and for them a special program is organized that includes a public tour of ETH, a presentation on "The Future is STEM!" as well as a Q&A session with female scientists. Many parents accompany their daughters to Kangaroo Goes Science and are delighted with the opportunity to learn more about ETH.*

The Kangaroo Goes Science

event is a great opportunity to inspire teenage girls on STEM topics, show them that math is fun, and show their parents that their daughters are good in math. Furthermore, it is an event that brings together math, science, and engineering female students and staff from ETH in a collective effort to showcase women in STEM and encourage young girls following in our footsteps. For more information about the event, please visit the ETH Department of Mathematics website <https://math.ethz.ch/studies/prospective-students/kangaroo-goes-science.html>.

Written by Dr. Darcy Molnar, Institute of Environmental Engineering, ETH Zurich.

Quotes by parents (translated from German):

“Our daughter Annabelle really enjoyed hearing from the students directly “what it’s like at ETH” and loved the day. The "Lightbulb of Mathematical Enlightenment" is definitely hanging in the middle of her room now!”

“I can only say, keep it up, I also liked that the girls of this age were allowed to spend the day like this before the environment influences our daughters so much that they would hardly dare to go to the ETH.”

“The enthusiasm of all of the event’s organizers has infected us.”



*Figure 1: Kangaroo Goes Science 2022 (photo: Caroline Palla)*

Proportion of Female Students by Department 2016 vs. 2020

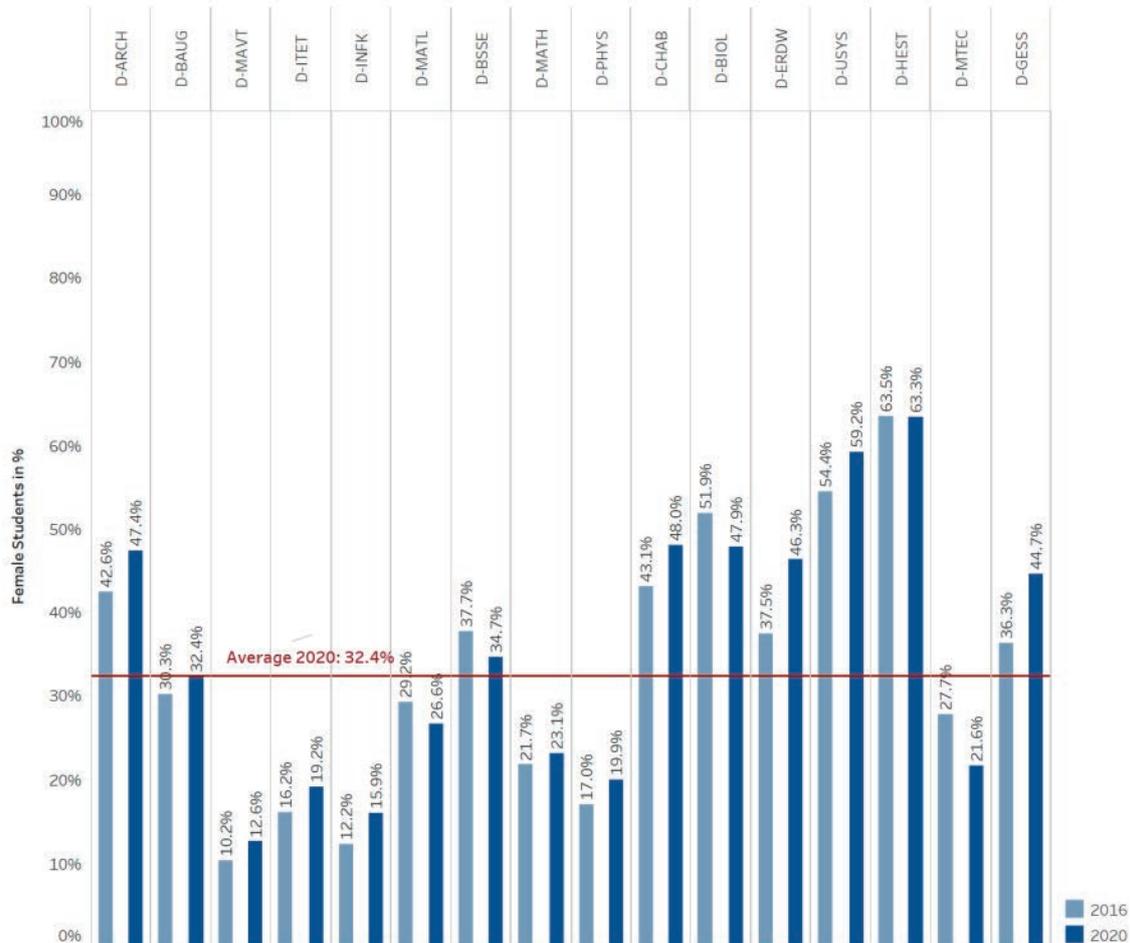


Figure 2: Equality Monitoring 2020/2021 ETH Zurich

<i>D-ARCH</i>	<i>Department Architecture</i>
<i>D-BAUG</i>	<i>Civil, Environmental and Geomatic Engineering</i>
<i>D-MAVT</i>	<i>Mechanical and Process Engineering</i>
