

InAmath VS TeComp

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Niš, Srbija

Program: *Erasmus+*

Key Action: *Cooperation for innovation and the exchange of good practices*

	InAmath	TeComp
Full title	An interdisciplinary approach to mathematical education	Strengthening Teaching Competences in Higher Education in Natural and Mathematical Sciences
Start/end	Start: 01-09-2020 - End: 28-02-2023	Start: 15-11-2018 - End: 14-11-2022
Project Reference	2020-1-HR01-KA201-077816	598434-EPP-1-2018-1-RS-EPPKA2-CBHE-JP
EU Grant	197050 EUR	941370 EUR

	InAmath	TeComp
Action Type	Strategic Partnerships for school education	Capacity Building in higher education
Coordinator	University of Rijeka, Croatia	University of Niš, Serbia
Number of countries	4	6
Partners	<ul style="list-style-type: none"> • University of Mostar • UNIVERZA NA PRIMORSKEM UNIVERSITA DEL LITORALE • Osnovna škola "Nikola Tesla" • Osnovna šola "Heroja Janeza Hribarja" Stari trg pri Ložu • CENTAR TEHNICKE KULTURE RIJEKA • UNIVERZITET U NOVOM SADU 	<ul style="list-style-type: none"> • UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI • UNIVERSIDAD DE GRANADA • OSTRAVSKA UNIVERZITA • UNIVERZITET U BEOGRADU • UNIVERZITET U KRAGUJEVCU • UNIVERSITETI FAN S NOLI KORCE • UNIVERSITETI "EQREM ÇABEJ" I GJIROKASTRËS • UNIVERSITEIT GENT • UNIVERSIDAD DE OVIEDO • UNIVERZITET U NOVOM SADU

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- Two projects presented here are from Erasmus+ program, and of the same key action - Cooperation for innovation and the exchange of good practices. However, they are of different action type, and therefore of different budgets, durations, and objectives.
 - Project TeComp started almost two years before InAmath project, therefore the experience of the TeComp team regarding organization of meetings and events, as well as, dealing with administrative issues is very useful to the InAmath team.
 - Since projects are of different action type, InAmath is Strategic Partnerships for school education, and TeComp is Capacity Building in higher education, organization, target groups, and outcomes are different.

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- The joint characteristic, and excellent starting point for cooperation, of these two projects is the use of ICT tools in teaching and learning. While InAmath is focused on the youngest primary school students and their teachers, TeComp considers university teachers that are already professionally formed. In both cases, utilization of ICT tools is a good way to improve target group's competences.
 - The connection between InAmath and TeComp can be seen as a circle of education. As a result of InAmath project, generations of students open for new methods of teaching and learning will reach universities, obtain higher education, and some of them will become university teachers. On the other hand, because of TeComp, university teachers will accept the necessity of continuous professional training in teaching methodology and will educate new generations of schoolteachers ready to apply methods of the InAmath type.

InAmath - <https://inamath.uniri.hr/>

An interdisciplinary approach to mathematical education

inAmath

inAmath

true face of Math



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Lecture in Kopar, Slovenia

Posted on **6. December 2022.**

On December 5th 2022, Vedrana Mikulić Crnković held a lecture for students of the Faculty of Pedagogy in Kopar, Slovenia. The lecture was titled "Popularisation of mathematics and InAMath activities" and students had the opportunity to try various activities developed within the InAMath project.



NEW POSTS

- [Lecture in Kopar, Slovenia](#)
- [Evening of Mathematics](#)
- [OpenSciComm 2022 \(November 24-25, 2022, Belgrade, Serbia\)](#)
- [InAMath activities at UNIRI Nano-day and Rikon 2022](#)
- [Conference paper "Treasure Hunt as a Method of Learning Mathematics"](#)

InAmath - <https://inamath.uniri.hr/>

Scenario “**Storytelling – mathematical edition**”,
31.3.2022., Elementary
school Nikola Tesla, Rijeka,
Croatia



Scenario “**Time**”,
25.3.2022., Elementary
school heroja Janeza
Hribarja, Igra vas, Slovenia



