GEM Deliverables

3.1. Summer Camp Support Site

3.2. Summer Camp learning Plan

This document bases on the work within the project Empower Girls to Embrace their Digital and Entrepreneurial Potential (GEM). This project is co-funded by the European Union under grant no. LC-01380173. The European Union/European Commission is neither responsible for the content nor liable for any losses or damage resulting of the use of these resources.

Coordination: Prof. Dr. Katja Maaß, UNIVERSITY OF EDUCATION FREIBURG, Germany.

Partners: UNIVERSITEIT UTRECHT, Netherlands; UNIVERSITA TA MALTA, Malta; UNIVERZITA KONSTANTINA FILOZOFA V NITRE, Slovakia; UNIVERSIDAD DE JAEN, Spain; ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON, Greece; UNIVERZITA KARLOVA, Czech Republic; SCHOOL OF EDUCATION AND COMMUNICATION, Jonkoping; EDEX – EDUCATIONAL EXCELLENCE CORPORATION LIMITED, Cyprus; VILNIAUS UNIVERSITETAS, Lithuania.

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Content

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P1 Germany: ICSE at University of Education Freiburg (PHFR) GEM Summer Camp Learning Plan

Summary of the German summer camp:

The University of Education Freiburg is coordinating the project GEM. This is a European Union co-funded pilot project, aiming to increase girls' interest in STEM and ICT subjects and careers. As part of this project, the University of Education Freiburg is organizing two summer camps for girls, the first in 2021 and the second in 2022. They will participate in teams in activities linked to real life problems in which they apply their knowledge of different STEM areas and learn new concepts in a hands-on, collaborative environment. The summer camps will also include online meetings with women involved in exciting work such as research on the use of 3D-printing or a female entrepreneur with STEM-background who designs escape rooms. The fist summer camp is separated in two parts each day (online and offline). The online part (10:00 – 13:00) is obligatory for all participants, the on-site part (8:00 – 10:00) is optional but will be limited to 10 girls due to the COVID-19 restrictions.

All participants will receive a certificate of participation.

For further information please visit our homepage and send an email to oliver.straser@ph-freiburg.de

Summer Camp Learning Plan

1. **Title of the Summer Camp:**

   Can You Escape: The German GEM Summer Camp 2021

2. **Target Group (age, school type):**
   Female students from the age of 12 to 19, any secondary schools

3. **Venue:**
   The University of Education Freiburg and/or online via Zoom

4. **Transportation to the venue / digital access to the Summer Camp:**

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The Summer Camp takes place during the school time. Therefore, the girls must ensure that they are exempted from their school. Our GEM team will support the girls here, if they need it (contact to teachers and so on). Registration takes place on our GEM website via an electronic form from eveeno (https://eveeno.com/290929825). There, the girls can register for the on-site and online-summer school. Within the registration form the girls have to write a sentence why they intend to participate (a short motivation statement).

All girls will receive a certificate for successful participation.

The meeting point of the on-site part is in front of the main building of the university campus, located central in Freiburg. Freiburg is quite a small city, so the girls will travel by public transport or bicycle. Transport by parents is of course also possible. Attendees who only participate online will get access via the web-based software Zoom.

5. Subsistence:

The summer camp is free for all participants. Snacks and light lunch (always vegan, vegetarian options) will be served every day for all on-site participants.

6. Contact person for girls and their guardians:

Girls, in groups of three of five, will be led by a female mentor who will accompany them throughout the summer camp. She will be their contact person during the week.

For other information girls and their guardians may contact the organisers (Prof. Dr. Katja Maaß, Dr. Oliver Straser and Katharina Floesser) on GEM@um.edu.mt.

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7. Schedule: 19.-22. July 2021

	Monday 19. July	Tuesday 20. July	Wednesday 21. July	Thursday 22. July
8:15 – 9:00	Welcome (Test of the Escape Box)	How to design an Escape Box (with a 3D Printer)	3D Designing and Printing II	3D Designing and Printing IV
9:00 – 9:45	Introduction to 3D – Printing & Design	3D Designing and Printing I	3D Designing and Printing III	3D Designing and Printing V
9:45 – 10:00	Break			
10:00– 10:45	Welcome & Pre - Questionnaires	Workshop Phase 1	Group Phase 3:	Group Phase 5:
10:45– 11:30	Test Digital Escape	Group Phase 1:	Workshop Phase 3:	Presentation Phase I
11:30 – 11:45	Break			
11:45 – 12: 30	Workshop: Introduction to the conception of Escape Activities	Workshop Phase 2:	Group Phase 4	Presentation Phase II
12: 30 – 13:00	Talk 1: Female Scientist in 3D Printing	Group Phase 2:	Talk 2: Female Entrepreneur Escape Rooms	Farewell & Post Questionnaires
	Lunch (only in person)			
14:00 – 16:00		**Visit:** Escape City Challange		

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8. **Content:**

Workshops Phase 1

- How to design escape activities with STEM sciences I
- How to set up an environment for digital escape rooms
- Digital realisation of escape activities (elementary coding)

Workshops Phase 2

- How to design escape activities with STEM sciences II
- Basics of image editing
- Digital realisation of escape activities II (advanced coding for digital Escape Rooms)

Workshops Phase 3

- Digital realisation of escape activities III (advanced coding for digital Escape Rooms)
- Using augmented reality in digital Escape Rooms
- Basics of storytelling (STE**A**M-Activity)

Group Phase 1: Start

- Group finding
- Getting to know each other
- Distribute roles

Group Phase 2: Let's go to work

- Draw a first concept (digital room / printed box)
- Design a first escape activity

Group Phase 3: We know what we do

- Produce a first draft of the escape room/box
- Develop further escape activities

Group Phase 4: Coming to an end

- Fixate the whole structure of the escape room/box

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- Fixate the escape activites

Group Phase 5: Finalisations

- Get everything to work

9. Format of the activities:

Because of the COVID 19 – Crisis we decided to run the summer school on a hybrid model (online and offline), this means participants can choose, if they want to attend the summer camp in-person (on-site in Freiburg) or just online. Because of Covid-19 restrictions we can offer the on-site participation only to a very limited number of students.

Each day of the summer camp is structured in two parts:

Part 1: 3D-Printing and Designing an Escape Box (only accessible for on-site participants)

Part 2: Escape Activity Design (obligatory for all participants and accessible on-site and online)

Note, that girls who participate on-site will also access the online part from the University of Education Freiburg. To encourage collaboration between online and on-site attendees we use the OWL-System, which we are lending from the University equipment (https://owllabs.com/products/meeting-owl-pro).

Throughout the summer camp the girls will work in small groups of around five students accompanied by a young female mentor. In total we will offer nine different workshops, but every student will be able to attend at most three workshops. So, each member of the group will have gain expertise in different areas through participation in different workshops requiring active collaboration within the group to be successful.

Additional two young women with STEM-background will talk about their work. The first one is a PhD-student working on applications of 3D-Printing to sustainability. The second one designs escape rooms professionally.

10. Expected learning outcomes:

The main learning outcome will be to understand how escape activities are designed and how STEM-sciences are involved in the conceptualisation. Further learnings outcomes include basics of programming, 3D-design, 3D-printing, the creation of augmented reality applications and

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storytelling. Furthermore, we intend to dissolve typical STEM stereotypes by emphasizing how creativity and collaboration are required to be successful in STEM-tasks.

11. Presentation of hosting Higher Education Institution and lecturers:

The International Centre of STEM Education located at the University of Education Freiburg, is a high-profile research institute for STEM Education and coordinator of several national and international funded projects, focusing the improvement of STEM-Education. ICSE regularly hosts out of school student-activities and is determined to increase the reputation of STEM-sciences among students. The lecturers involved in the GEM summer camps are Katharina Flößer, Alice Hesse, Aileen Fahrländer, Miriam Hahn, Esra Mandaci and Dr Oliver Straser, as well as several female student assistants.

Mentors and lecturers	Activities
Katharina Flößer	Welcome, introduction and education activity 3D-print and escape room
Oliver Straser	Welcome and introduction 3D-printing
Aileen Fahrländer	Education activity 3D-print
Alice Hesse	Education activity online escape room
Miriam Hahn	Education activity online escape room
Berit Stier	Education activity of image editing
Esra Mandaci	Education activity
Female Student assistants	Support during the education activities
Dr. Lisa König	Lecturer storytelling
Hannah Buchheit	Lecturer 3D-print
Pamela Linde	Lecturer digital escape rooms

LINK Summer Camp support site: https://icse.ph-freiburg.de/gem/gem2021/

Additional information for the EC:

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Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead?

We originally planned a completely different summer camp (starting a weather-balloon into space). Here the collaboration between students would have been much more intense. But the COVID-19 restrictions made it impossible to realise this concept. Instead we changed to a topic and format which can be held, if needed, completely online.

