# Diversity, Equity, and Inclusion in Computer Science and Beyond

## Keynote and Workshop




Dr Anna Szlavi (PhD, MEd) – Johannes Kepler University, Austria

# Why?



# women in society

# 51%

Eurostat (2024)



# women in STEM-majors

# 33%

Eurostat (2024)



# women in IT-sector

# 19%

Eurostat (2024)



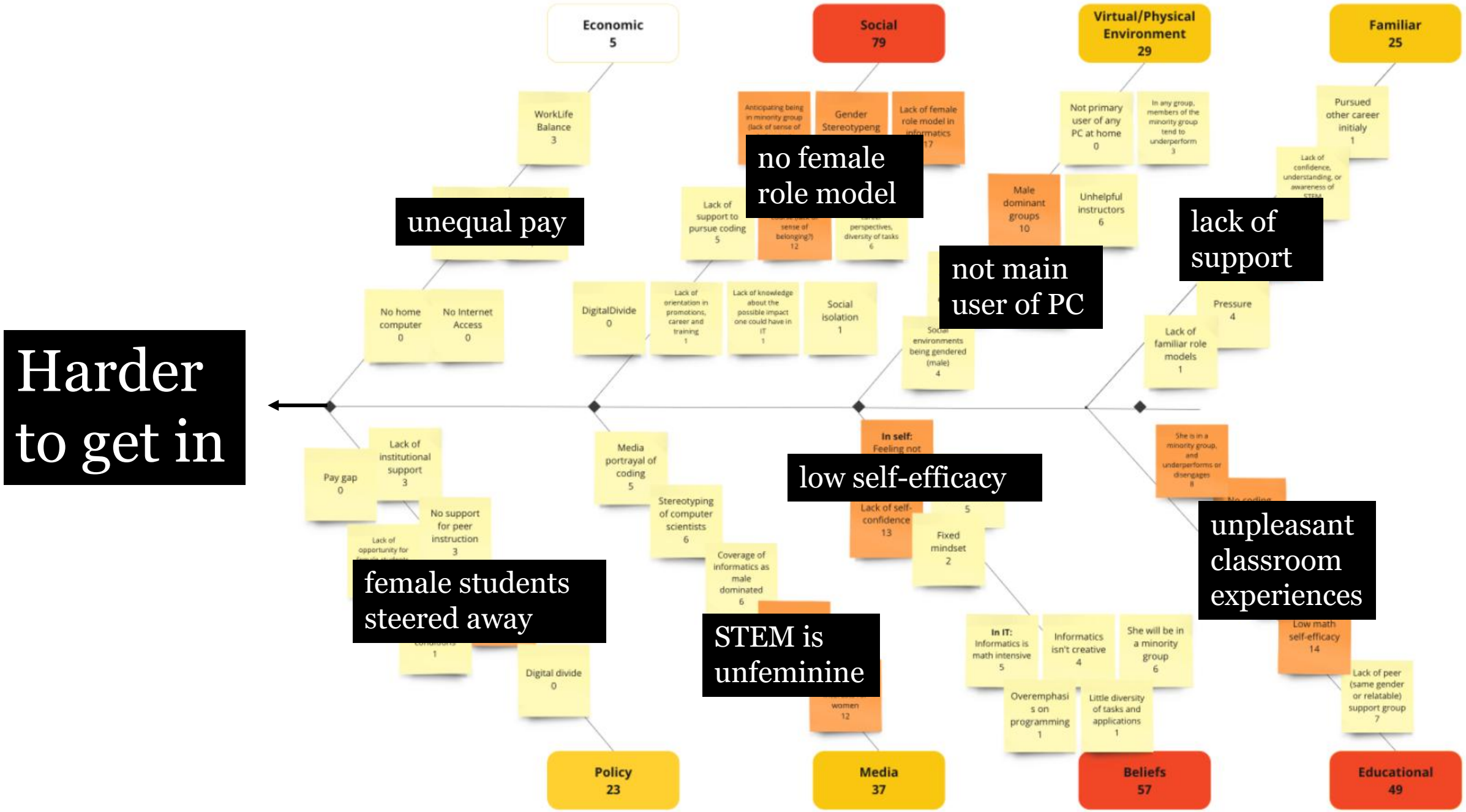
4 software engineers

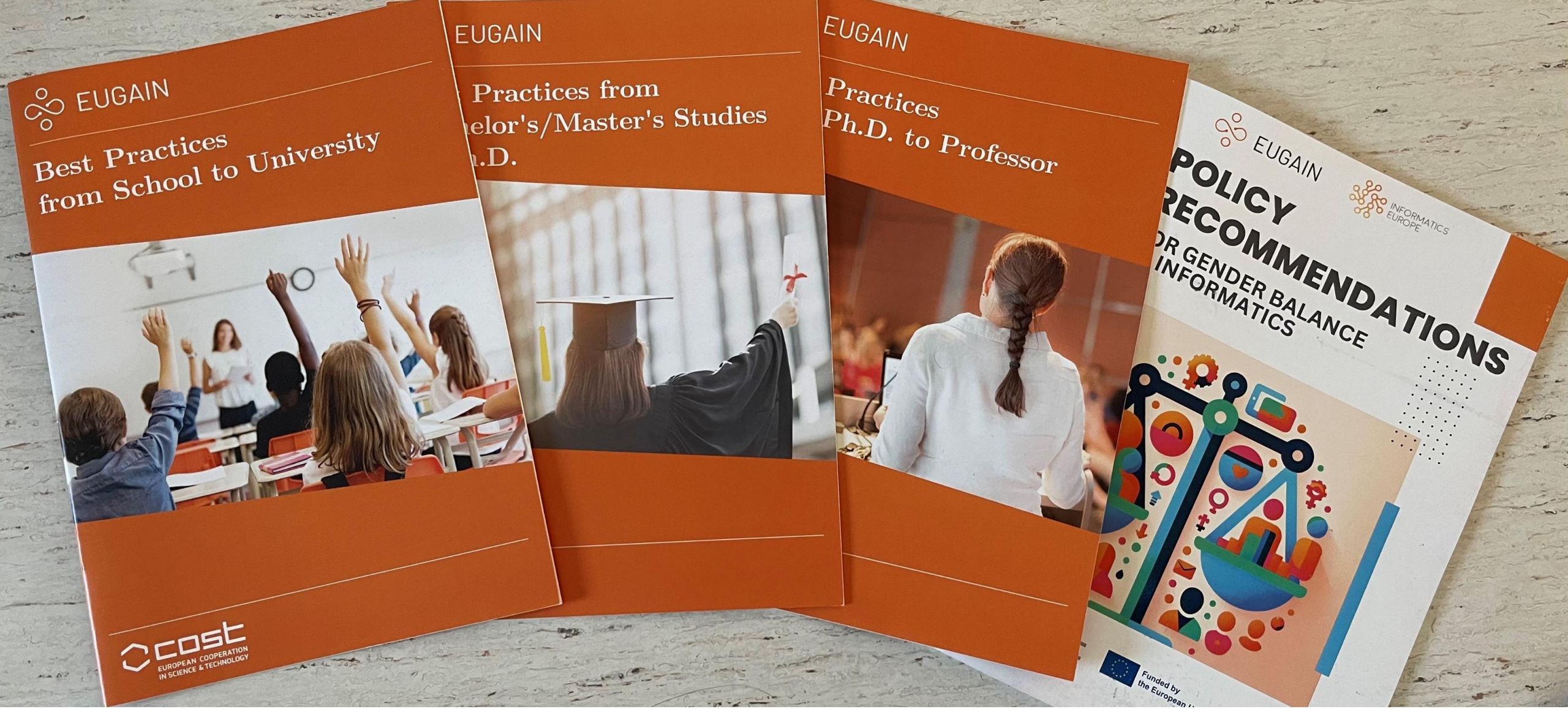
# OpenAI

# Barriers



What are women's **main barriers** in CS?


