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Girls4STEM

ORGANIZING STEM ACTIVITIES FOR GIRLS

Josette Farrugia
Vincent Jonker

GEM Empower Girls to Embrace their Digital and Entrepreneurial Potential

Co-funded by the European Union

ICSE International Centre for STEM Education

- collecting and sharing your best-practice strategies to support girls in STEM & ICT
- raising awareness about the diversity in STEM

- **1h4GirlsinSTEM** Josette Farrugia, Vincent Jonker "Organizing Out of School STEM Activities for Girls“
- **1h4GirlsinSTEM** Silvija Markic “Educators as Supporters in Career Guidance for Girls in STEM” February 28
- **1h4GirlsinSTEM** Lucy Avraamidou “Self-Identification in Science and Self- Efficacy “ April 28

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Empowering Girls to Embrace their Digital and Entrepreneurial Potential

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THEORETICAL STARTING POINTS

PEDAGOGICAL APPROACH FOR EMPOWERING Girls4STEM

Starting Points

- Inquiry-based learning
- Socio-scientific issues
  - Energy transition, sustainability, waste problem, …
- Avoid activities that resemble classical old-school STEM practices
- Safe learning environment
  - Feeling of belonging
- Female role models in the workplace
- Growth mindset!

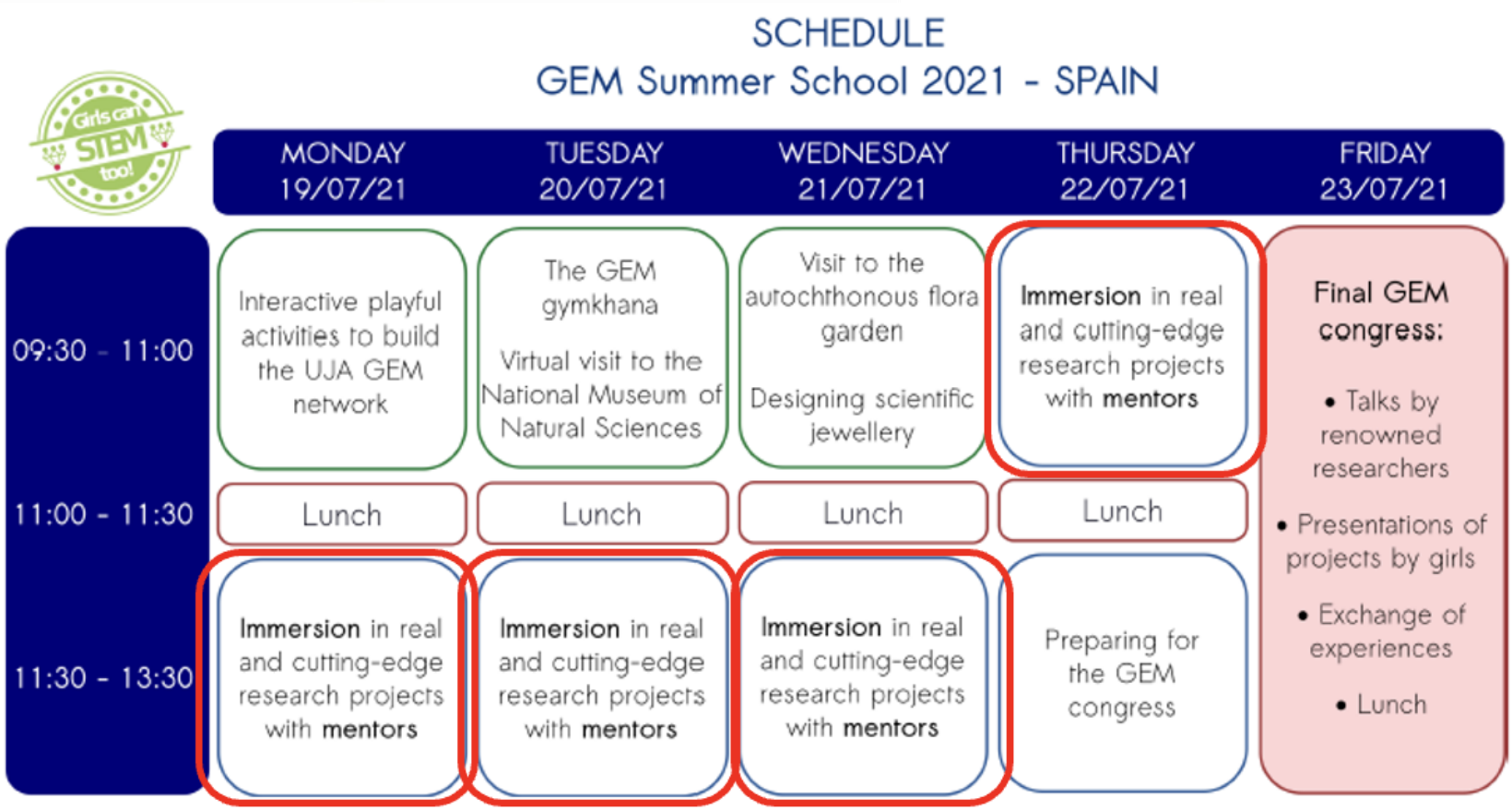
Content of Activities

