TEACHING YOUTH TO USE AI TO TACKLE THE SUSTAINABLE DEVELOPMENT GOALS
There are 900 million teenage girls in the world.
Most of them battle:

**POVERTY** - Most of the world’s poor are women.

**FOOD INSECURITY** - Women own less than 10% of the land despite being responsible for 50% of the world’s food production.

**CLIMATE CHANGE** - Women have limited control of environmental resources while being major users and managers.

**DIMINISHED ECONOMIC OPPORTUNITIES** - Women have less time to spend in learning and training.

**HUMAN RIGHTS VIOLATIONS** - Women have negligible participation in decision-making & distribution of environmental resources.

**LIMITED ACCESS TO POWER** - Even in developed countries women are left out of sectors such as technology that drive so much of the world’s progress.
What future do we want to offer her?
We have the technology, the tools, the infrastructure and a research-based blueprint to achieve gender equality.
The time is now.
To make a real dent in gender inequality.
EDUCATING GIRLS -> MOST EFFECTIVE PATH TO SUSTAINABLE DEVELOPMENT

Girls’ education saves lives (UNDP, HDR, 2020)

Girls’ education is the 6th most effective strategy for reducing CO₂ emissions (Project Drawdown)

Real-world problem solving with AI = Diverse pipeline for emerging jobs (WEF Global Skills Taxonomy, 2020)
Empowering girls and families to use cutting-edge mobile & AI technologies to solve real-world problems in their communities
TECHNOVATION: MENTORS & GIRLS (AGES 8-18) TACKLE SDGS USING TECHNOLOGY (OVER 12-WEEKS)
GIRLS AND FAMILIES SOLVING REAL-WORLD PROBLEMS

Help teen mothers finish school during COVID
Kenya

Monitoring forest fires
Cambodia

Ease transfer of social work cases between NGOs
India

# StopTheSoot to monitor air quality
Nigeria

Using AI to help deaf people communicate
Mexico

Help mothers communicate with their daughters
Morocco
Maji (Kenya)
Helping girls access water more easily
350,000 participants, 120+ countries
The world's largest tech-entrepreneurship program empowering young women to tackle the sustainable development goals with AI

Annual operations:
100 Chapter Ambassadors
→ 6,000 mentors
→ 25,000 girls
→ 150,000 alumnae
TECHNOVATION: SUSTAINED IMPACT

- 350,000 participants engaged across 100+ countries
- 150,000 young women alumnae trained as technology entrepreneurs & innovators
- 76% of alumnae are pursuing STEM degrees (WestEd, 2020)
- 60% of alumnae are working in STEM careers
- 50% of alumnae are leading change in their communities & being honored
- 60% of alumnae credit Technovation for their career choice & increasing their self-efficacy

Technovation Minnesota team invited to the White House Science Fair, 2015

Emma Yang, Featured in Apple's 2018 WWDC keynote

Gitanjali Rao, 3-time Technovation participant

GraAkpoiroro, 2015 Technovation winner & finalist in 2020 XPRIZE Next-Gen Mask Challenge
Student to Provider
Padmapriya’s Developer Journey
CURRICULUM & TRAINING
BEYOND LEARNING TO CODE

12-week Curriculum, Solve It!

Complex systems

Metacognition

Understanding human behavior

Problem Solving

Building with Technology

Systems Thinking Creativity

Goal-setting & Reflection

Monitoring/ Evaluating Self

Engineering Design Ethics

Collaborative problem solving

Participatory Design

Problem Identification

Ideation

Identifying Barriers

Iteration

Algorithmic thinking

Abstract Modeling

Data Analysis

Machine Learning

Building Datasets
Girls & Families Solving SDGs with AI

Lesson 1: Describe your community with data
Lesson 2: Identify problems in your community
Lesson 3: Use AI to make an animal classifier
Lesson 4: Use AI to make a preference guesser
Lesson 5: Use AI to make an emotion detector
Lesson 6: Brainstorm solutions
Lesson 7: Plan your invention
Lesson 8: Prototype your invention
Lesson 9: Pitch your invention
Lesson 10: Share your invention