Harder to get in
Economic 5
Social 79
Virtual/Physical Environment 29
Familiar 25
WorkLife Balance 3
unequal pay
Gender Stereotypeng
Lack of female role model in informatics 17
no female role model
Not primary user of any PC at home 0
In any group, members of the minority group tend to underperform 3
Pursued other career initialy 1
Lack of confidence, understanding, or awareness of STEM
Male dominant groups 10
Unhelpful instructors 6
not main user of PC
lack of support
Lack of support to pursue coding 5
perspectives, diversity of tasks 6
No home computer 0
No Internet Access 0
DigitalDivide 0
Lack of orientation in promotions, career and training 1
Lack of knowledge about the possible impact one could have in IT 1
Social isolation 1
Social environments being gendered (male) 4
Pressure 4
Lack of familiar role models 1
In self: Feeling not
low self-efficacy
She is in a minority group, and underperforms or disengages 8
Pay gap 0
Lack of institutional support 3
No support for peer instruction 3
female students steered away
Media portrayal of coding 5
Stereotyping of computer scientists 6
Coverage of informatics as male dominated 6
STEM is unfeminine
Lack of self-confidence 13
Fixed mindset 2
unpleasant classroom experiences
In IT: Informatics is math intensive 5
Informatics isn't creative 4
She will be in a minority group 6
Overemphasis on programming 1
Little diversity of tasks and applications 1
Low math self-efficacy 14
Lack of peer (same gender or relatable) support group 7
Digital divide 0
Policy 23
Media 37
Beliefs 57
Educational 49


EUGAIN
Best Practices
from School to University
cost
EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY
EUGAIN
Practices from
elor's/Master's Studies
.D.
EUGAIN
Practices
Ph.D. to Professor
EUGAIN
POLICY
RECOMMENDATIONS
INFORMATICS EUROPE
OR GENDER BALANCE
INFORMATICS
Funded by
the European

EUGAIN

# Tools



What are the tools to increase **sense of belonging**?