- Open activities with a lot of inquiry
- Visit a workplace with a female scientist
- Female lecturers give hands-on workshops

Roadmap for Organization

- Involve universities/universities of applied science
- Involve national organizations already tuned to the gender in STEM issue
- Make sure you have a ‘regional embedding’ (schools, institutes) in your initiative
- Take a year for all preparations

Schedule Example



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ORGANIZING SUMMER SCHOOLS: OUR EXPERIENCES

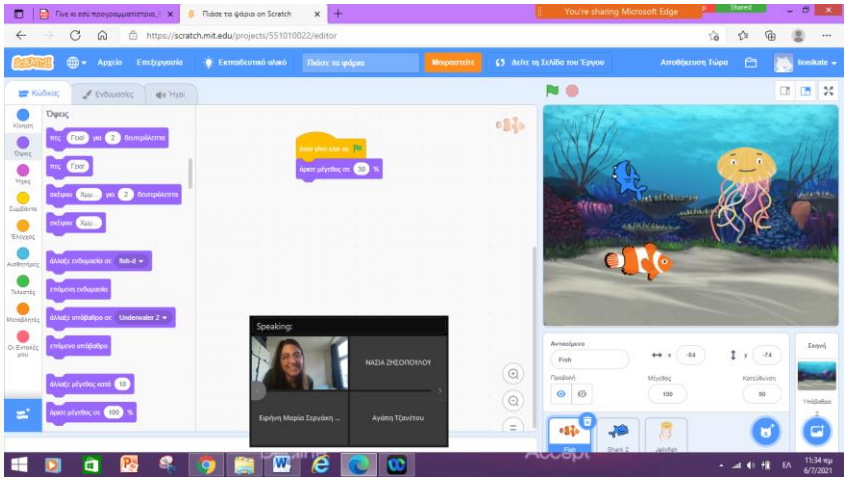
PEDAGOGICAL APPROACH FOR EMPOWERING Girls4STEM

Approaches

- Most of the summer camps focused either on a particular theme such as
  - colour (CY),
  - designing digital escape rooms (DE),
  - lab technology and every-day life consumption (CZ) and
  - exploring automisation solutions for safety and comfort using Arduino (LT) or
- included a number of stand-alone activities targeting different desired outcomes (MT, SK, GR, SE, ES) with some of the activities running over a number days.

Activities

- Trips
- Outdoor activities
- Meetings with female STEM professionals
- Shadowing female scientists at work
- Hands-on activities including those done on-line
- Workshops
- Laboratory work
- Coding
- Work through which girls could solve problems, try out ideas, design and collaborate on the given tasks.