<i>D-ITET</i>	<i>Information Technology and Electrical Engineering</i>
<i>D-INFK</i>	<i>Computer Science</i>
<i>D-MATL</i>	<i>Materials</i>
<i>D-BSSE</i>	<i>Biosystems Science and Engineering</i>
<i>D-MATH</i>	<i>Math</i>
<i>D-PHYS</i>	<i>Physics</i>
<i>D-CHAB</i>	<i>Chemistry and Applied Biosciences</i>
<i>D-BIOL</i>	<i>Biology</i>
<i>D-ERDW</i>	<i>Earth Sciences</i>
<i>D-USYS</i>	<i>Environmental Systems Science</i>
<i>D-HEST</i>	<i>Health Sciences and Technology</i>
<i>D-MTEC</i>	<i>Management, Technology and Economics</i>
<i>D-GESS</i>	<i>Humanities, Social and Political Sciences</i>



Figure 3: Kangaroo Goes Science student helpers (photo: Monika Krichel)

Figure 4: Kangaroo Goes Science training of student helpers (photo: Darcy Molnar)

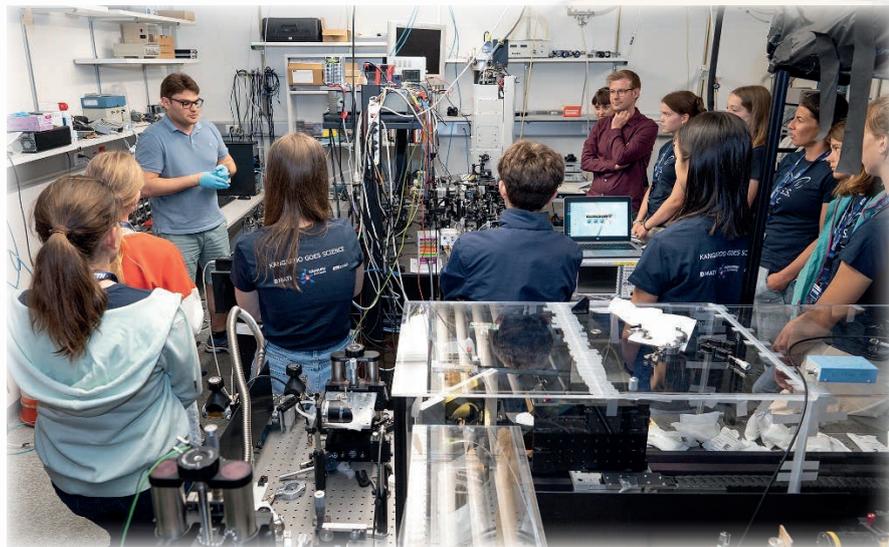


Figure 5: Kangaroo Goes Science physics lab visit (photo: Heidi Hostettler)

Figure 6: Kangaroo Goes Science Environmental Engineering lab visit (photo: Philipp Neff)



## *Award for the BEST female managers in Montenegro*

Jelena Milojković  
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Eight equal "UPCG Awards for the BEST female managers in Montenegro" were awarded to successful businesswomen, within four categories: (1) Economy, (2) Public sector, (3) Civil sector, (4) Media. This year in the CIVIL SECTOR category, equal award winners were Kristina Mihailović, executive director of the NGO "Parents" (Tinker partner organization), and Jelena Milojković, executive director of the NGO Tinker. Montenegrin society recognizes the importance of Tinker's activities and results and one of the most important activities is organizing Kangaroo and Bebras competitions in Montenegro. In the ECONOMY category, Dejana Ponoš, executive director of ARHIMED d.o.o., was announced as one of the two award winners "THE BEST female manager in Montenegro". She is one of the three founders of Tinker.