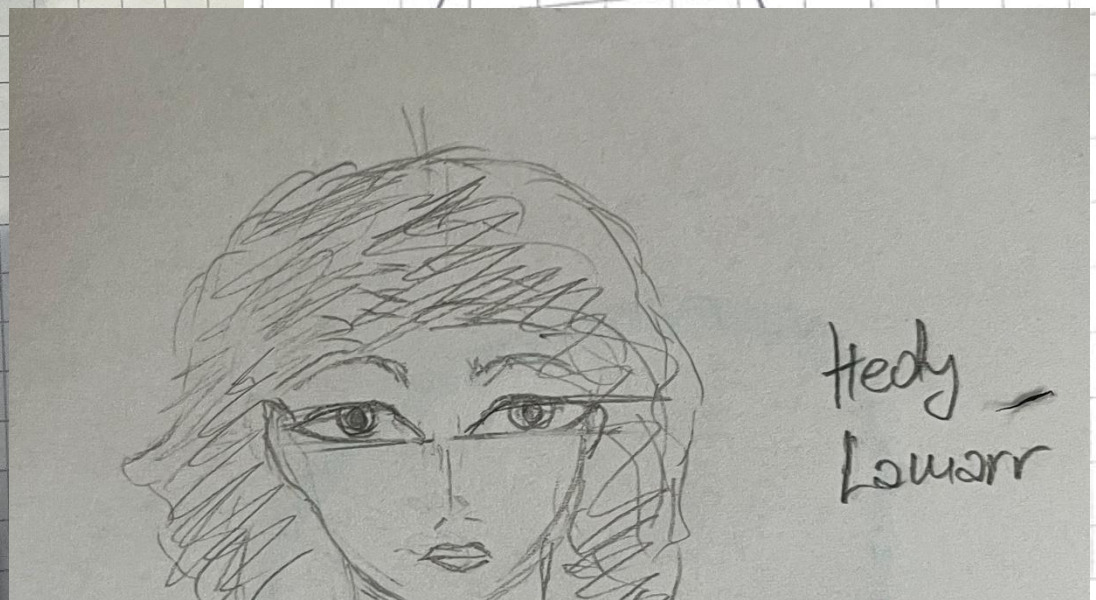
1

# Role models challenge stereotypes.

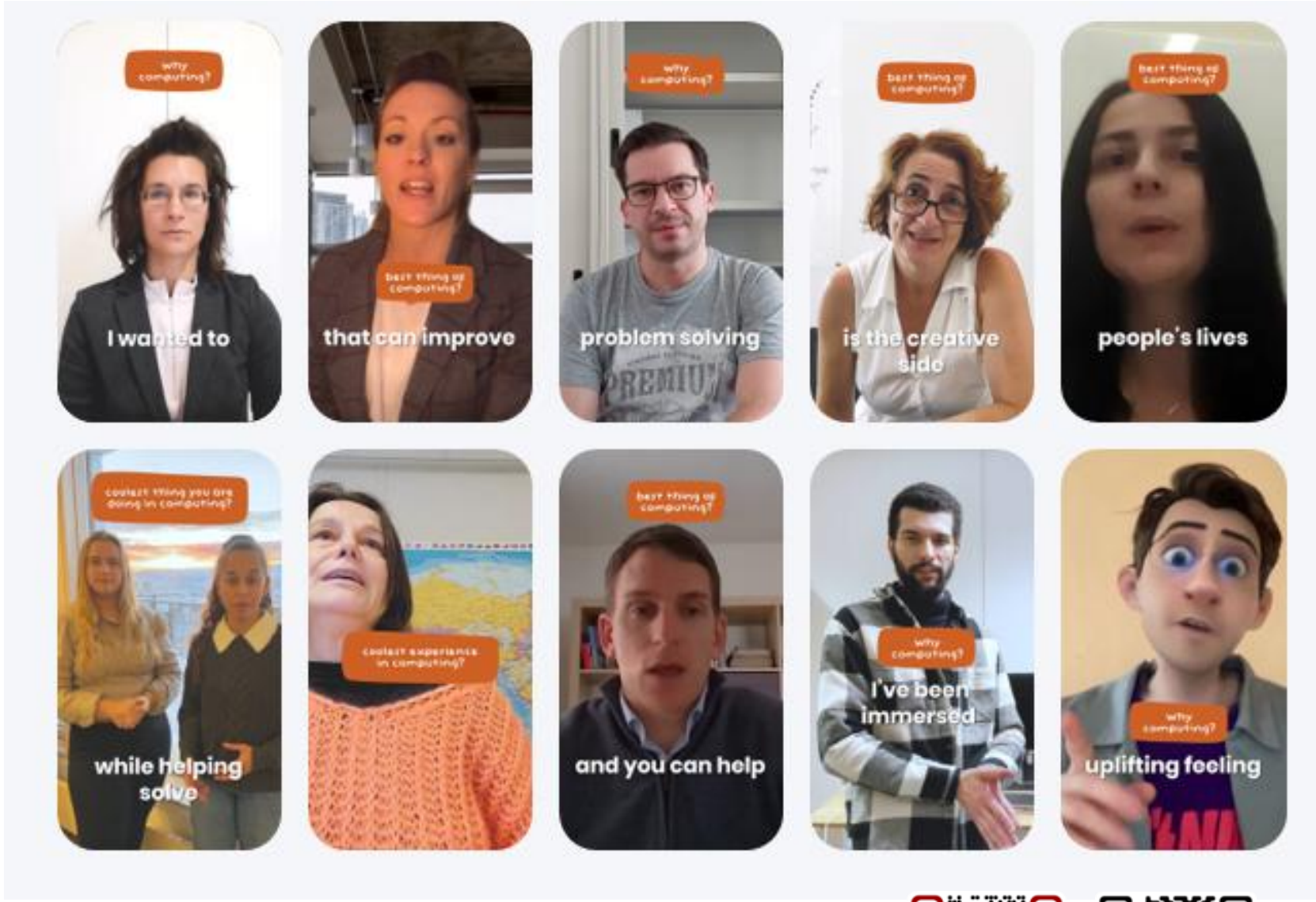







| Role Model | Count |
|---|---|
| Marie Curie | 62 |
| Ada Lovelace | 21 |
| Rosalind Franklin | 15 |
| Katherine Johnson | 5 |
| Hedy Lamarr | 5 |
| Lise Meitner | 4 |
| Maryam Mirzakhani | 4 |
| Kalpana Chawla | 3 |
| Dorothy Vaughan | 2 |
| Grace Hopper | 2 |
| Jane Goodall | 2 |
| Mileva Marić | 2 |
| Antonela Tommasel | 1 |
| Angela Bitte-Nemling | 1 |
| Rosa Vásquez Espinoza | 1 |
| Julieta Fierro | 1 |
| Ekaterina Schulmann | 1 |
| Aleksandra Prokopenko | 1 |
| Aleksandra Arkhipova | 1 |
| Marietta Chudakova | 1 |
| Pratiwi | 1 |
| Rebecca Brady | 1 |
| Dr. Martina Seidl | 1 |
| Dr. Anna Szlavi | 1 |
| Charlie Young | 1 |


why computing?
I wanted to
best thing of computing?
that can improve
why computing?
problem solving
best thing of computing?
is the creative side
best thing of computing?
people's lives
coolest thing you are doing in computing?
while helping solve
coolest experience in computing?
best thing of computing?
and you can help
why computing?
I've been immersed
why computing?
uplifting feeling

EUGAIN

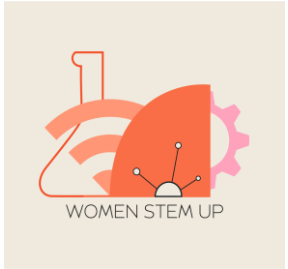
2

# Mentoring provides support and a reference point.



# Mentoring Throughout the Professional Lifecycle

Girls in Tech




KARRIERE MENTORING
LINZ SALZBURG KREMS

**K-12**

**university**

**professional**

# Guide to setting up a mentoring program for women in STEM

Co-funded by the European Union

LINKÖPING UNIVERSITY

UNIVERSITY OF THESSALY

NTNU
Norwegian University of Science and Technology

STIMMULI
for social change

WOMEN STEM UP

**Women STEM UP** Project Number: **2022-1-SE01-KA220-HED-00008623**

# Training packet for mentors

WO
ME
N

Co-funded by

LINKÖPING UNIVERSITY

UNIVERSITY OF THESSALY

NTNU
Norwegian University of Science and Technology

STIMMULI
for social change




# How to Design and Run a Mentoring Program? - Expectations

Unlisted

## Mentoring Resources

Women STEM UP - 7/7

4 How to Design and Run a Mentoring Program? - Relation type
Women STEM UP

5 How to Design and Run a Mentoring Program? - Duration
Women STEM UP

6 How to Design and Run a Mentoring Program? - Matching
Women STEM UP

▶ How to Design and Run a Mentoring Program? - Expectations
Women STEM UP

All | For you | Recently uploaded



3

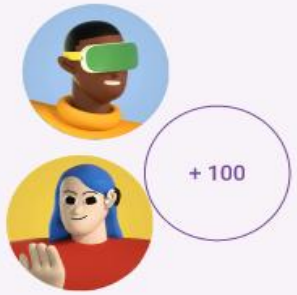
# Networks help resilience.

DiversIT

Community Articles About Log in

# Meet your intersectional network in tech

## Connect with peers who can help




Build an intersectional peer community. Connect with fellow tech students or fellow tech professionals across organisations.

Sign up to access

## Discover topics you care about



Join discussions, ask questions, and have conversations with people.

Social Leadership Tech Mentoring

## Grow you knowledge

Save interesting topics and threads to your own private collections.

Saved 10+



Keep track of threads you are participating in.