Scenario “**Secrets of cryptography**”, 25.3.2022.,
Elementary school Sveti
Matej, Viškovo, Croatia



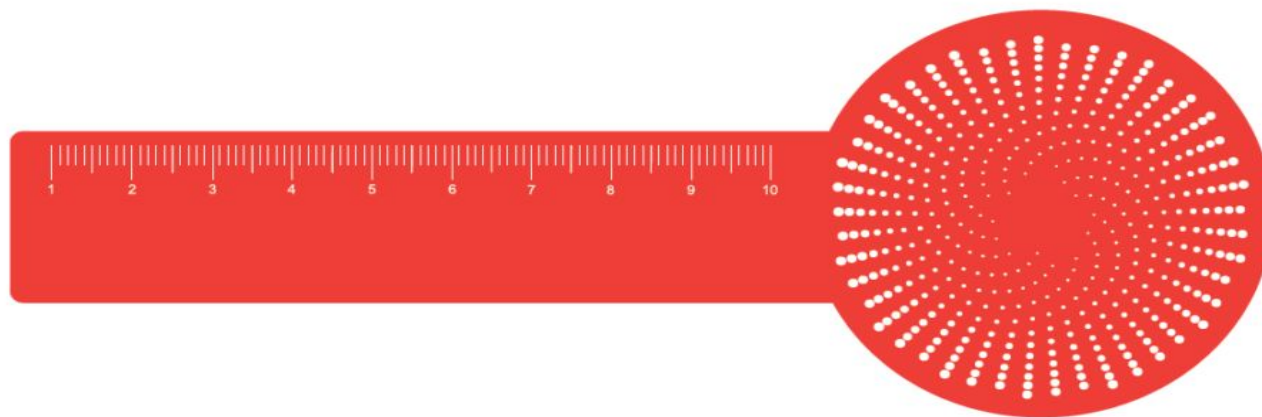
Scenario “**We learn to watch / Geometric figures**”, 24.03.2022.,
Elementary school Stolac,
Bosnia and Herzegovina



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inAmath

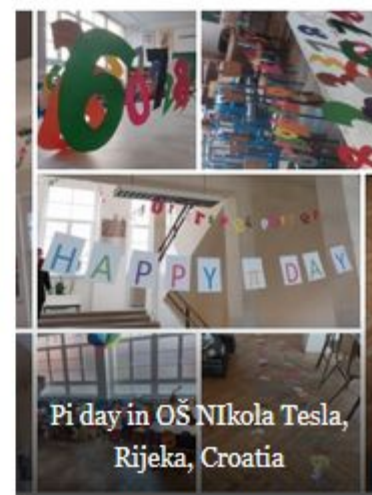
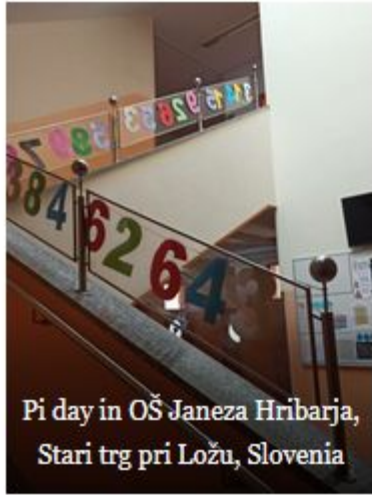


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Pi day

We had so many activities for Pi day that we celebrated for the whole week! Plenty of ideas and plenty of workshops with students were organized in our four countries during this Pi week! We bring you some pictures to feel a little part of our International day of Mathematics celebration!