This is what Jelena writes about receiving this award:

I am really proud of the Tinker team, and I am glad that we can share this good news with you. The Tinker team is defined by the strong motivation of its members. We share common goals and we work tirelessly towards them, not because we have to, but because that is what we want to do. We are constantly adapting our plans according to our opportunities. We invest ourselves and our free time with love while being aware that this is a luxury that we may not always be able to count on, and that is why we are able to celebrate each of our successes as a great gift. Being a manager in such a team of great, committed people is a challenge, a huge responsibility, and an enormous privilege. This year's award from the Union of Employers "For the best manager in the civil

sector", as well as the award from 2017 "For contribution to the community", are particularly dear to me. They follow the natural development of Tinker and represent, on the one hand, confirmation of the importance of the results achieved by the entire Tinker team directed towards developing the community, and on the other, provide a strong wind on our back pushing us towards new challenges. It is always a special pleasure to be in the company of great colleagues. On this occasion, I would like to single out two: the award for the Best Manager in the economy went to Dejana Ponoš, one of the founders of NVU Tinker and Executive Director of ARHIMED LLC, while in the civil sector category, the joint winner of the award for the best manager is Kristina Mihailović, Executive Director of the Parents Association, a Tinker partner since the very beginning of our work.

A community leader is a term I came across a long time ago, without thinking much about its meaning. Now that I live it I can see clearly how many things can be started by enthusiasm, knowledge, and effort and a group of people oriented towards the

same goal. During the events and activities organized by Tinker, thousands of elementary and high school students from Montenegro socialize, think, solve logical tasks and fun mathematical puzzles, compete and develop their knowledge and abilities. We sail the world of science together in a fun way. Tinker has been part of the Devoxx4Kids community since the beginning of its work. In 2021, we became an active member of the International “Kangaroo without Borders” Association. After the pilot Kangaroo competition that was held in Montenegro in 2020 in three municipalities of the central region with about 200 participants, in 2021, we organized the Kangaroo competition in 8 cities, in which 1,070 competitors from all over the country took part. I remind you that Montenegro only has about 600,000 inhabitants. The Ministry of Education supported us in the implementation of the competition and thereby improved and facilitated our communication with all primary and secondary schools. In addition, in the last two years, we organized a series of online and in situ free workshops throughout the country run by teachers from the school system and included a number of university professors, in which we promoted the Kangaroo competition. This year, Tinker became a member of the Bebras initiative, one of the main goals of which is to set up an international Beaver competition in the field of computational thinking. In November 2022, we plan to organize the first-ever international Beaver competition in Montenegro.

Tinker has also started publishing a series of books that we use in the workshops and make available to anyone who is interested. We have published books with solved tasks from selected years of the Kangaroo competition in the CSBH language. In 2020, in cooperation with the Ministry of Science, we organized an online programming summer school "Python for everyone" for 100 Montenegrin high school students and high school graduates from all regions of Montenegro, and one of the results of that project is the book of the same name. Detailed information about our work can be found at [www.stemtinker.me](http://www.stemtinker.me).

Thanks to everyone involved who makes the Tinker story magical!



## Worldwide Challenge on Informatics and Computational Thinking

Valentina Dagiene  
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The current status of Informatics (Computer Science, or Computing) education as a deep understanding of information technology is increasing in many countries. Computers, applications and technologies in general is a natural part of schools. However many educators focus on basic digital literacy skills and it is risk that the underlying principles are left uncovered.

Computational Thinking (CT) has become popular in recent years and has been recognized as an essential skill for all, as members of the digital age. Bebras challenge (Beaver in English) is an initiative aiming at making Informatics and CT education accessible to every student at school.

Bebras challenge was established in 2004, when an experimental trial was held in Lithuania led by Valentina Dagiene from Vilnius University, Lithuania. Now Bebras is an annual contest held in schools in over 60 countries. Participants usually use computers or mobile devices and are supervised by teachers who may integrate the Bebras challenge in their teaching activities.