STEM Learning Taking Place

- science content learning such as electromagnetism, human power or DNA;
- mathematics such as mathematics in architectural structures;
- computational thinking and programming skills;
- problem-solving;
- hands-on practical skills

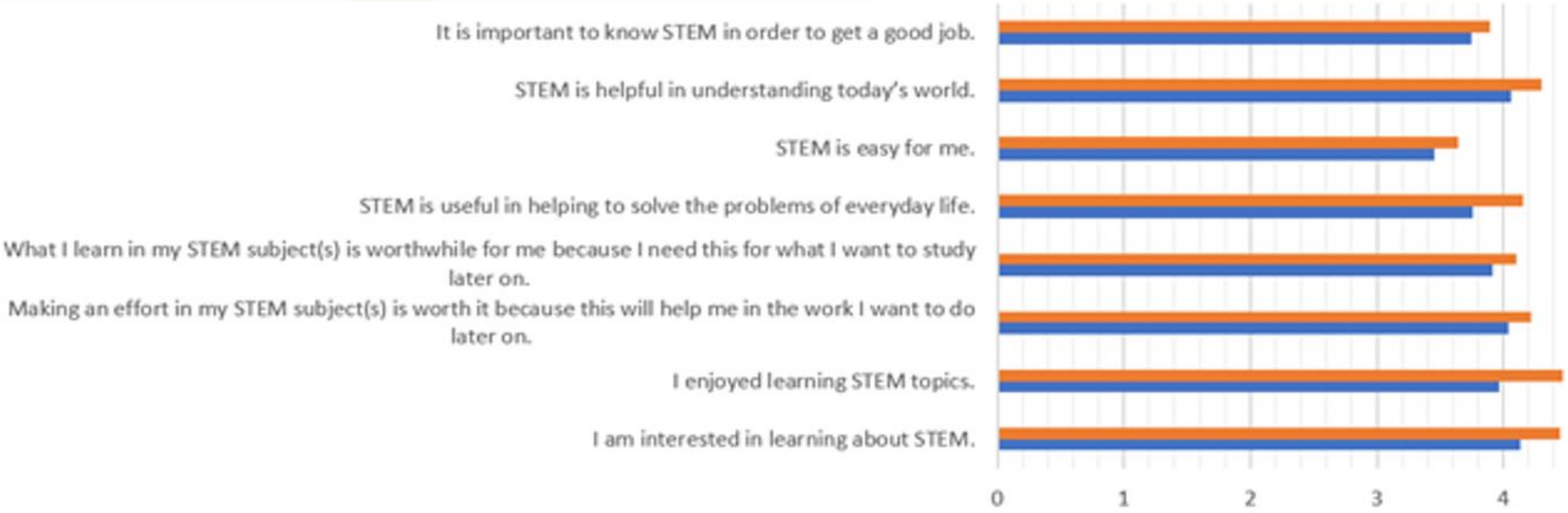