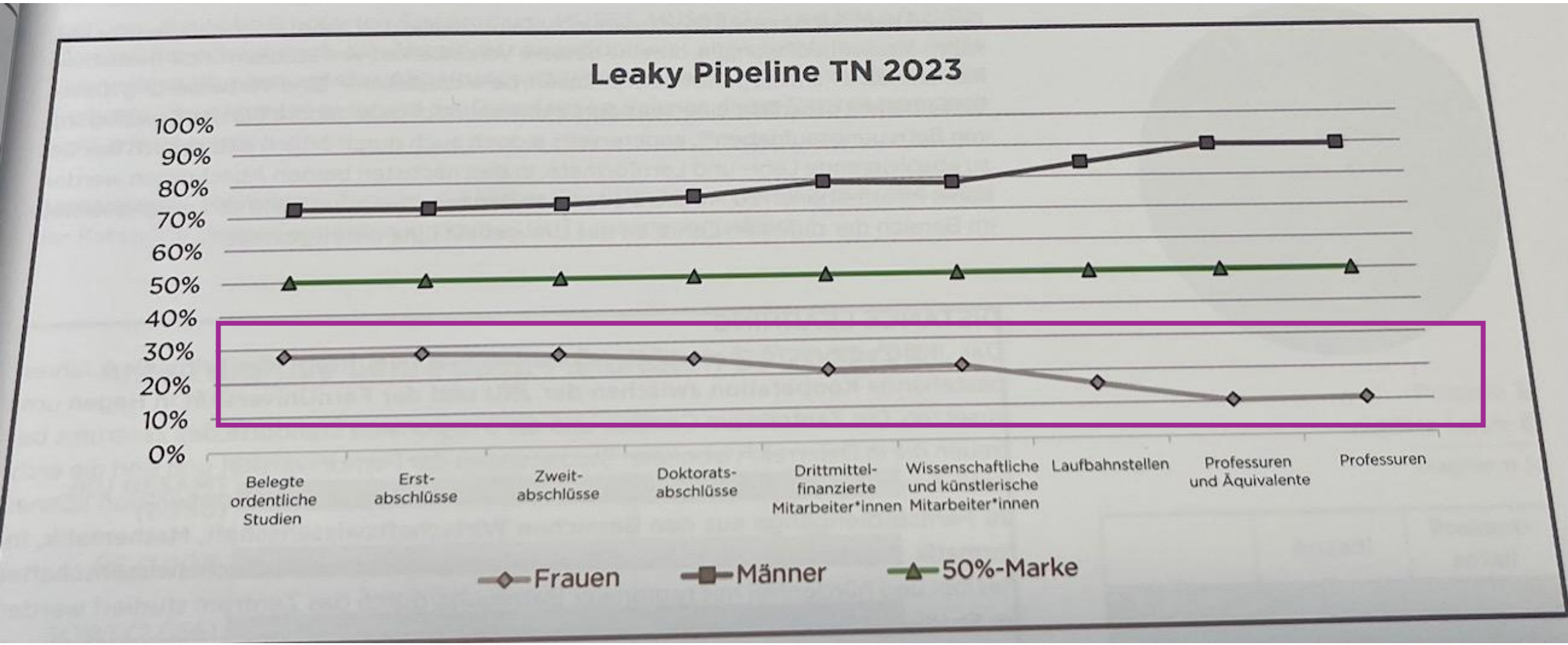
Your prompts 5



**You are also a support network for each other.**



# Case Study

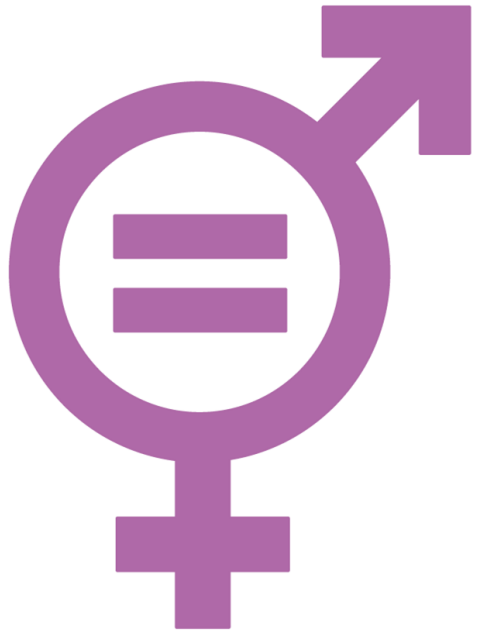

Leaky Pipeline TN 2023
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Belegte ordentliche Studien
Erst-abschlüsse
Zweit-abschlüsse
Doktorats-abschlüsse
Drittmittel-finanzierte Mitarbeiter*innen
Wissenschaftliche und künstlerische Mitarbeiter*innen
Laufbahnstellen
Professuren und Äquivalente
Professuren
Frauen
Männer
50%-Marke