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P2 Netherlands: Utrecht University (UU) GEM Summer Camp Learning Plan

Summary of the summer camp:

Girls in the Netherlands, and especially in the Utrecht Region, can participate in the GEM-Girlsclub-days that are organized throughout the year. In the 2020-2021 season we decided not to organise a summer camp (because of the corona pandemic), but to have a 'distributed' alternative that runs in different days throughout the year. Especially girls (age 14-15) from the regional schools (U-Talent schools in the Utrecht region) can participate.

In the Girlsclub activities your get to know (female) scientists and students of computer science, mathematics and physics. You also meet young women who are starting their career in this field. You will get started yourself, for example by doing experimenta or programming or designing. And you get the chance to browse places at the university where students don't normally come.

Finally, and that's perhaps the most fun, you get to know 24 other girls who, like you, are enthusiastic about computer science, mathematics and physics! Together you follow the program of the Girls Club WIN, you get to know each other better and you discover the university together.

Summer Camp Learning Plan

1. **Title of the Summer Camp:**

GEM Girlsclub WIN ('Wiskunde, Informatica, Natuurkunde' -> Mathematics, Computer Science, Physics)

2. **Target Group (age, school type):**

Age group 14-15 year-olds (grade 8-9).

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3. Venue and 4. Transportation

Venue	Transportation
	The Utrecht Science Park is easily accessible by tram and bus from Utrecht Central Station and various smaller regional train stations. Tram 22 is the main transport link for Utrecht Science Park. The tram takes 17 minutes to get from Utrecht Central Station to the science park's P+R. A large number of bus services from surrounding municipalities also stop at Utrecht Science Park. www.utrechtsciencepark.nl/en

4. Digital access to the Summer Camp:

The Campus does have an excellent free wifi network.

5. Subsistence:

For meals etc. we will follow the regulations of the UU (vegetarian). The costs will be part of the total costs.

6. Contact person for girls and their guardians:

- Marjolein Gelauff, U-Talent
- Vincent Jonker, Freudenthal Institute

See website elwier.nl/gem for details.

7. Schedule:

At the moment we work with a couple of days throughout the year, partly organized live and partly online.

2020-2021	2021-2022
8 December 2020 (Physics - CS), live 31 May 2021 (Physics - CS) , live	14 October 2021 (Physic - CS), live 9 December 2021 (Math - CS), live

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21 June 2021 (Math), online	17 March 2022 (Physics - Math), live The plan is to organize a summer camp in July 2022, we are in negotiation with others.

8. Content:

Especially in the bachelor's programmes in physics, mathematics and computer science, there is still a large gender imbalance at the UU: many more boys than girls choose these studies. At two schools, the first choice in the direction of these subjects is made when choosing a profile in class 3 (grade 9). Girls who are interested in these subjects in the first years (grades 7 and 8) of the pre-university stream in secondary school (two) sometimes have the idea that they are the only ones with this interest and they experience it as socially undesirable to want to continue in these directions.
By bringing them together, they experience that it is not 'weird' and they stimulate each other to follow their interest. Moreover, it turns out that girls are often more insecure about their performance in science subjects than boys, and that this is reinforced when they work together with boys. By having the girls work together with other girls on STEM subjects and meeting role models, their self-confidence and self-efficacy are strengthened.

The so-called GirlsClub WIN brings together a group of about 30 girls from the Utrecht region in a set of days throughout the year. The girls come to the university campus a number of times to work with each other on physics, mathematics and computer science subjects and meeting (female) scientist and other professionals in the stem field.

The program aims to be a combination of:

- Contact with (female) scientists and other young professionals (role models!) via lectures and tutorials on subjects that are interesting to this target group.
- Contact with students, preferably female.
- Practical work: Doing practical's, programming, modelling, etc.

There are also links in the program to existing activities (Girls' Day, Code Day, Junior Olympiads).

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In spring 2021 a video was made with an impression of the Girlsclub day of 8 December.

Video December 2020
youtu.be/ONK1_KiN0U0

u-talent.nl/girlsclub
elwier.nl/gem

To give an impression of an 'average GEM GirlsClub WIN Day' we show the program of May 31, 2021, with two parallel programs (Grade 9 and Grade 8):

Grade 9

11:30-11:45	Welcome
11:45-12:00	Presentation Dean of the Faculty of Science Isabel Arends
12:00-12:45	Lunch
12:45-13:15	Presentation Anja Volk
13:15-15:15	Workshop Music Programming Christian Köppe
13:55-14:10	Break
15:15-15:30	Evaluation
15:30-16:00	Closure with certifcates

25 girls

Grade 8

11:45-12:00	Welcome
12:00-12:15	Presentation Dean of the Faculty of Science Isabel Arends
12:15-12:30	Intake
12:30-13:00	Presentation Nadine van der Heijden and Iris Beerepoot
13:00-14:00	Lunch with Start Game
14:00-15:30	Campus Game with 7 problems
15:20-15:30	Closure

25 girls

On May 31 we work together with:

- Isabel Arends - Dean of the Faculty of Science - https://www.uu.nl/staff/IWCEArends

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- Anja Volk - CS - https://www.uu.nl/staff/AVolk
- Christian Köppe - CS - https://www.uu.nl/staff/CKoppe
- Nadine van der Heijden - Physics - https://www.uu.nl/staff/NJvanderHeijden
- Iris Beerepoot - CS - https://www.uu.nl/staff/IMBeerepoot

9. Format of the activities:

The format is 'Be together, have fun, and learn by doing'. There is a big difference between a live meeting and an online meeting. We already gave an example of a live session (see above, 'Content').

We will now show an example of an online program (in Teams/Zoom).

14:00-14:05	Welcome
14:05-14:20	The Girl of the Day: Fleur Doorman - PostNL
14:20-14:30	Architect in a virtual world. An activity with the use of augmented reality
14:30-14:50	Make your first building
14:50-15:00	Check - does it work
15:00-15:30	Make another building
15:30-15:45	Presentations of the work
15:45-16:00	Closure

https://elbd.sites.uu.nl/2020/05/27/girlsclub-win-21-juni-2021/

It is important that the girls work together, have fun, meet interesting women with a STEM background

10. Expected learning outcomes:

Within the U-Talent cooperation (a cooperation with 24 schools in the Utrecht region) we have some experience with organizing STEM activities for girls (and boys) age 12-17. Evaluation of those activities indicates the students are highly motivated to participate (in this special setting of coming to the University Campus and work together with lecturers and researchers).

By working with female role models, we hope this will be an extra stimulus to be interested, and possibly choose for a STEM study.

11. Presentation of hosting Higher Education Institution and lecturers:

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The GEM Girlsclub WIN is primarily an activity from Utrecht University, and there is a strong connection with other (nationwide) activities from other institutes:

- VHTO-girls-and-technology (with their annual GirlsDay)
- Vierkant-voor-wiskunde
- NVvW and others (they had a succesful digital event in march 2020 - EGMO - girls math olympiad)

Lecturers

- Isabel Arends - Dean of the Faculty of Science - https://www.uu.nl/staff/IWCEArends
- Iris Beerepoot - CS - https://www.uu.nl/staff/IMBeerepoot
- Birgit van Dalen - Leiden University
- Fleur Doorman - PostNL
- Paul Drijvers - Universiteit Utrecht - Freudenthal Instituut
- Ines Duits - Enschede
- Nadine van der Heijden - Physics - https://www.uu.nl/staff/NJvanderHeijden
- Felienne Hermans - Universiteit Leiden
- Carl Koppeschaar - Stichting Vierkant voor Wiskunde
- Berenice Michels - Universiteit Utrecht, U-Talent - vo-ho-netwerk utrecht
- Heleen van der Ree - Nederlandse Vereniging van Wiskundeleraren - NVvW
- Esther van Schaik - Landelijk expertisebureau meisjes/vrouwen en bèta/techniek - VHTO
- Sietske Tacoma - Math - Hogeschool Utrecht - U-Talent
- Anja Volk - CS - https://www.uu.nl/staff/AVolk
- Emma Wortelboer - https://nl.wikipedia.org/wiki/Emma_Wortelboer

Link of the Summer Camp support site: elwier.nl/gem

Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

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In 2020 we thought we were going to organize a summer camp of three days at the start of the summer in 2021 (half of July), but the COVID circumstances made this impossible to organize.

That's why we decided to distribute the summer camp across different days.

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P3 Malta: University of Malta (UM) GEM Summer Camp Learning Plan

Summary of the summer camp

The University of Malta is participating in a project called GEM. This is a European Union co-funded pilot project, aiming to increase girls' interest in STEM and ICT subjects and careers. As part of this project, the University of Malta is organizing two summer camps for girls, the first in 2021 and the second in 2022. They will participate in teams in activities linked to real life problems in which they apply their knowledge of different STEM areas and learn new concepts in a hands-on, collaborative environment. The summer camps will also include meeting and working with women involved in exciting work such as research on the use of electromagnetics for medical applications. For further information please visit https://www.um.edu.mt/educ/ourresearch/gem and send an email to GEM@um.edu.mt.