Other Learning

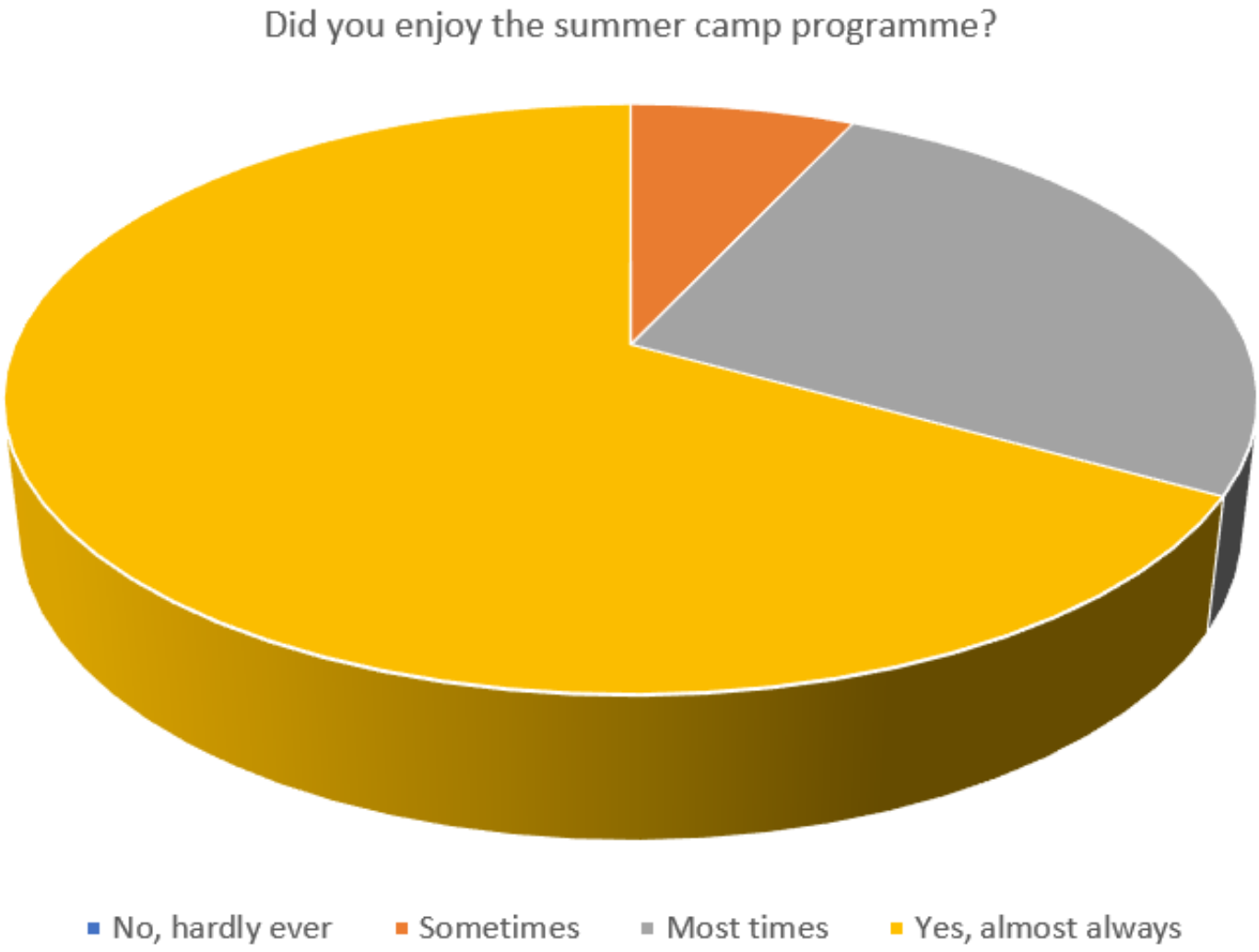
- Entrepreneurship
- Contributions of women to STEM
- STEM-related stereotypes
- Learning was taking place while participants were enjoying themselves doing fascinating things.
- Development of soft skills