Many other activities have been developed under the Bebras umbrella: hands-on seminars for students and teachers, discussions for deepening informatics knowledge and teamwork on developing Bebras tasks, so that the competition idea was changed to a

broader Bebras challenge on informatics and CT. Actually, the Bebras challenge is based on the Kangaroo contest model. There are different task sets for the six age groups: Pre-Primary (age 5 to 8), Primary or Mini Beavers (age 8 to 10), Benjamins (age 10 to 12), Cadets (age 12 to 14), Juniors (age 14 to 16), and Seniors (age 16 to 19). Students should solve 18 to 24 tasks within 45 to 55 minutes. The second week of November is declared as World-Wide Bebras Week for the contest; extension to two weeks is possible. Countries run all-year-round Bebras activities such as participant award events, second rounds of the challenge (usually in February), summer campuses, teacher workshops, collecting statistics and writing research papers. During contest the main attention is paid to solve and discuss the presented tasks. Actually, participation and discussions are more important than competitiveness. Therefore, solving in pairs (e.g., Germany) or in teams are welcome.

## *Bebras Tasks*

Bebras challenge provides motivating and puzzle-like small tasks in the format of multiple-choice questions, open ended problems, and interactive tasks where students answer by dragging and dropping objects, drawing lines, clicking on items, writing answers in text boxes, etc.

New sets of small tasks are usually originated before annual Bebras tasks development workshop (usually held in May). The tasks are designed in such a way that a problem is posed but the way of solving it is not stated at all. Thus, the students have to develop their own solution strategy. This is a creative process for the students since these strategies are usually not known to the participants beforehand. Each country chooses tasks from the task pool approved by Bebras workshop. The tasks are related to various Informatics topics like algorithms, data structures and control flow, data mining, computer systems, information comprehension, combinatorics, and categorized according to three difficulty levels (hard, medium, and easy).

A good Bebras task should satisfy the following criteria:

- represent informatics concepts,
- stimulate computational thinking,
- motivate learning informatics,
- open a new knowledge area for students,
- facilitate a deeper understanding of technology,
- be short and solved within 3 minutes,
- present information independently from specific software,
- be interesting and funny.

The international Bebras community has agreed to develop small tasks according to a framework. The framework consists of two parts:

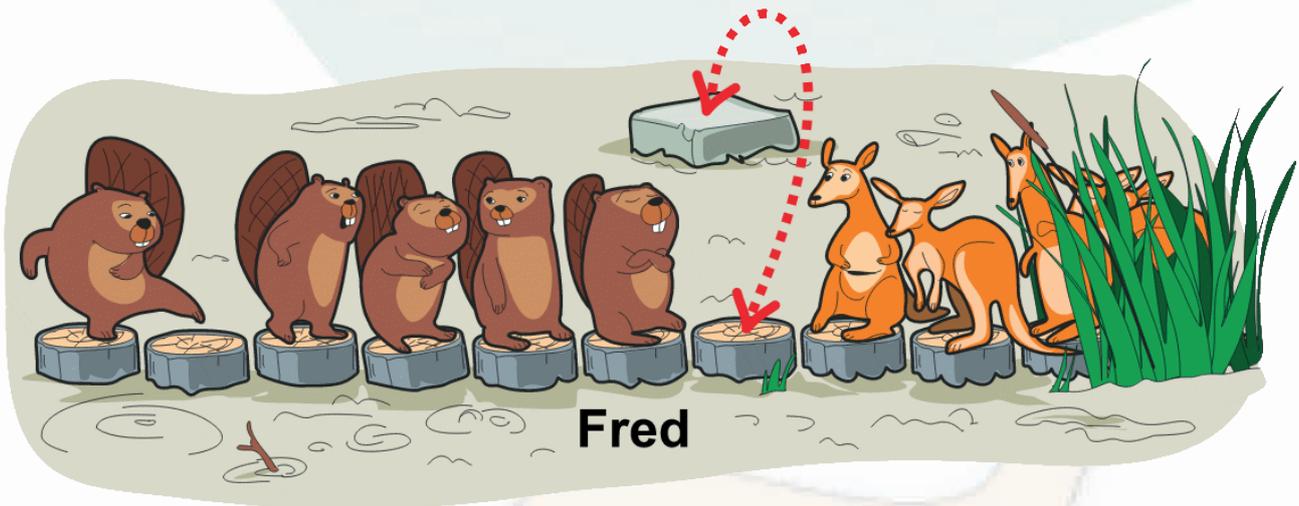
- 1) A task formulation (title, text (story), image(s) and question).
- 2) Metadata including age group, difficulty level, list of Informatics keywords, list of computational thinking skills, solution, explanation of why it belongs to computer science.