Summer Camp Learning Plan

1. **Title of the Summer Camp:**

   Girls4STEM summer camp

2. **Target Group (age, school type):**
   Students who have finished Year 7, around the age of 12.

3. **Venue:**
   The University of Malta

4. **Transportation to the venue / digital access to the Summer Camp:**

The meeting point is outside the gateway building (Mikiel Anton Vassalli Conference Centre) at the entrance from the Mater Dei Hospital side of the University. Students will be met by mentors and accompanied to the meeting rooms.

5. **Subsistence:**

The summer camp is free for all participants. A light lunch will be served every day (subject to approval from health authorities).

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6. Contact person for girls and their guardians:

Students, in groups of five, will be led by a mentor who will accompany them throughout the summer camp. She will be their contact person during the week.

For other information girls and their guardians may contact the organisers (Dr Josette Farrugia and Dr Charles Bonello) on GEM@um.edu.mt.

7. Schedule:

Day 1 – Monday 13th September 2021

Activity 1 (1 hour) – Art and Science
Activity 2 (1 hour) – Entrepreneurship
Activity 3 (1 hour) – Health and wellbeing

	09:00 - 09:45	10:00 – 11:00	11:15 -12:15	13:00 -14:00
Group 1	Introduction + Pre-Questionnaire	Activity 1	Activity 3	Activity 2
Group 2	Introduction + Pre-Questionnaire	Activity 2	Activity 1	Activity 3
Group 3	Introduction + Pre-Questionnaire	Activity 3	Activity 2	Activity 1

Day 2 – Wednesday 15th September 2021

Activity 4 (1 hour 15 mins) – Special programme at the ESPLORA Interactive Science Centre Activity 1
Activity 5 (1 hour 15 mins) – Special programme at the ESPLORA Interactive Science Centre Activity 2

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	09:00 – 10:00	10:00 – 11:15	12:00 -13:15	13:30 -14:00
Group 1	Transport to Venue	Activity 4	Activity 5	Transport from Venue
Group 2	Transport to Venue	Activity 5	Activity 4	Transport from Venue

Day 3 – Friday 17th September 2021

Activity 6 (1 hour) – Electromagnetics in medical diagnosis and treatment
Activity 7 (1 hour) – Coding activity using microbit
Activity 8 (1 hour) – Treasure Hunt

	09:00 – 10:00	10:15 -11:15	12:00 -13:00	13:15 – 14:00
Group 1	Activity 6	Activity 8	Activity 7	Conclusion and post-questionnaire
Group 2	Activity 7	Activity 6	Activity 8	Conclusion and post-questionnaire
Group 3	Activity 8	Activity 7	Activity 6	Conclusion and post-questionnaire

8. Content:

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Activity 1 (1 hour) – Arts and Science. The session will involve a talk by a person working on restoration of works of art. She will talk about her passion for art and how science helps her in her work. Students will learn some scientific knowledge related to the topic. They will be able to ask her questions about her career and so on.

Activity 2 (1 hour) – Entrepreneurship. This session will be led by a businesswoman and founder of an SME.

Activity 3 (1 hour) – Health. The session will involve the participation of a young female radiographer. She will talk about her work related to medical imaging and how science helps us learn about conditions. This will be followed by a hands-on session using an app that enables exploration of internal organs.

Activity 4 (1 hour 15 mins) – ESPLORA - activities are being developed with ESPLORA educators.

Activity 5 (1 hour 15 mins) – ESPLORA - activities are being developed with ESPLORA educators.

Activity 6 (1 hour) – Electromagnetics in medical diagnosis and treatment. The session will include a hands-on activity related to magnets and a talk by the female scientist leading the research. Students will be able to ask her questions about her career and so on.

Activity 7 (1 hour) – Coding Activity. Participants will be conducting simple coding activities using a micro:bit aimed at enhancing their computational thinking skills. Participants will work in teams to design and prototype their own flashing designs.

Activity 8 (1 hour) – Treasure Hunt on the university campus. The students will work in groups on STEM related clues that will lead them to different areas of the University and different Faculties.

9. Format of the activities:

Throughout the summer camp students will work in a small group of around five students accompanied by a young female mentor. The activities will be held via workshops in groups of around sixteen participants and coordinated by STEM professionals. The format of the activities will be designed around the development of the participants' (i) hands-on skills (ii) problem solving (iii) team working and collaborative capabilities (iv) leadership aptitudes and (v) presentation skills. The one-hour (or one hour 15 minutes) workshops will provide students with an opportunity to enhance their conceptual learning and understanding of STEM and ICT-related content and contexts. Furthermore, the curriculum linked activities will complement the participants' in-class learning experiences and its practical implementations.

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10. Expected learning outcomes:

Increased interest in STEM/digital disciplines

Greater awareness of their own potential

Improved performance in STEM/digital disciplines

Greater interest in studying or pursuing careers in STEM/digital sectors

Interest in leadership positions in STEM/digital sectors

Greater willingness to know more about STEM

Greater willingness to be involved in STEM

11. Presentation of hosting Higher Education Institution and lecturers:

The University of Malta, the highest teaching and learning institution in Malta, participates in a number of projects funded by the EU. One of these projects is the GEM project which is being implemented in several countries across Europe. The University is participating in this project through the Department of Mathematics and Science Education of the Faculty of Education. The Department is committed to the development of reflective teachers who are dedicated towards student-centred learning, making learning relevant for students and engaging students in reasoning about the content being taught. The lecturers involved in the GEM summer camps are Dr Josette Farrugia and Dr Charles Bonello. Both are senior lecturers and former heads of department with expertise in science teaching and learning, student engagement and student-centred learning.

Link of the Summer Camp support site: https://www.um.edu.mt/educ/ourresearch/gem

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Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

At the planning stage it is still unclear what we will be able to offer our students during the summer camp in 2021. We have delayed the summer camp to September such that more of the population would be vaccinated and hopefully a face to face programme may be offered. How there is still a lot of uncertainty. For this reason, we prepared plans for a face to face programme with health and safety considerations that include COVID-19 directives but we are also working on an online programme in case the summer camps cannot be held face to face. Even if the in-person summer camps are possible, due to health protocols there are some activities that cannot be held. For example, a visit to the virtual reality lab where students can experience VR has been abandoned since students should not be wearing and sharing the equipment. The activities are also planned in a way that they can be held with small groups of students at a time. For this reason, it was necessary to organise short stand-alone activities that could be alternated. The students will work within the same small group for the whole duration of the summer camp.

Originally, we had planned to provide students with a light lunch during the summer camp. This will need to be adapted according to the health standards that will be in place in September.

Another possible impact is the recruitment. Will students and their guardians be ready to commit to a summer camp during a pandemic? If we revert to an online summer camp will students be willing to participate especially since they have had a lot of online learning this year?

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P4 Slovakia: Constantine the Philosopher University (CPU) GEM Summer Camp Learning Plan

Our project partner from Slovakia will run two camps this year in July and September 2021. A third cam will be implemented next year in 2022 as planned.

Summer camp I:

Summary of the summer camp.

Dear parents,

Also, this year, in the civic association MORE THAN LEARNING, in cooperation with the Faculty of Natural Sciences UKF in Nitra, we have prepared a summer program for your children.

In the period from 12.7.2021 to 16.7.2021, we have prepared the STRONG PHYSICS camp, which is intended for children aged 12 to 15 (primary school pupils). The theme of the camp, as its name suggests, will be dedicated to SILE. As is customary in our camps, we will deal with various physical measurements. Although this topic may be more challenging for children, we believe that it is interesting and can certainly interest children. In addition to exploring the strength, a rich program full of various camp activities and competitions awaits everyone.

We will not let the children starve this year either. We will eat at a nearby restaurant. In addition to lunch, a tenth and continuous drinking regime will be provided.

As in previous years, this year we want to make an interesting trip in one day. This year, also due to the situation, we decided to spend the day in the rope centre. For this reason, too, we decided to move the age of the children to 12 years, due to the requirements of the rope centre and the safety of children. Children aged 11 could attend the camp, but we will evaluate their placement individually.

If you are interested in our offer of camps, write down the application, 2 × contract and consent and send it.

Either to the address: Ľubomíra Valovičová, KF FPV UKF, Tr. A. Hlinku 1, 94974 Nitra or

in person at the Department of Physics FPV UKF in Nitra, Tr. A. Hlinku 1

We can take a maximum of 32 children to the camp.