Impact results published in *KI - Künstliche Intelligenz*, German Journal of Artificial Intelligence
20,000 CHILDREN & PARENTS SOLVING REAL-WORLD PROBLEMS WITH AI

20,000 under-resourced 3rd-8th grade students, parents and educators engaged

91% of students increased their self-efficacy as STEM learners

87% of parents indicated greater capability to support STEM learning at home

100% of educators learned better ways to stimulate a student’s interest in STEM

Kuwait Birds Tracker uses image-recognition tools to identify and protect local endangered bird species
2022
SEASON
A CONTINUUM OF SUPPORT FOR GIRLS & YOUNG WOMEN

8-12 year old girls supported by Parents & Mentors

13-15 year old girls supported by Mentors

16-18 year old girls supported by Mentors

Alumna support

BEGINNER DIVISION

JUNIOR DIVISION

SENIOR DIVISION
BEGINNER DIVISION

Technovation Girls Beginner Division is for girls ages 8-12 and their parent / caregivers to work together to learn about app development and artificial intelligence while solving a problem that matters to them! Let’s get started.

Level: Beginner

Study time: 40+ hours

Duration: 12 weeks
APPRAOCH

- Categorize SDGs to facilitate problem solving
- Leverage citizen science frameworks to tackle real-world problems
  - Combine crowdsourcing and satellite data analysis
- Develop System Maps & Coding Tutorials for each SDG
SPECIFIC TECH FOR SPECIFIC SDGS  (NATURE, 2021)

PLANETARY INTEGRITY

MATERIAL NEEDS

PEOPLE

PROSPERITY

PEACE
UN Office of Outer Space Affairs & Technovation

Empowering girls to use space technology & AI to tackle climate change!
CITIZEN SCIENCE MODELS + MOBILE, GROUND-DATA + SATELLITE DATA + AI → INNOVATIVE SOLUTIONS TO THE SDGS
System maps for SDGs 6, 12 and 13 (water, climate action and responsible consumption) to help girls develop apps that incorporate at least 2 of the 5 elements below:

- Collect Data & Raise Awareness
- Motivate Behavior Change
- Build Empathy
- Implement & Track
- Finance
MEASURING WHAT MATTERS - INCREASING CAPABILITY

Success = significant gains in **Resources, Agency & Achievement** for all participants, leading to resilient communities.
BUILDING RESILIENT COMMUNITIES

Metrics of success increase in:

- AI capacity for underserved communities
- Social capital (mentors) for underserved communities
- Open-mindedness and ability to accept change for community members
- Volunteerism and civic engagement
BREAKOUT ROOMS
OPEN QUESTIONS TO DISCUSS

1. What skills should youth, especially girls, build to thrive in this world?
2. In what situations have your students developed truly innovative solutions to hard problems?
3. The most fulfilling experiences require a lot of persistence, skill building, dealing with failure, grit etc.. What are some effective strategies for keeping students motivated through long, hard learning journeys?
- 92% of the world has a smartphone. Women in low and middle income countries are less likely to own a smartphone but the gap is narrowing (GSMA, 2020).
- Internet access is growing.
### WE KNOW HOW TO BUILD A MOVEMENT

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<thead>
<tr>
<th>Exposure</th>
<th>Experience</th>
<th>Expectations</th>
<th>Energy</th>
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<tbody>
<tr>
<td>Stories in the media</td>
<td>Easy to start</td>
<td>Parents</td>
<td>Social interactions</td>
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<td>TV shows</td>
<td>Quick, specific, unpredictable feedback</td>
<td>Peers</td>
<td>Adrenaline/drama/competitions</td>
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<tr>
<td>Trained Mentors</td>
<td>Social interactions</td>
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<tr>
<td>In-person modeling</td>
<td>Goal Setting</td>
<td>Mentors</td>
<td>Basic human needs are met (not hungry/sleepy)</td>
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<td>Reflection</td>
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*Bandura, 1997*