# Compulsory Gender Course

for all students in STEM

JOHANNES KEPLER
UNIVERSITÄT LINZ

GENDER
EQUALITY



# themes

**Gender stereotypes in STEM**

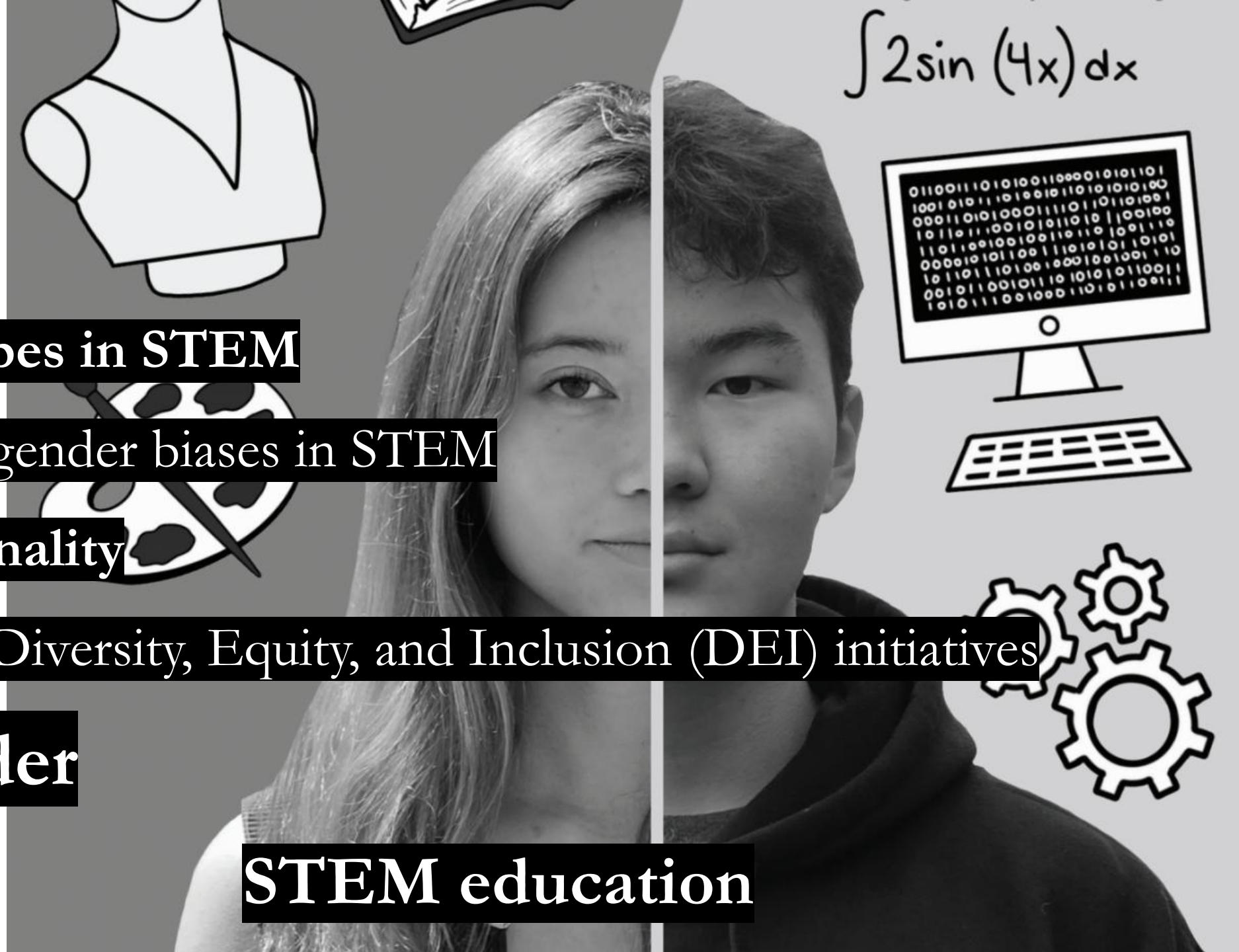
gender biases in STEM

**Intersectionality**

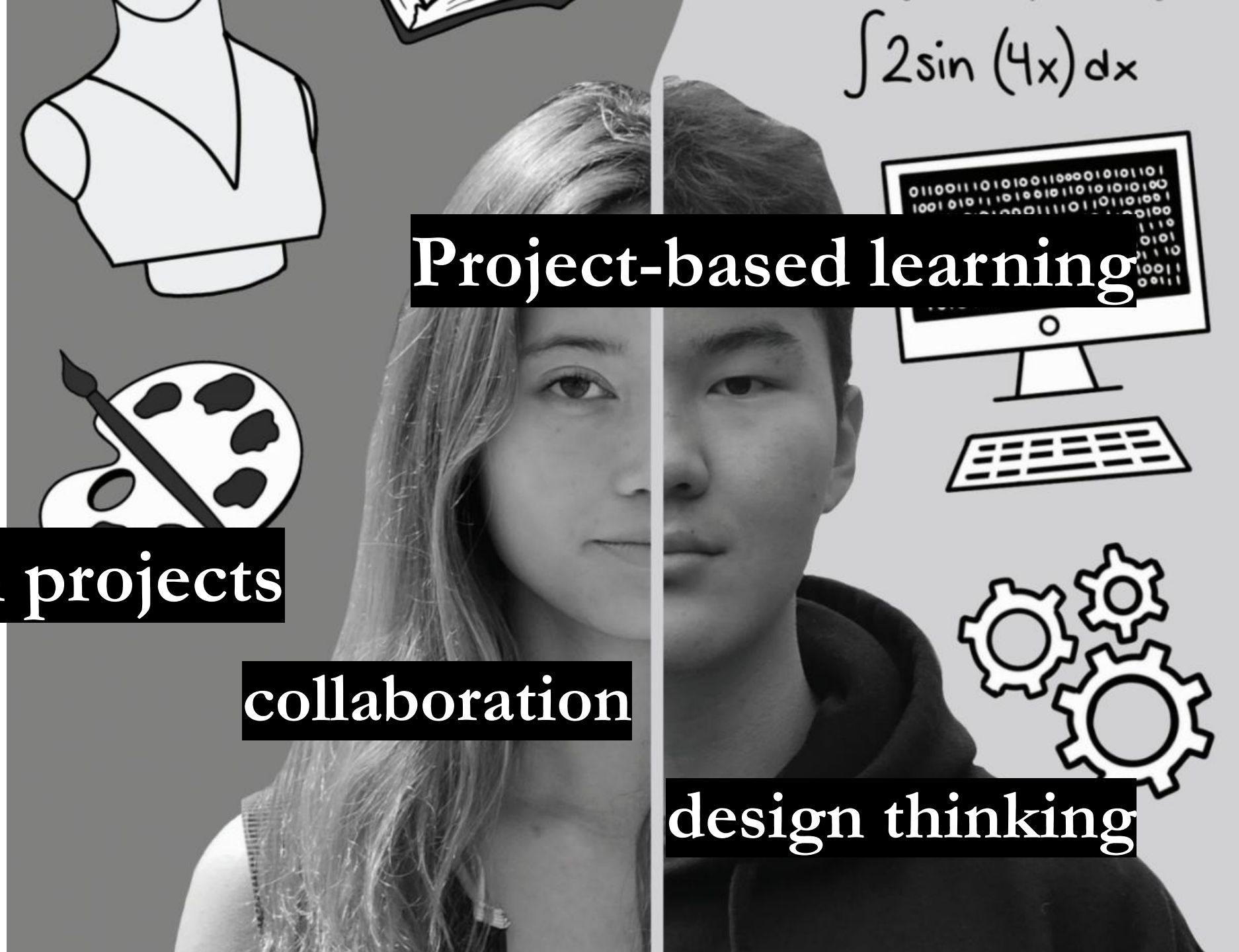
Diversity, Equity, and Inclusion (DEI) initiatives