Sincerely

creative team of FAJN camp

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Summer Camp Learning Plan

1. Title of the Summer Camp:

FAJN – physics like you do not know it

2. Target Group (age, school type):

12-15 years old pupils

3. Venue:

Department of Physics, Faculty of Natural Sciences, Constantine the Philosopher University in Nitra, Tr. A. Hlinku 1, 949 74 Nitra

4. Transportation to the venue / digital access to the Summer Camp:

Daily summer camp on site

5. Subsistence:

lunch, refreshment, drinks, water

8€ per day per participant = 32 x 8 x 5 days =	1 208 €
Material support	300 €
	1 580 €

6. Contact person for girls and their guardians:

Ľubomíra Valovičová: lvalovicova@ukf.sk (Slovak language)

7. Schedule:

Monday – Friday 8:00-16:00

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8. Content:

Physics experiments, traditional and non-traditional, outdoor and laboratory experiments

9. Format of the activities:

research-oriented and inquiry-based-oriented education; team-building activities: competitions, sports activities; Visit to the rope centre

Research-oriented education - Laboratory work will be carried out in groups of 4 students under the guidance of an animator: 8 × 90 min)

10. Expected learning outcomes:

Science: force, tool for measure force, force in everyday context

Mathematics: average, central tendency, characteristics of spread; comparing the central values

11. Presentation of hosting Higher Education Institution and lecturers:

The University of Constantine the Philosopher in Nitra has more than 60 years of tradition of teacher training, including teachers of science and mathematics.

Ľubomíra Valovičová has been organizing summer camps with a natural focus at the University of Constantine the Philosopher in Nitra together with the civic association VAU for more than 15 years. More than 700 participants have already taken part in the camps for the second stage of primary school.

The animators in the FAJN 2021 camp are mostly young women, future physics teachers, scientists in the field of physics didactics and materials physics.

Link of the Summer Camp support site: The link will be ready until June 10th.

Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

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The attendees of the camp will follow the current measures related to COVID-19 pandemics (e.g. wearing mask, have the negative test on Monday, measuring the body temperature each morning). In case of restriction of the number of participants attending the event below 20 the camp will be cancelled in 2021.

Co-funded by the European Union

P4 Slovakia: Constantine the Philosopher University (CPU) GEM Summer Camp Learning Plan

Summer camp II :

Summary of the summer camp:

The summer camp (24.-27. September 2021) offers outdoor STEM activities with focus to research in the landscape. Participants will observe selected protected areas: botanical garden and protected landscape area and will learn about landscape scientific research. Participants will experience some field research activities and will work in laboratory. Participants will discuss about country, landscape characteristics and prepare outdoor walk with parts of important scientific elements and features about objects in the landscape. Activities will be supported by digital technologies.

Summer Camp Learning Plan

1. **Title of the Summer Camp:**

More than trip - outdoor STEM scientific activities

2. **Target Group (age, school type):**

15 – 18 years old, secondary vocational school pupils

3. **Venue:**

Town Nitra, CPU Campus, Secondary vocational school of tourism

Region Nitra: Arborétum Mlyňany – botanical garden

Region Trnava: Dropie - protected landscape area

4. **Transportation to the venue / digital access to the Summer Camp**

Bus to botany garden Mlyňany; distance Nitra – Mlyňany 30 km …	300€
Bus to protected area Dropie; distance Nitra – Dropie 70 km …	500€
Total	800€

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5. Subsistence:

50 persons for 4 days

11,60 € (according to Slovak law) subsistence per person per day	2 320 €
Material support for participants and activities	300 €
Total	2 620 €

6. Contact person for girls and their guardians:

Secondary female school teacher Mgr. Jarmila Čameková

7. Schedule:

day	1. block	2. block	3. block	4. block
1	CPU - introduction	CPU - lecture	CPU – indoor workshop	CPU – outdoor workshop with ICT support
2	BotG – interactive educational trail with ICT support	BotG – Water - terrain research workshop	BotG – Soil - terrain research workshop	BotG – Scientific excursion
3	Dropie – Scientific excursion		Dropie – Outdoor workshop	
4	Secondary school – students projects presentations		Secondary school - GEM project summer camp feetback	

8. Content:

1 day (Place: CPU in Nitra):

1. block – introduction of the GEM project, project partners and Summer camp learning plan, Icebreaking activities

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2. block – lecture on modern approaches in landscape research and their application in the field of tourism
3. block – indoor workshop focused on working with modern 3D applications of geographic information systems
4. block – Interactive outdoor workshop Landscape from a mathematical point of view. Assignment of student projects aimed at finding ways to modernize tourism using scientific methods

2. day (Place: Botany garden Arboretum Mlyňany):

1. block - interactive educational trail with ICT support focused on the world's dendroflora
2. block - terrain research workshop focused on the analysis of water quality and the impact of water pollution on landscape elements
3. block - terrain research workshop focused on soil quality analysis and the impact of soil pollution on landscape diversity
4. block - Scientific excursion – Applied research and development in the botanical garden

3. day (Place: Protected landscape area Dropie):

1. - 2. block – Scientific excursion - restoration (revitalisation) of natural values of the meadow landscape
3. - 4. block – Scientific excursion - practical examples of research activities aimed at the protection of meadow ecosystems

4. day (Place: Secondary vocational school of tourism):

1. - 2. block – Students projects presentations
3. - 4. block – GEM project summer camp feedback

1. Format of the activities:

Lecture, indoor workshop, outdoor workshop, scientific excursion, terrain research workshop, interactive educational trail with ICT support, student's projects

2. Expected learning outcomes:

Participants will learn about special research methods and forms: outdoor environment research: how to find appropriate landscape, how to scientifically observe the landscape, how to prepare the outdoor research protocol; how to collect samples for research for laboratory expertise; how to report about massive agriculture industry activities and their impact to landscape and to water quality; how to understand the landscape uniqueness suitable for research for popularisation the research and how to prepare the thematic walk for tourists with ICT and digital technologies

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support. The main idea is to get deep knowledge about informed European citizenship with focus to complex environment protection.

3. Presentation of hosting Higher Education Institution and lecturers:

Mgr. Jarmila Čameková - teacher of Geography, History and Tourism at the Secondary School of Tourism in Nitra, expert in the field of creating interactive educational trails with the support of ICT

Ing. Jarmila Králová, PhD. - Expert in the field of biology and ecology of denroflora. She is an employee of the Botanical Garden Arboretum Mlyňany in the position of public relations.

doc. Ing. Viera Petlušová, PhD. – expert in agrocenoses research and in the impact of agriculture on surface water quality

Mgr. Peter Petluš, PhD. – expert in soil research and in water erosion of soil modelling in agricultural land

Ing. Katarína Vajlíková – expert in the protection of meadow ecosystems and environmental education

Link of the Summer Camp support site: The link will be available until June 10th.

Additional information for the EC:
Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

The expected date of the summer camp is September 2021. We do hope that COVID-19 situation will be consolidated and safe and the summer camp will be organized face to face and in real circumstances.
If the situation will be not open for travelling for excursions and for visiting schools (university), the blended learning or online learning activities will be prepared adequately.

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P5 Norway: Norwegian University of Science and Technology (NTNU) GEM Summer Camp Learning Plan

The Norwegian GEM Team will not arrange a summer school this year because of the COVID-19 situation.

1. They are not allowed to invite people to the campus that do not belong here. (So, school students cannot come to us.)
2. They find it risky to mix students from different schools in the same room.
3. The tendency of COVID infected is increasing in Trondheim.
4. None of the GEM staff will be vaccinated before the end of the summer.

The plan was to do the summer school in end of June; that is when the school vacation starts. It is not actual during the rest of the summer vacation due to that the staff is on vacation and so are the students too. The staff at the university start the semester the week before the schools starts so they cannot have any summer school in august either.

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P6 Spain: University of Jaen (UJA) GEM Summer Camp Learning Plan

Summary of the summer camp:

60 girls from all around Jaén province will live an intensive week of exciting experiences inspired by 16 female scientists (mentors), who will welcome them in their own research projects, providing them with an immersion experience in cutting edge research topics, such as artificial intelligence for a better world, using social media data for making good decisions, the secret life of waste and new materials, microorganisms zoos and much more. The community of girls and female mentors will have plenty of opportunities to experience and discuss the social relevance of the research conducted by close role models and will share a wide range of activities, including outdoors visits to interesting natural places (the autochthonous flora garden), speeches by interesting female entrepreneurs (such as a designer of scientific jewellery) and playful interactive activities, where they will have the opportunity to communicate to each other and create something innovative together, expressing their full ICT and entrepreneurial potential. The scientific campus will finish with a final open-door congress, where the participating girls will present their projects to their family and the whole community and disseminate the experience through the media.

Summer Camp Learning Plan

1. **Title of the Summer Camp:**

Empowering girls to unveil their digital, entrepreneurial and STEM potential.

2. **Target Group (age, school type):**

Female students aged 14-18 years old.

3. **Venue:**

Facilities of the University of Jaén placed in the Campus de Las Lagunillas S/N, 23071 Jaén (Spain):

- Lecturing rooms
- Meeting rooms
- Labs
- Gardens

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4. **Transportation to the venue / digital access to the Summer Camp:**

Public transport and familiar vehicles, in some cases.