The metadata are very important for educators and also for future task developers and researchers. Especially important is the explanation of why a given task is based on a computer science concept. That explanation gives a larger picture and answers the question: what are the informatics concepts and the informatics “story” behind this task?

Solving tasks can be considered as a systematic process involving students in deeper understanding of Informatics concepts and could support a pedagogical shift in the classroom and foster students’ engagement and motivation to learn. Also, solving small tasks can be one of the strategies that engages and motivates students towards deeper learning and fosters deeper thinking skills.

### *Task example: Beavers vs. Kangaroos*

While crossing a swamp by using a log path, five beavers meet a group of kangaroos going into the opposite direction. Nobody wants to become wet or dirty, so they stay on the path. The Kangaroos found out that from one specific log it is possible to jump onto a stone next to the log path and jump back to that one log. However, only one kangaroo can stand on the stone at a time.

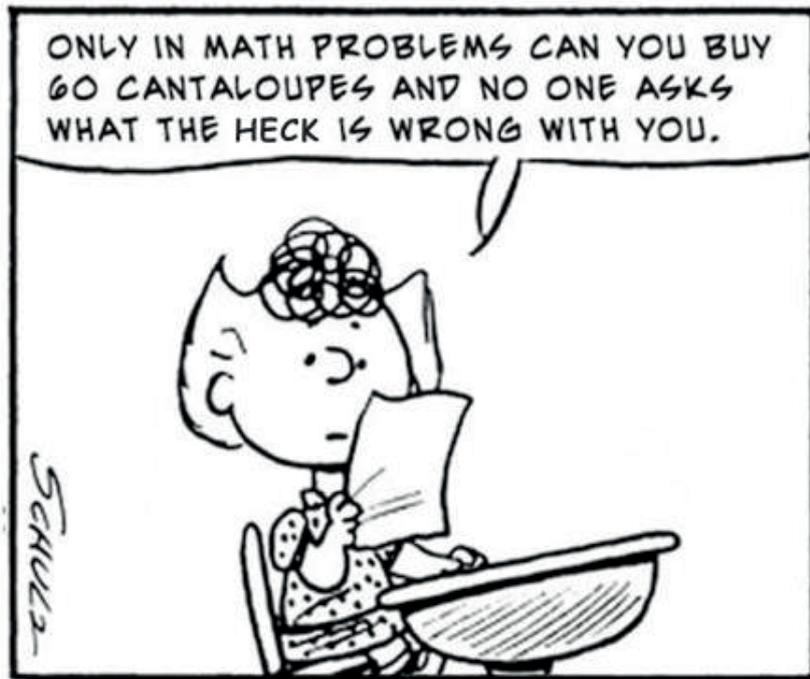


The kangaroos and beavers don't mind going all the way back, except for Fred, the leading beaver, who is the first to meet the kangaroos. Fred only wants to take a step back 10 times. With Fred's behavior, how many kangaroos can pass him without taking a step back?