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Title	Is there something hidden in circles?
Keywords	Circle, Diameter, Radius, Circumference, Number Pi
Short description	With the help of a dramatic text, and through a large selection of examples from the real world and games, students are introduced to the number pi and its role in nature. Through play and artistic expression, we determine the terms circle, circle, and radius. On an intuitive level, we introduce the concept of the circumference of a circle and go beyond the set of natural numbers.
ICT tools included	Drawing software (Paint) Scratch Micro:bit
Areas (select)	A1: Mathematics A2: Art A3: Literature A4*: Computer science A5*: History *possibility of expanding activities
Topics (for each selected area)	A1: Circle and radius A2: Getting to know certain tempera painting techniques A3: Reading and understanding the dramatic text A4*: Elementary programming in Scratch and <u>Micro:bit</u> A5*: Archimedes and Einstein
Expected prior knowledge of students	Knowledge of the notion circle. Knowledge of natural numbers. *Elementary knowledge of computer work
Expected outcomes	Comprehending the notion of circle and diameter. Intuitive perception of the circumference of a circle. Ability to compare circles based on radius. Adopting the concept of the real number on an intuitive level. Mastered a new tempera painting technique. Practiced reading, understanding, and interpretation of a dramatic text.
Expected duration of the activity	2 school hours, with the possibility of extension to a themed day
Preparation of activities	Downloading the <u>pdf/pptx</u> of the text. Preparation of appropriate equipment for painting. Printing <u>sudoku</u> puzzles. *Access to the internet for activities 9 and 10. https://www.britannica.com/biography/Archimedes https://www.britannica.com/biography/Albert-Einstein * https://scratch.mit.edu/help/videos/ * https://microbit.org/get-started/first-steps/introduction/
A detailed description of all teaching	Activity 1: Reading the preparatory text that is projected on the board. The magical spring number π A small dramatic text with a dash of mathematics

activities

Ana (student of the 4th grade of Elementary School "Jovan Ducić", a wise girl, a big fan of apple pie and painting): What is that title? Numbers are numbers, there is nothing magical about them. Actually, they are a bit boring... And what about spring? They bother us with numbers also in autumn and winter. Maybe a little less in the summer, we are saved by the summer holiday. ☺

Iyana (professor, for some unknown reason a big fan of mathematics): This number is different. It is very stubborn, and persistent and is recorded in a very strange way. Let's use a fancy Greek letter (raise your hands all gyros fans!) to spell it out

π

We read that letter as pi.

Ana: I'm not convinced. And why do we write it with a Greek letter? Although, it's truly nice, we could paint it nicely, with nice brushstrokes.

Iyana: Of course, we can use digits to write it, but that number is so persistent that it won't stop. It is one of those numbers that is written with a dot. For example, when you read a recipe for an apple pie, and it says 1.5 kg of apples. That's one whole kilogram and another half kilogram. That dot is placed after that whole kilogram and tells us that we need more than a kilogram of apples, but still less than two kilograms.

If we want to write π down, we need 3, then a dot after the three, and a lot more digits. Even today, supercomputers are competing to discover more digits of our number. Someone from Switzerland took 108 days last year and found more than 62 billion (who knows how many zeros there are, raise your hand ☺) digits after the comma. And there is no regularity, no repetition, the digits appear as they please. Without a lot of math, we can't know which one is next. Here's how it looks, but let's not overdo it with the numbers after the comma, we have enough for e.g., 50 pieces

3.14159265358979323846264338327950288419716939937510

Ana: Well, it is really persistent! Who will remember that?

Iyana: Yes, it really exaggerates. That's why most people memorize only the first two digits after the dot 3.14 The rest is in books and on the Internet, so if you need it...

Ana: I understand now! That's why we're talking about this number today! It is 3 14, that's March the fourteenth! But why the spring number? Calendar-wise, spring hasn't started yet, we learn when spring starts, you can't confuse us...

Iyana: You are right. But spring is so close, so it didn't make sense to call it a magical winter number...

Ana: And what is it good for? Really, does it do anything, or do mathematicians have nothing better to do but make up numbers?

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Iyana (laughing): Yes, they are very bored, so they make up numbers all day long.
Ana: I knew it! Surely that's why we must learn distributive property! I knew it, I knew it, I knew it...
(Ana runs around the classroom and triumphantly sings "I knew it, I knew it...").

Iyana: Stop, stop! I'm joking! Of course, it has a purpose. Let me show you. Do you know what a circle is?