5. **Subsistence:**

Girls will receive a lunch pack every day, funded by the project.

6. **Contact person for girls and their guardians:**

Marta Romero Ariza mromero@ujaen.es and María Martín Peciña mmpecina@ujaen.es

7. **Schedule: 19. July-23. July 2021**

	19/07/2021	20/07/2021	21/07/2021	22/07/2021	23/07/2021
9:30-11:00	Interactive playful activities to build the UJA GEM network	The GEM gymkhana	Visit to the autochthonous flora garden. Designing scientific jewellery	Immersion in real research with mentors	Final Congress
11:00-11:30	Lunch	Lunch	Lunch	Lunch	
11:30-13:30	Immersion in real research with mentors	Immersion in real research with mentors	Immersion in real research with mentors	Preparing for the GEM congress	

In order to evaluate the impact of the GEM campus on the participating girls and mentors, questionnaires will be used before and after the experience with previous informed consent, along with case studies to get an in-depth view of the key issues taking place.

8. **Content:**

- Welcome: a fascinating world of professional women
- Technology, creativity and entrepreneurship for a smarter world

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- Getting to know each other: women that unveil their full potential and avoid gender gaps.
- Becoming part of an exciting research project with my mentor.
- Final congress: sharing experiences and passions.
- Farewell and evaluation
- Keeping in touch through the GEM network

9. Format of the activities:

The scientific campus is designed to challenge stereotypes and expose girls to role models (mentors) working on different scientific fields, including also females in leading positions and funders of innovative businesses based on their own entrepreneurial skills. During the camp, the girls will get to know two female entrepreneurs (an architect and a designer of scientific jewellery) from their own region and learn how they have used their professional background, creativity and capacities to change ideas into innovative processes and products.

The female role models will also share their personal experiences, discussing challenges they have encountered and how they solved it. In this line, we will include small "storytelling-units" in which the girls will be asked to talk about their personal sources of inspiration, their personal STEM/digital role model (if they already have one) or try to think of an inspirational female which would impress them. At the end of the scientific campus, each girl will get the chance to present her role model.

All the role models will be shared via our project website and social media channels and we will invite girls to spread them across the European GEM Network.

We plan to openly discuss perceived stereotypes with participating girls and thus make them aware of their existence and encourage them to challenge their own perceptions

In addition, some activities, are designed to promote critical thinking, presentation and communication skills, organizational skills, teamwork, enthusiasm, self-motivation, tolerance, open-mindedness and, which is especially essential for digital education, media literacy.

As a whole, we offer a range of communicative, playful, interactive and experiential activities respecting safety measures in order to avoid accidents and COVID-19 spread.

10. Expected learning outcomes:

Through the engagement in the GEM summer camp the participating girls will:

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- Become aware of fascinating professional activities led by women.
- Take part of a research project in collaboration with a mentor.
- Acquire digital skills related to the use of technical devices for data collection and data management.
- Develop creativity and decision-making skills related to the participation in a constructive project.
- Develop digital skills related to the use of ICT for the presentation and communication of research results.
- Develop their identity in scientific research and/or STEM professional fields.

In this way, the GEM summer camp in Spain will contribute to the project's objectives and promote:

- Girls with knowledge of inspiring role models and their meaning
- Girls with knowledge about the STEM/digital world of work
- Girls with entrepreneurial mind-sets
- Girls with transversal skills

11. Presentation of hosting Higher Education Institution and lecturers:

The University of Jaén (UJA) is a medium size public university created in 1993 that is in the Top 50 of the world's best young universities according to THE (Times Higher Education) and the first Spanish University concerning the United Nations Sustainable Development Goals. This position is due to its commitment to efficient, clean and affordable energy, its remarkable contributions to high quality and inclusive education and decent work, and the reduction of social inequalities, with special emphasis on reducing gender gaps. Besides, the UJA has received the distinction of Campus of International Excellence in the fields of Climate Change (CamBio) and Agrifood (CEIA3) among other areas, and has been awarded with EFQM seal of Excellence with the qualification of 500+ and the 'Human Resources Excellence in Research Award' while aligning their human resources policies to the 40 principles of the Charter & Code.

UJA permanently welcomes new foreign students https://web.ujaen.es/serv/vicint/ and new research proposals as part of a conscious effort to increase its international profile and widen both its knowledge and its horizons https://www.ujaen.es/servicios/ofipi/project-experience

Within a modern and well-equipped campus, the Faculty of Humanities and Educational Sciences offers graduates and post-graduate studies for primary and secondary school teachers addressing societal needs and last trends in education, with a special focus on innovative and inclusive pedagogies such as inquiry-based science education, socio-scientific issues and the promotion of education for sustainable development through active environmental citizenship.

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In the GEM scientific campus, 16 female brilliant scientists leading relevant research lines in different fields of knowledge will act as mentors sharing their personal and professional background with the girls and offering them an immersion experience into their current research work. The following mentors and research projects will be offered:

Mentor	Project
Maite Martín Valdivia Flor Miriam Plaza del Arco Pilar López Úbeda	Artificial Intelligence for a better world
Carmen Martínez García	Discover the secret life of waste and take care of your planet
Rosa María Rodríguez Domínguez	Acquiring data from social media for decision-making
Maria Ángeles Verdejo	Smart networks for energetic transmission: caring about society and the environment
Dolores Victoria Ruiz Garrido	Towards inclusive and sustainable cities.
Gema Parra Anguita	What do wetlands hide? Finding out cryptic biodiversity through digital images.
Fátima Aguilera Padilla	Is pollination at risk? study of the production and viability of pollen grains
Mª José Grande Burgos	Microbiological Zoo
María Aranda López	Z generation and the socialization in the digital era: gender-based attitudes and prevention of sexism
Belén Agrela Romero	Research from the gender perspective on issues of social intervention. When the personal matters
Beatriz Montes Berges	Are young people now more sexist? New expressions of sexist attitudes
Rocío Bolaños Jiménez	Fluid Mechanics: unraveling the mysteries of bubbles, drops and other surface tension phenomena
María José del Jesús Díaz María Dolores Pérez Godoy	Analyzing information with artificial intelligence techniques: application to medicine and protection of natural species.

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Link of the Summer Camp support site: https://gem-esp.eu

Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

In other circumstances, we could have welcomed more participants, work in larger groups and try to accommodate girls in the campus, in order to let students from farther away areas, to participate in the summer camp. As a consequence of the health situation, girls will spend only 4 h a day participating in the summer camp, operating mainly in small groups and keeping always the safety measures.

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P7 Greece: Ethniko Kai Kapodistriako Panepistimio Athinon (NKUA) GEM Summer Camp Learning Plan

Summary of the summer camp:

The summer camps will address only girls 13-15 years old. It will be held online for three days from 9.00 to 15.00 every day. The girls will be divided in three groups. A mentor will be responsible for each group as regards the educational part of the camp (e.g., activities, structure of sessions, materials, etc.) while another colleague will be responsible for the communication with parents / guardians for all organization issues. The girls will be involved in STEM labs based on activities addressing at least two STEM fields. The activities will be adapted to diverse levels and profiles including connections to women's contribution to STEM fields and favoring the girls' reflections on their own educational and professional path. With these activities, we aim to (a) introduce the girls to featured STEM fields and corresponding professional spaces, (b) inform girls about women's contribution to scientific domains, and (c) improve girl's self-confidence in their abilities related to STEM.

Summer Camp Learning Plan

1. **Title of the Summer Camp (national language):**

Ενθαρρύνοντας την ενασχόληση των κοριτσιών με τα γνωστικά αντικείμενα STEM (Encouraging girls' engagement with the subjects in STEM)

2. **Target Group (age, school type):**

12-15 years old, lower secondary education.

3. **Venue:**

Online platform (zoom or webex).

4. **Transportation to the venue / digital access to the Summer Camp:**

5. **Subsistence:**

6. **Contact person for girls and their guardians:**

Co-funded by the European Union

There will be one contact person on behalf of the team responsible for the communication with parents/guardians concerning all issues of organization. Mentors will also be available to communicate with girls (one for 10 to 15 girls) as regards their participation in the summer camp.

7. Schedule:

The program is divided into three learning zones. The first two zones will include three STEM laboratories in which all the teams will be involved. The STEM labs will be adapted to various levels and profiles (e.g., age, school grade, special needs & interests) of the participating girls. The daily program will be organised as following: opening/welcome, first learning zone (lab), small break, second learning zone (lab), lunch break, last learning zone (lectures by women scientists, video screenings, discussion panel, presentation of labs outcomes etc.). The program will be completed in three days and will last from 9.00 to 15.00 every day.