### *Informatics education research in connection to the Bebras*

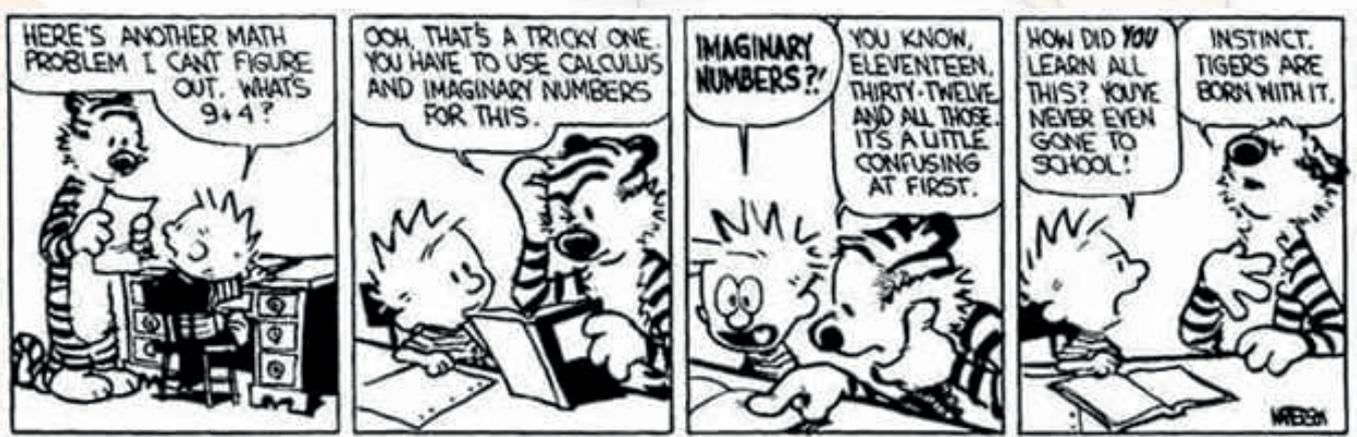
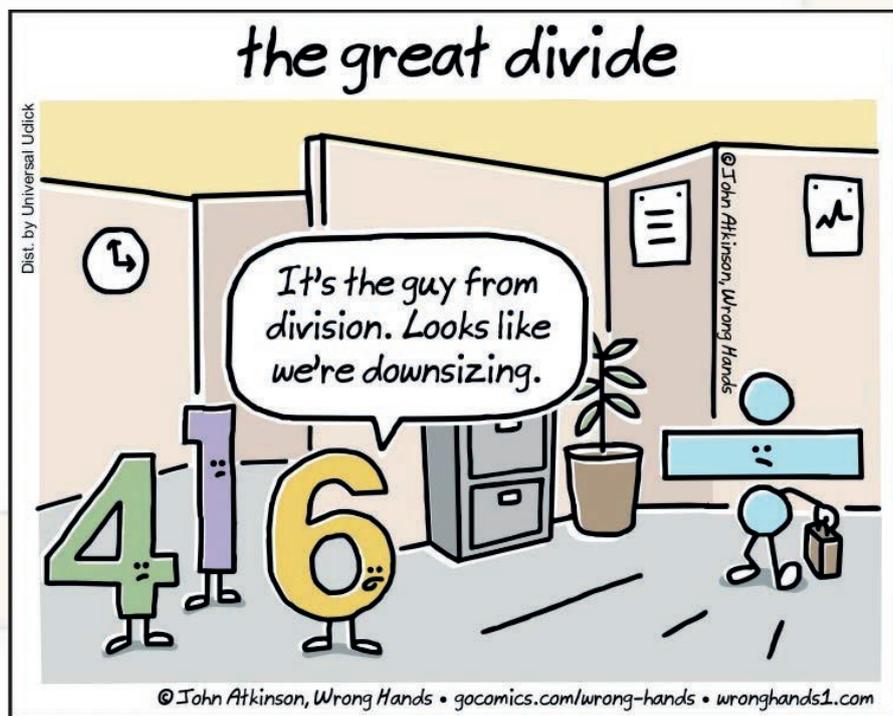
Research studies of various countries on Bebras activities started to be developed year by year. Bebras community collects publication lists and publishes on the Bebras website annually, see <https://www.bebbras.org/publications.html> If an article is open access, the copy or link to the full article is provided.

Website of the Bebras challenge: [www.bebbras.org](http://www.bebbras.org)



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## Important dates for the season 2022/2023

Kangaroo day Thursday, March 16, 2023



AKSF report 1. 5. 2022 — 22. 9. 2022 Report refers to the Kangaroo contest 2022.



Study problems 14. 9. 2022 — 28. 10. 2022 Participants can study problems and Group Chairs can preselect questions.



Download proposed problems 20. 9. 2022 — 15. 4. 2023 Proposed problems are available for download.



Select problems 5. 10. 2022 — 9. 10. 2022 Problems preparation during Annual Meeting.



Download selected problems 12. 10. 2022 — 15. 4. 2023 Problems selected at the Annual Meeting are available for download.



Finalize problems 12. 10. 2022 — 28. 10. 2022 Problems are being finalized (language and style improvements, picture corrections, ...).



Download finalized problems 31. 10. 2022 — 15. 4. 2023 Final versions of problems (including latex files and all the figures) are available for download.