**AI and gender**

**STEM education**



# activities




Project-based learning

intervention projects

collaboration

design thinking

# What kind of interventions did students design and implement?

1

**Digital Interventions**

Social Media Campaigns

Websites

2

**Interventions on Campus**

Posters/Infographics

Brochures

Stickers

3

**Interventions in Schools**

Workshops

Trainings

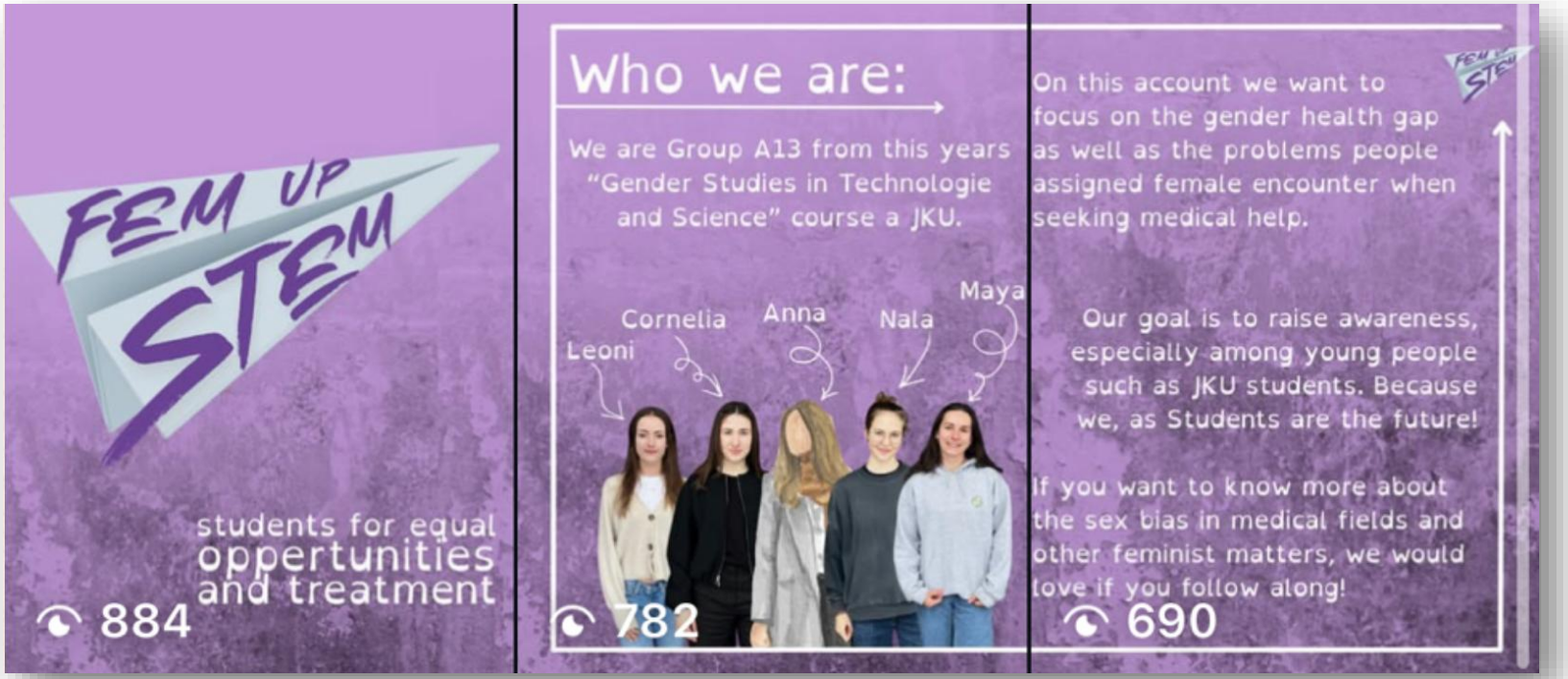
1

# Digital Interventions

Social Media Campaign, Websites, Video Interviews

# Fem up STEM

Instagram campaign about the gendered health gap in medicine

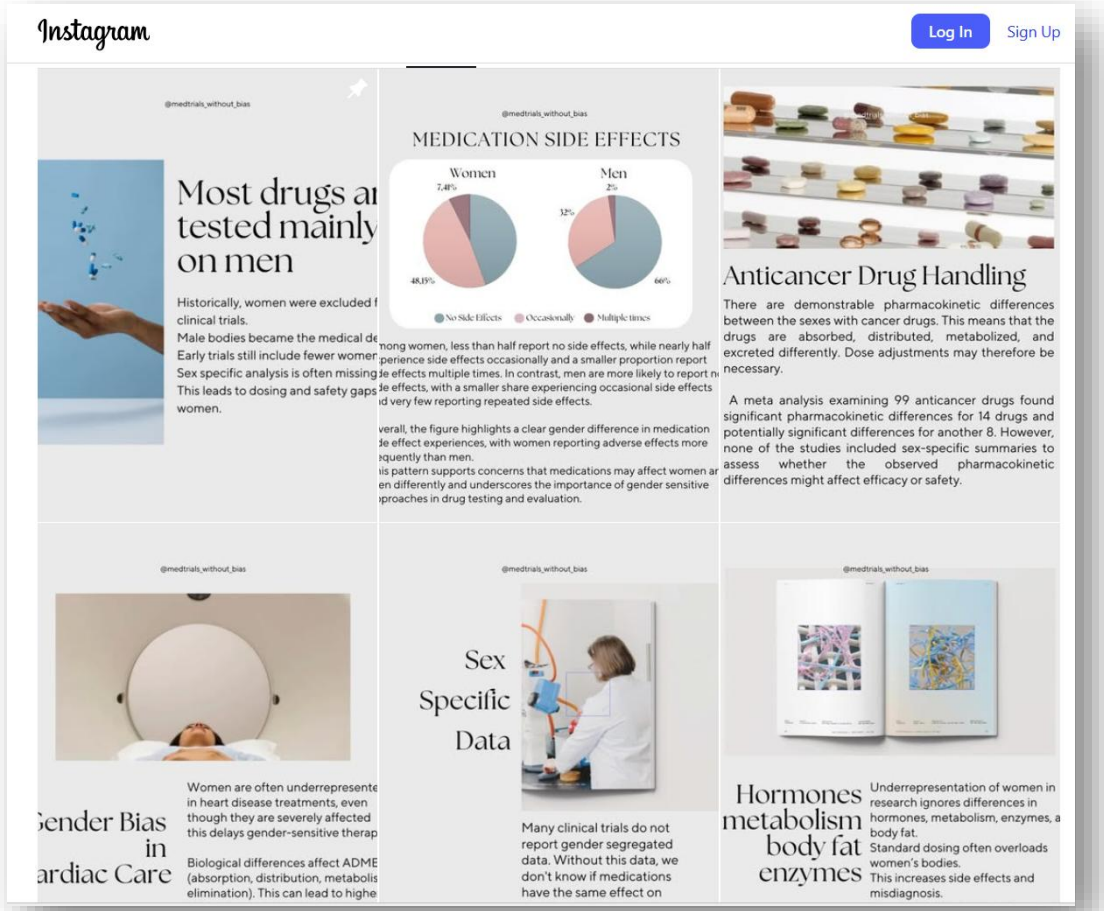



Instagram

## Social Media.

# Med trials without bias

## Instagram campaign against gender bias in drug testing

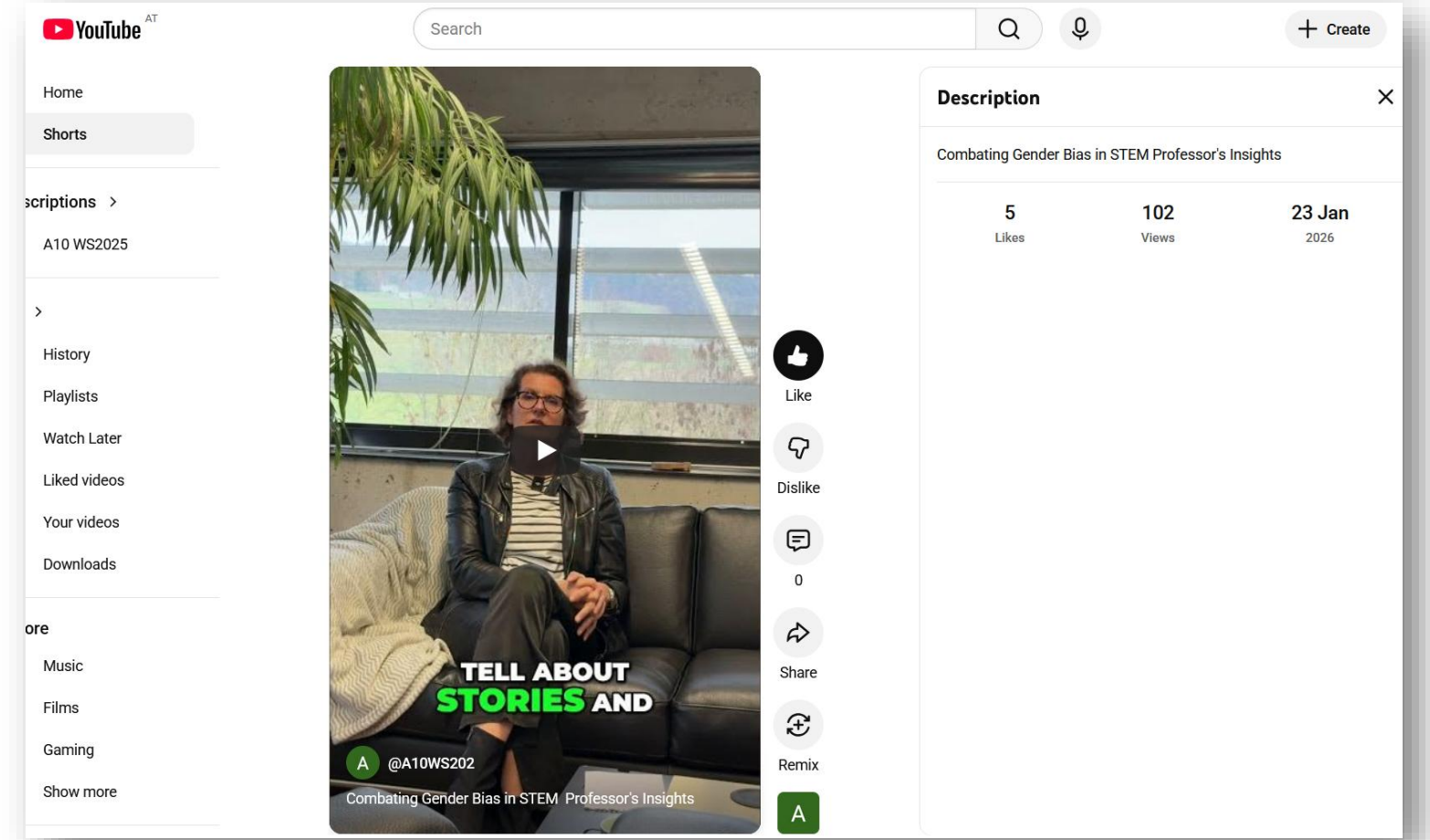



Instagram

Social Media.