8. Content and format:

Most of the activities address at least two STEM fields, where one of these fields is (or might be) more dominant than the others. The activities have different formats, such as problems describing real-life situations, games, programming, professional oriented problems, experiential and interactive activities, etc. For instance, one activity concerns girls' engagement in exploring the construction of stairs emphasizing different aspects such as geometrical (e.g., height, length, slope), architectural (e.g., plan view, safety) and engineering ones (e.g., electrical elevator). Another activity concerns girls' engagement in programming through Scratch and game design while a third one concerns girls' involvement in exploring the DNA helix through manipulatives and digital tools. Moreover, all the activities will be followed by reflections on women's role and self-projection of the girls in the related domains (studies, potential professional careers, etc).

9. Expected learning outcomes:

Through these activities, we anticipate the participants to:

- acquire a significant knowledge about STEM fields and make connections between them,
- explore some possible STEM professions in WoW,
- get involved in competitive projects and to develop team working spirit,
- realise that many women have excelled in STEM domains,
- gain confidence in their abilities and believe that they have their own place in STEM world,
- apply their school knowledge to new contexts related to STEM.

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10. Presentation of hosting Higher Education Institution and lecturers:

The National and Kapodistrian University of Athens (NKUA) is a public university with 33 departments, 2.100 academic staff members and about 40.000 undergraduate students. The Department of Mathematics has about 1.200 undergraduate students and 44 academic staff members with a variety of academic expertise (e.g., Statistics, Algebra and Geometry, Analysis or Didactics of Mathematics). The department offers a variety of courses but there are two main directions in the teaching program, pure and applied mathematics, and there are three specializations (Computational mathematics, Statistics and operational research and Mathematics education). Members of the Mathematics Department serve in the board of the Greek Mathematical Society and participate in scientific committees of the Ministry of Education, the body responsible for educational policy, for curriculum and textbook development. Every year the Mathematics Department admits 250-300 undergraduate students. About half of them will follow a teaching career after their studies while other continue their professional careers and further studies in STEM-related areas (e.g., finance, programming, big data analytics). Additionally, there is a Master's programme in Mathematics Education that is attended by many in-service and pre-service mathematics teachers. There are several research collaborations with other European universities through e.g. Erasmus+. Consequently, the Mathematics Department has strong relations with various bodies and groups of stakeholders in Greece and abroad and this could support project's dissemination and sustainability.

Department webpage: https://en.math.uoa.gr/

NKUA webpage: https://en.uoa.gr/

We plan to have some lectures, one panel discussion and mentoring by women from a variety of disciplines, to provide advice to girls as they plan for their future, to get to know "the woman behind the scientist," and to be inspired by their personal stories. For instance, Dr. Marina Sagnou holds a PhD in Medicinal Chemistry and works as an associate researcher at the Institute of Biosciences and applications (IBA) of NCSR "Demokritos". She has worked intensively in the area of design, synthesis and biological evaluation of novel small organic molecules, natural products or organometallic complexes with potential target-specific pharmacological properties. Some areas of potential application of such designed molecules involve diagnosis and/or therapy of breast and ovarian cancer as well as diagnosis of Alzheimer's disease. Another lecturer is Mrs. Aspasia Georgakopoulou who is mechanical engineering with a master of science in sustainable energy futures. She has been working in energy infrastructure projects leaded by industrial and research organisations and companies.

Link of the Summer Camp support site: http://scholar.uoa.gr/gpsych/GEMSummerCamp2021

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Additional information for the EC:
Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

Due to barriers posed by COVID-19 it was decided the summer camp to take place online.
The activities we have planned for the camp with physical presence we modified so as to align with the online communication. For instance, activities involving manipulatives have been replaced by digital ones while group work is planned to take place in workout rooms within the online platform.

P8 Czech Republic: Charles University (CUNI) GEM Summer Camp Learning Plan

Summary of the summer camp:

Lab Technology and Everyday Life Consumption

We offer girls to recognize in detail with things of personal consumption they can meet in everyday life. They can use labs and appropriate technologies i.e., sensors for measuring and for recognizing principles and processes connected with food, cosmetics, washing means etc. They can use different lab approaches, technologies, devices, and analytical means. This will attract girls for STEM through their main interest about daily used products.

They can discover through own lab activity during the summer camp:

- content of “healthy” and “unhealthy” food products,
- what are differences between winter and summer skin creams,
- active parts of washing means,
- how to replace traditional products by more nature-friendly means and procedures,
- and many other interesting things, phenomena, and procedures.

Summer Camp Learning Plan

1. **Title of your Summer Camp:**

Lab Technology and Everyday Life Consumption

2. **Target Group (age, school type):**

Girls in age 12 – 16, second level of elementary school and lower level of 8-years grammar school

Co-funded by the European Union

3. Venue:

Faculty of Education Charles University. Lecture and seminar rooms and labs at Department of Chemistry and Chemical Education.

Co-funded by the European Union

4. **Transportation to the venue / digital access to the Summer Camp:**

By city transport or by train/bus from surrounding of the Prague.

Digital access by MS Teams and/or ZOOM in ownership of Faculty of Education CUNI.

5. **Subsistence:**

The canteen in building of Faculty of Education CUNI (snacks and drinks in breaks, lunches).

6. **Contact person for girls and their guardians:**

RNDr. Katerina Chroustova, Ph.D. – katerina.chroustova@pedf.cuni.cz

Prof. PhDr. Martin Bilek, Ph.D. – martin.bilek@pedf.cuni.cz

7. **Schedule:**

3 days activity: first day: invitation and afternoon sessions; second day: morning and afternoon sessions; third day: morning sessions and farewell

8. **Content:**

Set of activities oriented to recognize in detail with things of personal consumption we can meet in everyday life. It means to use labs and appropriate technologies i.e., sensors for measuring and for recognizing principles and processes connected with food, cosmetics, washing means etc. To use different lab approaches, technologies, devices, and analytical means.

Short theoretical introductions and own lab activities will focus to discover:

- content of “healthy” and “unhealthy” food products,
- what are differences between winter and summer skin creams,
- active parts of washing means,
- how to replace traditional products by more nature-friendly means and procedures,
- and many other interesting things, phenomena, and procedures connected with means od daily consumption.

9. **Format of the activities:**

Short lectures for introduction of analysed phenomena or substances.

Workshops in labs contenting activities with sensors, analytical devices, and lab synthesis.

Co-funded by the European Union

Discussions with experts working in area of science/chemistry research (mainly women).

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the European Union

10. Expected learning outcomes:

To recognize the principles of everyday life products and their preparing, using and recycling

To try different lab procedures

To receive experience from scientific activities

To gain orientation in procedure to how to become a scientist

11. Presentation of hosting Higher Education Institution and lecturers:

Presentation of Department of Chemistry and Chemical Education – research and study.

Presentation of research work of cooperating scientists (by topic of summer camp: analytical chemistry, bioorganic chemistry, biochemistry, food technology, and toxicology).

Presentation of Vernier.cz company (sensors and lab equipment).

Link Summer Camp support site: https://pages.pedf.cuni.cz/kch/vyzkum/resene-projekty/gem/

Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

We don't have applicants till now. Czech schools were closed during main part of school year and the instruction was based on distance form. They are starting step by step now, in second half of May 2021, and school year (2020-21) will finish at end of June. The new school year will start hopefully in presence form in September. We will start to prepare application process in June 2021. Till end of June we will decide about date and form of summer camp (estimated date is end of August or September).

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P9 Sweden: School of Education and Communication (HLK) GEM Summer Camp Learning Plan

Summary of the summer camp:

The name of our Summer camp in Jönköping is Teknikkollo. The purpose of Teknikkollo is to inspire young people to technology, give technical self-confidence and, in the longer term, contribute to a well-thought-out high school choice. Sweden needs a lot of manpower with technical skills going forward and we must all contribute to this! In addition, Sweden needs to level the gender-segregated labour market.

The participants will be on camp at Upptech in 4 days, Monday - Friday at 10-15. Upptech is a Science Center in Jönköping and is in cooperation with Jönköping University in several ways. A total of 48 participants in three weeks. We mainly target girls between 12-15 years, but boys are also welcome, subject to availability.

The participants will be taught by experienced young instructors working at the Science Center on the evening courses we usually conduct in spring and autumn. The instructors are in technical education at university. The instructors have adequate knowledge and are good at teaching. As an instructor at Upptech, a continuous coaching from a university lecturer is included.

In Teknikkollo we will teach in programming, 3D modelling, 3D printing and use laser cutters as well as several maker moments with electronics as well as programming robots. Our idea is that we teach basics, show possible prototypes they can try to make but that their interest and curiosity will make them later develop their own products based on their own ideas. The whole process is the instructors there and lead them to progress. We will program with Microbits and build products controlled by Microbits. The participants are encouraged to create complex products where they use knowledge from several different new technologies they learned during the week. We have a lot of materials, tools, and knowledge so there are great opportunities to pursue their production ideas. The instructors also serve as good role models for choosing technology and science education. They talk about their experiences, feelings and thoughts about the technology and contexts they have come in contact. In the end of the week they are going to create a simple video to show what they accomplished during the week.