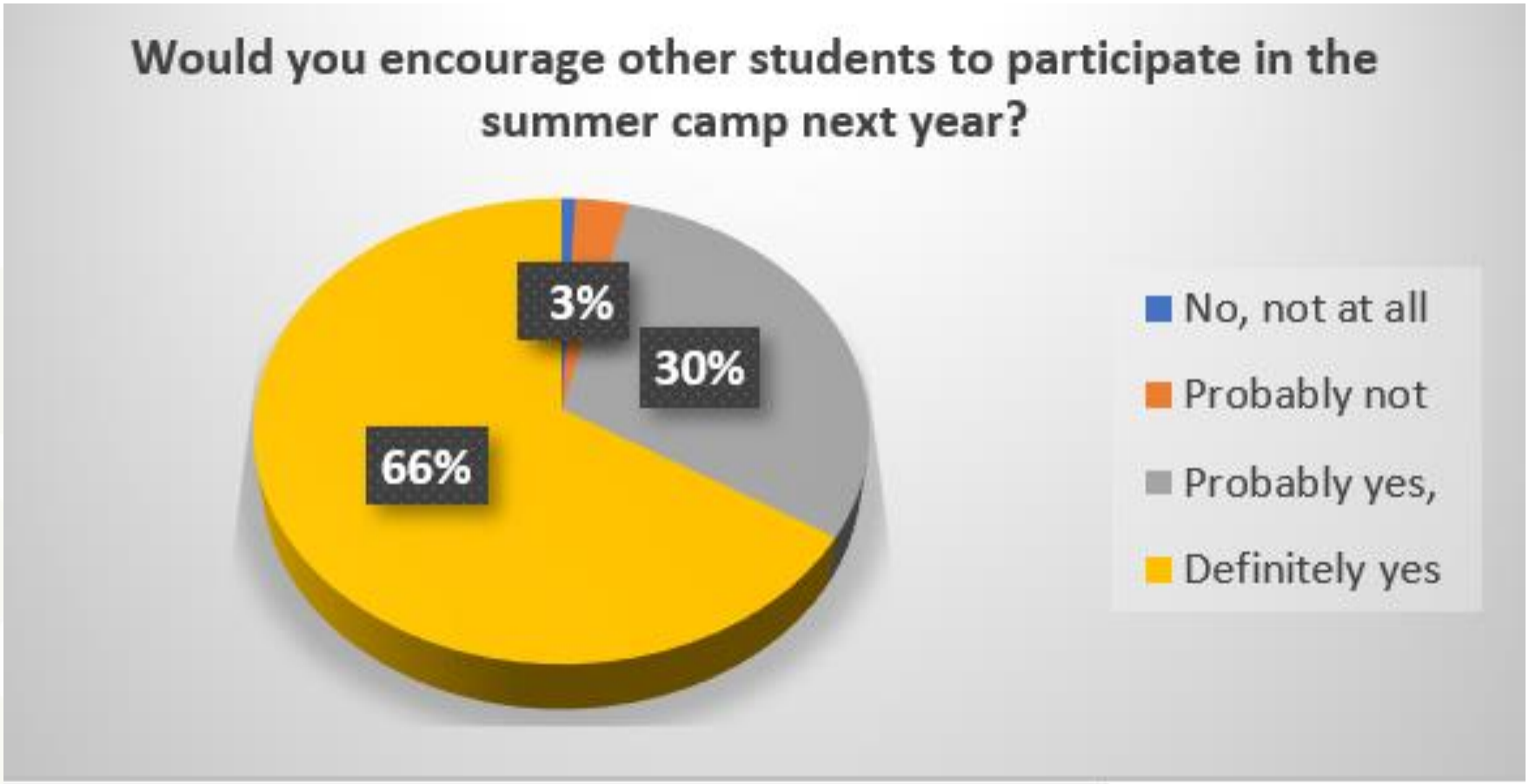
Evaluation

- Who are the students participating in the summer camp?
- What are their attitudes towards science and STEM?
- Did their views and attitudes change after participating in the summer camp?
- What do students have to say about their experience in the summer camp?

Students' Attitudes to STEM




Did you enjoy the summer camp programme?
No, hardly ever
Sometimes
Most times
Yes, almost always


Would you encourage other students to participate in the summer camp next year?
3%
30%
66%
No, not at all
Probably not
Probably yes,
Definitely yes

Lessons Learnt

- Selecting a driving problem
- Importance of the wow factor
- Using existing networks
- Make STEM learning accessible
- Self-efficacy
- Role models
- Mentors
- Supportive environment

Other Points

- Need for further financing of such initiatives.
- Need for policy makers to create space for possible mentoring programmes or mentoring summer schools.
- Higher Education institutions are in a good position to offer these events.

Discussion

- STEM activities for mixed groups or girls only? What age?
- What are the criteria when you choose the target group?

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EVALUATION

- https://www.surveymonkey.de/r/C3SKBG3


thank you