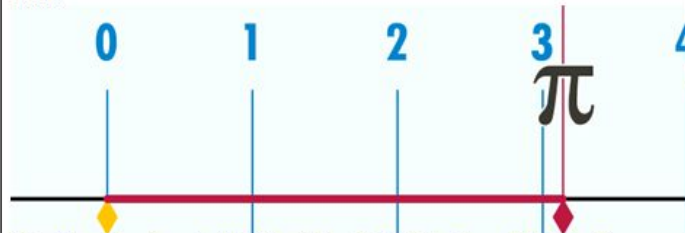
Ana (slightly offended): What kind of question is that, of course, I know.

Iyana: I'm sorry, I didn't doubt it. Let's draw some circles.

Activity 2: On the floor of the classroom or in the schoolyard, draw three large circles of different diameters with chalk. Three volunteers carefully measure the lengths of the drawn circle lines in steps, i.e., the circumferences of the circles, for all drawn circles. Let's explain the concept of the circumference of a circle. Let's notice the radius and connect the radius with the number of steps. Compare the results and discuss. Drawing circles on paper and a blackboard is also possible, and with the help of a string that we place on the drawn circles, we explain the concept of circumference and compare the results.

Ana: But that's not fair, they all have different shoe numbers! Of course, the number of steps varies even for the same circle!

Iyana: Exactly. The number of steps will depend on the length of our feet. But, to avoid confusion, the exact circumference can be told to us by the number π . If you multiply the diameter of the circle by π , you get the circumference of the circle. Actually because of the circumference of the circle (and the surface, but that's another story) mathematicians began to calculate and discover the number π . As you can see the number π is hidden from us in the circles!



Ana (laughing): It *hjd* really well.

Iyana: Look at it like *this*, it is also hidden in the apple pie, the circular one, of course. On one hand, a pie is circular in shape, so it has a circumference that we calculate using π , on another pie is pronounced the same as the letter π .

Ana: I'm hungry now. Good thing lunchtime is near. I hope it's pie on the menu today. ☺
 But, why magical? Yes, a pie has a bit of magic, but not enough.

Iyana: If you try hard and look closely at the digits of the number π , you can certainly find the date of your birthday. Sometimes it's immediately noticeable (for example, in the case of my uncle, it's March 14th), and sometimes you need to look at a lot of numbers, but it's definitely there. And you can make it magical too. You said yourself that you could draw him with fine brushstrokes, so let's draw. Maestro, some light spring music please, so let's make it our π magic with tempera.

Activity 3: Drawing the letter π and circles of the different radius using the technique intended for art class work. After class, organize an exhibition of works.

Iyana: Yes Sofia (*Anna's best friend, a bit of a computer freak, knows which graphics card is the best and why you should use a mechanical keyboard, and is also a big fan of apple pies*), you can use modern methods. Turn on that *computer*, you will be in charge of the graphic design. Gather your team. And when you're all done with the drawings, we can move on to the brain teasers.

Activity 4: Depending on the software available in the school, children draw circles of different dimensions and colors, and arrange them in given shapes (tree, house, flower...).

Activity 5: Solving Pi *sudoku* puzzles. Depending on the affinity of the children, it is possible to divide them into groups and organize competitions.

Activity 6: A small competition in memorizing the decimals of Pi.

Expanding activities The possibility of organizing a themed day.

In agreement with informatics teachers, older students mentor younger students:

Activity 7: Making simple animations in Scratch.

Activity 8: Depending on the availability and affinity of the children, programming the *micro:bit* car for circular movement. Two toy cars move along different circular paths. Discuss which one returned to the starting point first and why. Connect with the concept of scope.

Historical aspects

Activity 9: Introduce the children to Archimedes. Conjure up to the children the historical period in which he lived, and explain that he was the first to calculate the number Pi. Tell the legend of his death.

Noli turbare circulos meos! – Do not touch my circles!

Activity 10: Introduce children to Einstein. Conjure up to children the historical *period* in which he lived, his most famous achievements. Connect it to the subject through the date of birth.

Additional notes If a student attends classes according to an individual educational program, it is necessary to include a personal companion in the preparation and choose activities in which it is possible to include the student as much as possible.

Authors Ivana Štajner-Papuga