Teknikkollo is free for the participants and they are all allowed to bring a lot of thing home in the end of the camp, etc Microbit. This camp will hopefully be a unique experience of science and technology with other young people. Our idea is that it should not end with the camp but that a genuine interest in technology develops.

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Summer Camp Learning Plan

1. Title of your Summer Camp:

Teknikkollo 2021

2. Target Group (age, school type):

Girls born in 2008 – 2006.

3. Venue:

We arrange our Summer camp at Jönköping Science Center, named Upptech. There is located 1 km from Jönköping University.

4. Transportation to the venue / digital access to the Summer Camp:

Upptech is in the middle of Jönköping and it´s easy to walk, bicycle or take a bus to join the Summer Camp.

5. Subsistence:

The Summer camp is inside at the Science Center daytime in 4 days. The participants receive lunch.

6. Contact person for girls and their guardians:

Linda Samuelsson

Business manager KomTek, Upptech

+46761198463

Linda.samuelsson@jonkoping.se

7. Schedule:

Each group is at the camp from 10.00 - 15.00 for 4 days. Teknikkollo is in progress for week 24, 25 and 26. Hopefully 2 groups every week.

Co-funded by the European Union

8. Content:

We will teach programming, 3D modelling, 3D printing and use laser cutters as well as several maker moments with electronics as well as programming robots. Our idea is that we teach basics, show possible prototypes they can try to make but that their interest and curiosity will make them later develop their own products based on their own ideas. The whole process is the supervisors with and just the wrists. We will program with micro bits and with the help of motor boards we can build products controlled by micro bits. Participants are encouraged to make complex products where they use knowledge from several different new technologies they learned during the week. We have a lot of materials, tools, and knowledge so there are great opportunities to pursue their production ideas.

9. Format of the activities:

There will be a lot of reviews including teaching, instructions and inspiration. But also, a lot of workshops, tinkering and making. Thanks to the small groups it will hopefully be a co-creation.

10. Expected learning outcomes:

The purpose of teknikkollo is to inspire young people to technology, provide technical self-confidence and, in the longer term, contribute to a well-thought-out high school choice. Sweden needs a lot of work force with technical skills going forward and we must all contribute to this! In addition, Sweden needs to level the gender-segregated labour market.

This camp will hopefully be a unique experience of science and technology with other young people. Our idea is that it should not end with the camp but that a genuine interest in technology develops.

11. Presentation of hosting Higher Education Institution and lecturers:

Jesper Boesen, Associate Professor, Associate Dean Cooperation

Director of the Research Environment, Practice based Educational Research

School of Education and Communication

JÖNKÖPING UNIVERSITY

PHONE +46 (0)36 10 15 30

SMS +46 (0)709 70 69 68

Adam Starck,

Operations manager, Upptech

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+46 (0)3610 66 78
adam.starck@jonkoping.se
Linda Samuelsson
Business manager KomTek, Upptech
+46(0)761198463
Linda.samuelsson@jonkoping.se
and
University Lecturer, Jönköping University
Linda.samuelsson@ju.se

Link of the Summer Camp support site:

https://ju.se/samarbeta/samarbeta-med-forskare/gem.html

https://upptech.se/komteks-fritidskurser/teknikkollo-2021-pa-upptech.html

Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

Company visits cannot be carried out in view of the spread of Covid- 19, but we hope that we can show short good films from several technology companies so that the participants get a broadened view of what it means to work with technology. Our original idea was to visit ex Prototal which has great additive prototype manufacturing. The aim had then been for the participants to see different technology environments out at real companies that relate to programming and 3D printing, which we worked with during the first days at Teknikkollo.

We can't make high school visits either, but we hope to come up with some digital variant that can help participants understand what it can be like to attend an industrial program.

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P10 Cyprus: University of Nicosia (UNiC) GEM Summer Camp Learning Plan

Summary of the summer camp:

The purpose of the summer camp is to engage girls in Cyprus with STEM activities, with an emphasis on understanding the role of STEM, and especially the entrepreneurial potential of the field. More than 12 female scientists, science communicators and educators have worked together to develop interactive activities around the topic of "Colours". The girls, in small groups will have the opportunity to learn about colours and their importance from the perspective of science, mathematics, technology, engineering and the arts and will collaborate on producing final products and present them. They will also have the opportunity to work with female scientists, do a field trip at an environmental centre and prepare their own digital advertisements to promote their products.

Summer Camp Learning Plan

1. **Title of your Summer Camp:**

Empowering girls to understand their role in STEM – Colors Uncovered

2. **Target Group (age, school type):**

12-14 year old girls

3. **Venue:**

University of Nicosia and Athalassa National Park in Nicosia. At the University of Nicosia we will use teaching classrooms, labs and outdoor facilities.

4. **Transportation to the venue / digital access to the Summer Camp:**

Parents will be asked to transport students to the venue.

5. **Subsistence:**

Free lunch and snacks will be provided, funded by the project

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6. Contact person for girls and their guardians:

Maria Evagorou Evagorou.m@unic.ac.cy

7. Schedule:

The summer school will take place from June 22nd until June 25th 2021. The overall schedule will be as shown below:

Day 1: **Introduction and the science of colours**

9-10: Introduction to the summer school and ice breaking activities

- Draw a scientist activity and share it with the rest

10-11.15 am: Break

11.15 – 1.00 pm: Group Work

- Making giant bubbles: Students will form groups and will be asked to make giant bubbles that can fit a person inside.
- They will be asked to observe the bubbles in terms of colors, consistency and size.
- Discussion on how bubbles are formed and what makes the colors on the bubbles iridescent.
- Discussion and group work on light and colors.

1.pm - 1.30 pm: Lunch Break

1.30pm – 3 pm: The science of iridescent colors

- The students will work in groups in the science lab mentored by a female scientist to understand the science behind iridescent colors.
- Students will experiment with materials to create their own iridescent colors.

Day 2: Colors in the environment – Visit to National Part and environmental center

9-10: Introduction to the activity, field study and tools

- Students will be introduced to the problem: what is the role of colors in the environment and where can you spot iridescent colors in the National Park.
- Students will be introduced to field study rules and the technological tools that they will use during the field study.

10-11.15 am: Break

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11.15 – 1.00 pm: Group Work

- Field study
- Presentation of findings and discussion of findings with female scientists

1.pm - 1.30 pm: Lunch Break

1.30pm – 3 pm: The science of colors in nature:

- Discussion with female scientists on the mechanisms of birds and bugs relating to the science of colors
- Using materials from the environment to produce colors and discuss the technology of materials.

Day 3: Using colors in the lab and the mathematics of colors

9-10: Introduction to lab work and lab rules

- Students will visit the Human Biology and Technology labs at the University of Nicosia and will learn about basic rules and the technologies and tools that are available for them to use (i.e. 3D printer, stop motion animation, lab equipment)

10-11.15 am: Break

11.15 – 1.00 pm: Group Work

- How do we use colors in lab work? Using indicators and change color as a way to see changes
- Introducing the role of women in STEM through an interactive presentation of history of STEM
- The role of mathematics in STEM
- Interview with a female scientist

1.pm - 1.30 pm: Lunch Break

1.30pm – 3 pm: Group work

- Preparation of final project: Make use of what you learned about colors and STEM to create and promote a product that has to do with colors.

Day 4: Entrepreneurial skills in STEM

9.00pm- 1pm: During the last day the students will work in their groups in order to prepare the final project.

1.00-1.30pm: Lunch Break

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1.30 – 4.30pm: Presentation of final project

8. **Content:**

- Introduction to STEM
- Picture a scientist activity (students draw how they imagine a scientist and can write a story of a scientist's everyday life as they imagine it - this will serve as a way to identify stereotypes - we can revisit this activity at the end of the week to see what changed.
- Introductory activity: What is colour and how does in relate to STEAM? Influence by - http://openstemresearch.org/steam-colors-of-nature/)
- Introducing colours in biology and environmental sciences (i.e. adaptability in animals – field trip to national park)
- Chemistry, colours and arts
- Optics and colours
- Technology, science and colours (3D printing, e-fabrics and robotics)
- Work in a lab with a female scientist:
    - Which blood type are you?
    - Grow your own cells in the lab
- Interview with a scientist: the students will interview a female scientist and then get to know what she is doing in her professional and personal life (i.e. visit the lab).
- Watch the a newly released movie (https://www.pictureascientist.com) together with female scientists and discuss. The movie is describing women in science

9. **Format of the activities:**

The activities are designed based on the project-based approach. During the first day of the summer camp the girls will be presented with the question: What are colours, why are these important and how can we use our knowledge about colours to produce a product that we could sell for profit? Following this overview question, every day the groups will be presented with more specific questions (i.e. how can we help an animal change their colour to adapt in an environment? How can we produce different colours of paint with materials from the environment? How can we build a kaleidoscope using materials in the class?). By the end of each day the students will have to work in their groups collaborating with a female scientist in order to solve each one of the problems, produce a product and find a way to promote their product. During the final day each group will revisit the original question and will try to produce a product and promote it. The female scientists that will work with us will be the judges.