# Gender Bias Against Female Professors

## YouTube interview campaign

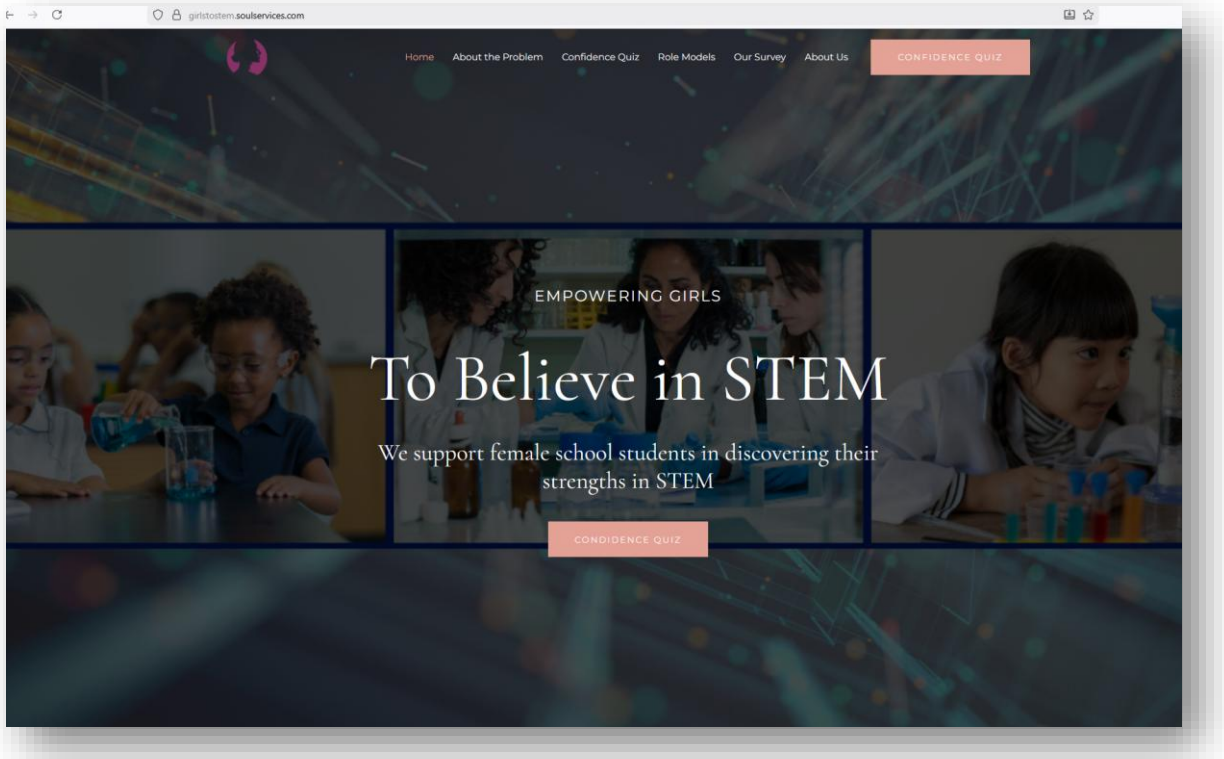



YouTube

Social Media.

# Confidence Quiz in STEM

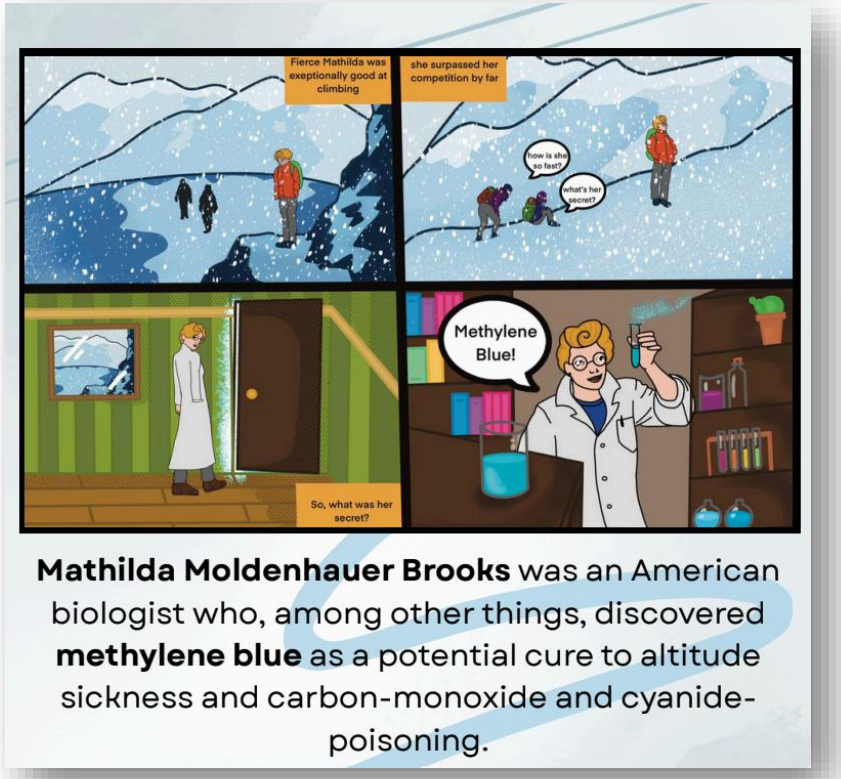
Website with an interactive survey for school girls about self-efficacy in STEM



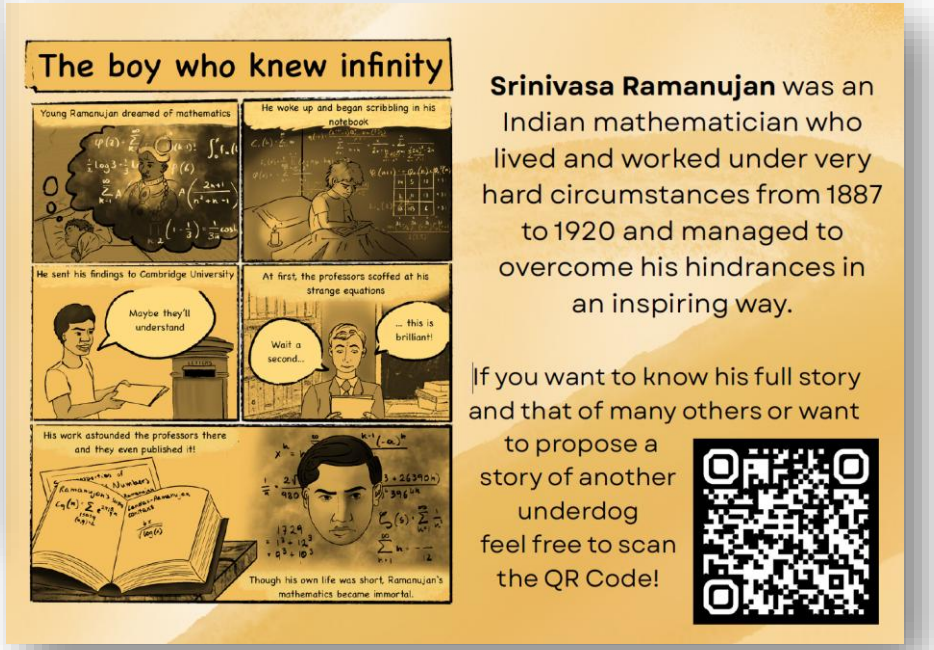

Website.

# Minority Role Models in STEM

Website offering lesser known role models in STEM through original comics




**Mathilda Moldenhauer Brooks** was an American biologist who, among other things, discovered **methylene blue** as a potential cure to altitude sickness and carbon-monoxide and cyanide-poisoning.




**Srinivasa Ramanujan** was an Indian mathematician who lived and worked under very hard circumstances from 1887 to 1920 and managed to overcome his hindrances in an inspiring way.

If you want to know his full story and that of many others or want to propose a story of another underdog feel free to scan the QR Code!

Website.

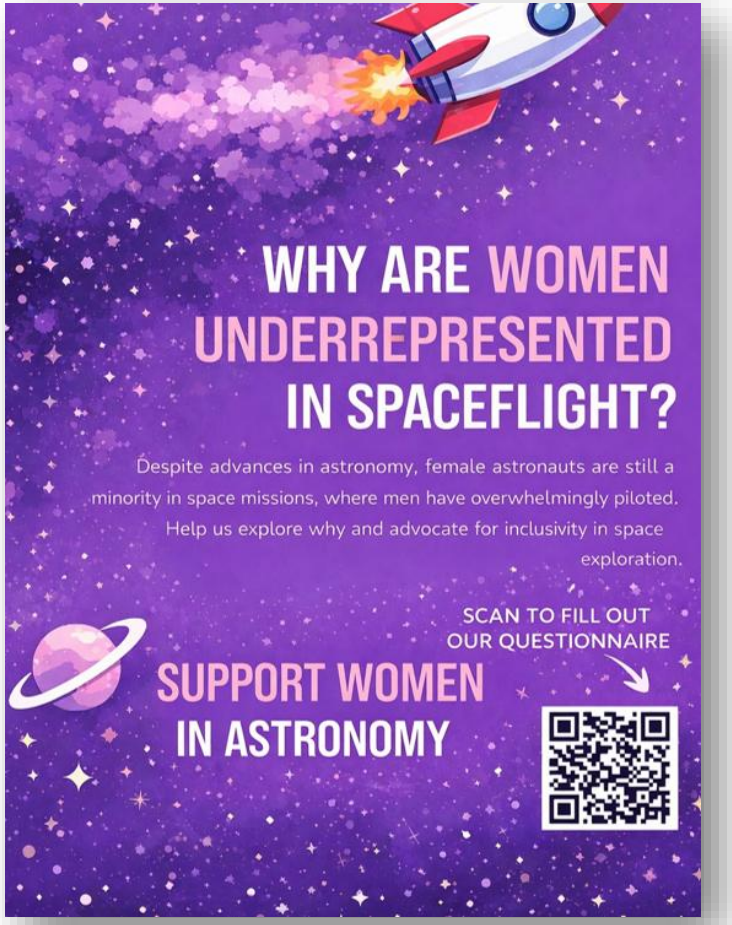
2

# Interventions on Campus

Posters, Infographics, Brochures, Stickers, Pins

# Support Women in Astronomy

Inclusivity in Space Exploration




Poster.

# Understanding Diversity, Equity and Inclusion in STEM and AI

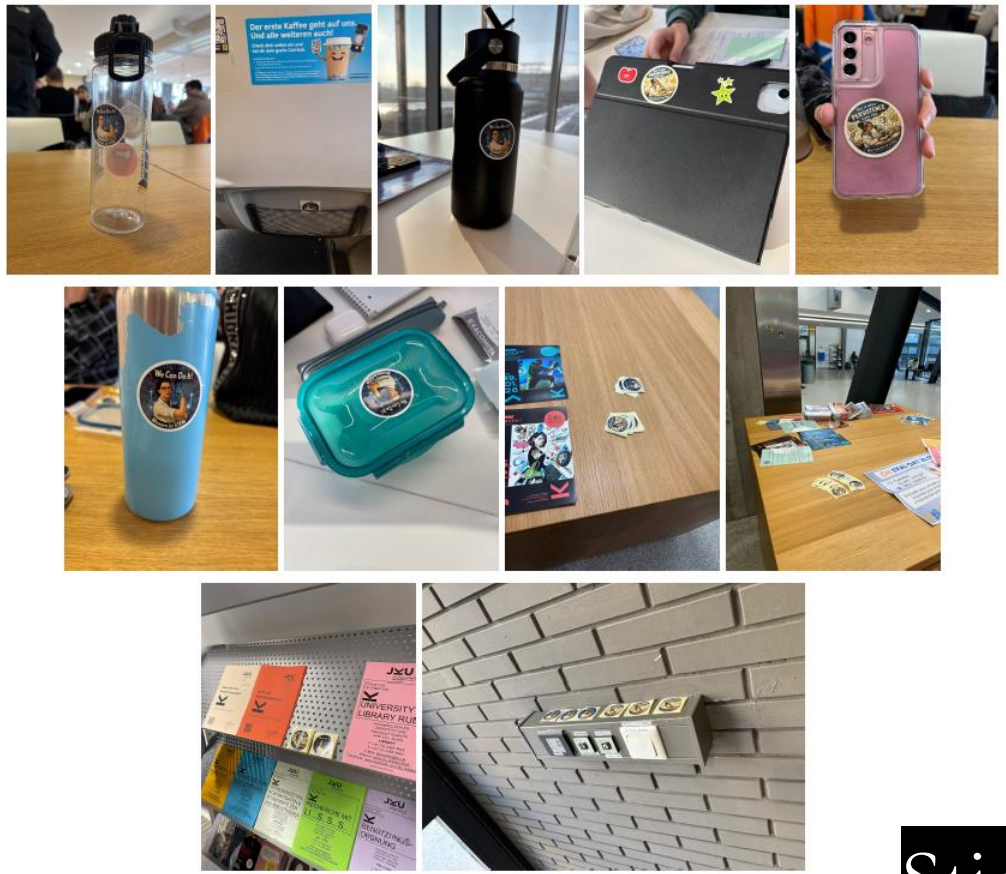



Brochure.

# We Can Do it!

## Campaign in Support of Women's Retention in STEM Programs



Stickers.

3

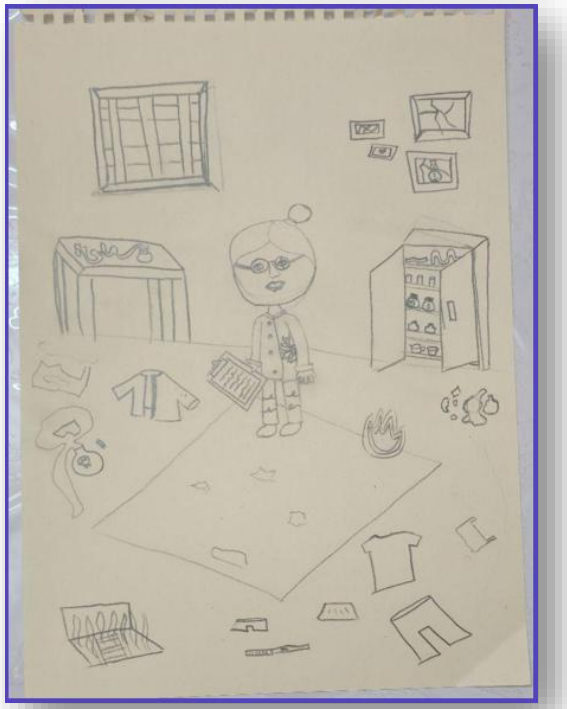
# Interventions in Schools

Workshops, School Visits, Skills Training

# “Draw a Scientist”

Awareness raising workshop through art (in primary school)







# “Gamified Intro to Women in Science ”

Interactive workshop about women in science (in middle school)




Mentimeter

Kahoot!

# Interested in our course video?




Scan to watch.

YouTube

# Workshop




How will you make FORTH more inclusive?

-

-

-

# Intervention Project

It is a **practical** project, which focuses on a **specific challenge**, aiming to **affect some positive change** for a **specific target audience**, with the help of a **set of structured steps**.

# Intervention Project

**1)** What is the **specific challenge** and the **specific target audience?**

# Intervention Project

**2)** What is the **positive change** you want to make?

# Intervention Project

**3)** What are the steps you need to take for this **positive change** to happen?

# Scan to start your intervetion project

or type: https://tinyurl.com/3xy4szva






Let’s make computing more inclusive together

# ευχαριστώ

**Anna Szlávi**
Anna.Szlavi@jku.at