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Furthermore, we will work on reflective activities to explicitly talk about the role of women in STEM, the stereotypes and how to empower women working in science.

10. Expected learning outcomes:

1. Understand women's role in STEM and engaging in discussions on how to challenge stereotypes
2. Appreciate the difficulties of doing STEM in the field
3. Make the connection between STEM and the world of work
4. Understand that STEM practices are interconnected
5. Appreciate the role of group work in the STEM fields
6. Develop entrepreneurial skills and mind sets
7. Develop critical thinking, communication skills, team work, self-motivation
8. Develop digital and media literacy skills

11. Presentation of hosting Higher Education Institution and lecturers:

The University of Nicosia (UNIC) is the largest university in Cyprus, with over 11,000 students, from over 70 countries across the globe. UNIC is an independent, co-educational, equal opportunity institution of higher education, which offers a wide range of programmes to students from around the world. The University through its six Schools (Medical School, School of Business, School of Education, School of Humanities and Social Sciences, School of Law and School of Sciences and Engineering), offers a large number of graduate and undergraduate programmes in business, science, medicine, education, Law and the liberal arts and Distance Learning programmes. The University pursues excellence in education through research and high teaching standards, in a continually improving academic environment. Research at the University of Nicosia focuses on a variety of global and local issues, including health, complex networks, social organisation, education, ICT, engineering, and environmental sustainability. Our researchers examine contemporary challenges from a wide range of perspectives, including technological and scientific advances, and modern culture and thought. They apply their expertise, derived from addressing local, regional and national concerns, to key issues with global impact; and develop teams to bring disciplinary strengths together to approach such issues. Cutting edge research is carried out in the areas of Educational Technology, Virtual and Augmented Reality, and Artificial Intelligence and Machine Learning. The University, through its participation in projects, either as partner or coordinator, has developed a wide base of knowledge and expertise in terms of both research output and project management. The Department of Education employs 13 full-time faculty and offers degrees in Primary and Preprimary Education, Masters' degrees in Education (with 8 specializations), and PhD in

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Education. It has links with several pre-primary and primary schools with which it collaborates on several projects. The Department of Education currently has over 5500 students enrolled and around 28% of its student population are non-Cypriots, something which makes it a multicultural institution where diversity and pluralism are valued.

Maria Evagorou, Associate Professor in Science Education

Andri Vrioni, STEMFreak Center, expert in enterpreunership

Myrtani Pieri, Assistant Professor in Human Biology

Stella Nicolalou, Assistant Professor in Human Biology

Olia Tsivitanidou, Physics Educator

Maria Nicolaou, Physics Educator

Liza Pitri, Associate Professor in Arts

Agni Stylianou, Associate Professor in Learning

Link of the Summer Camp support site: http://www.girls4stemcyprus.com

Additional information for the EC:

Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

Normally the summer camp would be longer in duration with more participants. However, due to the current restrictions and protocols we cannot have more than 12 students in each class. Therefore, we will have a smaller participation than expected.

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P11 Lithuania: Vilnius University (VU) GEM Summer Camp Learning Plan

Summary of the summer camp:

36 (12–14 years old) girls will participate in a 4-day summer school "Smart city 2021". The girls will visit the smart home demonstration center, get acquainted with smart home projects and think about their mini-project ideas. Smart house and smart city elements will be developed and programmed in order to reach the intended aims, such as, ecological greenhouse solutions, house and streets safety and comfortable/easy control. Smart house and smart city topics will be presented as complex real-life problems that cannot be solved by a simple algorithm. Mini projects will be implemented by small groups/pairs and later merged into one or two projects depending on participants' choices. The girls will present their mini-projects to the summer school community and parents. During the school, playful educational activities will be implemented developing girls' algorithmic thinking, creativity and programming skills. The girls will meet with the executives of TeachLeadTeach company and Business Machinery Company to get acquainted with the activities of the companies and the success stories of the managers. Along with the help of mentors, the girls will describe their impressions in an article about summer school. The article will be published on the project dissemination page and in girls' schools.

Summer Camp Learning Plan

1. **Title of your Summer Camp:**
„Smart city 2021"

2. **Target Group (age, school type):**
Female students aged 12-14 years old.

3. **Venue:**
Vilnius University, Faculty of Philosophy, Universiteto str. 9.
Computer classes, Audiences for presentations, meetings.

4. **Transportation to the venue / digital access to the Summer Camp:**
The girls will come to the summer school on their own with public transport or will be accompanied by their parents / guardians.

5. **Subsistence:**
The girls will receive a lunch and all the necessary tools for the activities every day, funded by the project.

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6. Contact person for girls and their guardians:

Asta Meškauskienė asta.meskauskiene@fsf.vu.lt ; Aušra Kynienė ausra.kyniene@tfai.vu.lt

7. Schedule:

Monday, August 16	
13.00 – 13.30	Registration
13.30 – 14.00	„Welcome to STEM world"
14:00 – 14:45	Let's meet. Students, Institute of Educational Sciences, Vilnius University
14:45 – 16:45	Education activity in the smart home demonstration center. https://www.jung.de/
17.00 – 18.00	„How to live more comfortably?", Arduino prototypes demonstrations.
Tuesday, August 17	
10:00 – 12.00	Design thinking and distribution by groups. Starting with Mini projects ideas.
12:00 – 13.00	*Lunch*
13.00 – 13:20	A success story. Daiva Viskontienė, BMC general director https://bmk.lt/
13:20 – 13:40	A success story. General director Teachers Lead Tech
14:00 – 15:00	Education activity in Vilnius university architectural ensemble
15:10 – 18:00	Arduino programming. Idea visualization. Posters: prototype actions algorithms and prototype construction.
Wednesday, August 18	
10:00 – 12:00	Continuing with prototypes constructions and bringing solutions into action.
12:00 – 13:00	*Lunch*
13:00 – 15:00	Testing products.
15:00 – 18:00	Scottie - Go programming game. UAB Business machinery company https://bmk.lt/
Thursday, August 19	
10:00 – 12.00	Final project presentation and summary. Discussions and Reflection.
12:00 – 13:00	*Lunch*
13:15 – 14.45	Education activity in Teachers Lead Tech https://www.teachersleadtech.com/en/
15:00 – 16:00	School closure – „See you later".

8. Content:

The content of the school's activities includes min projects with Arduino, meetings with business representatives, games developing algorithmic thinking and programming skills.

9. Format of the activities:

Main activity: Exploring ecology and automatisation solutions for safety and comfortable life using Arduino-set and sensors.

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Focus on competences: Problem solving; Collaboration; Creativity; Communication; Critical thinking; Digital fluency.
School format: day school

10. Expected learning outcomes:

- Girls will acquire and deepen their knowledge in the field of STEM sciences;
- Girls will acquire problem-solving, collaborative, critical and informative thinking skills. Become more creative thinking "outside the box";
- The girls will get acquainted with business leaders, their meaningful success stories, motivating to become leaders, to create a better world. Girls will gain knowledge about future professions related to digitization.

11. Presentation of hosting Higher Education Institution and lecturers:

Mentors and lecturers	Activities
Prof. Valentina Dagienė	Welcome to STEM world
Dr. Anita Juškevičienė	„How to live more comfortably?", Arduino prototypes demonstrations. Design thinking and distribution by groups. Starting with Mini projects ideas. Arduino programming. Idea visualization. Posters: prototype actions algorithms and prototype construction. Continuing with prototypes constructions and bringing solutions into action Testing products.
Dr. Aušra Kynienė Dr. Asta Meškauskienė	Education activity in the smart home demonstration center. Education activity in Vilnius university architectural ensemble
Gintarė Rimšaitė Rūta Kairytė Mindaugas Navickas Tomas Čerba	Educational games that develop programming skills, algorithmic thinking, creativity, collaboration

Link of the Summer Camp support site: https://www.fsf.vu.lt/mokslas/projektai/tarptautiniai-projektai/europos-komisijos-programos?layout=edit&id=2937=empower-girls-to-embrace-their-digital-and-entrepreneurial-potential-gem

Additional information for the EC:

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Please, write in short about your problems and difficulties of the implementation of your Summer Camp in 2021 under the COVID-19 circumstances.

- What would you have planned in your Summer Camp under normal circumstances and what do you plan to do instead.

The summer school could invite girls from other regions of Lithuania, but due to the pandemic situation we cannot do that. Also, due to the pandemic situation, visits to technological business centers and companies, scientific laboratories are impossible.

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