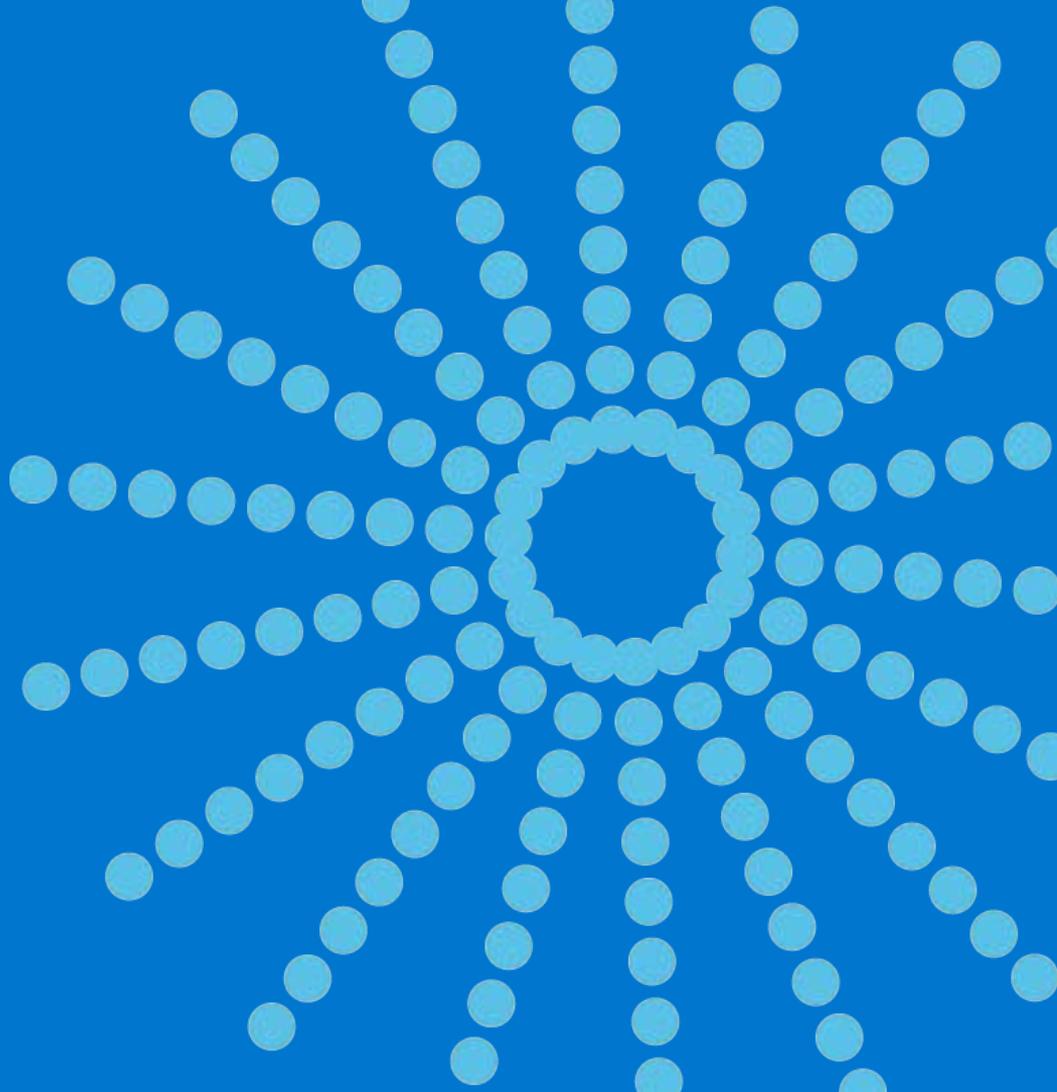


# **TEACHING YOUTH TO USE AI TO TACKLE THE SUSTAINABLE DEVELOPMENT GOALS**

**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.**

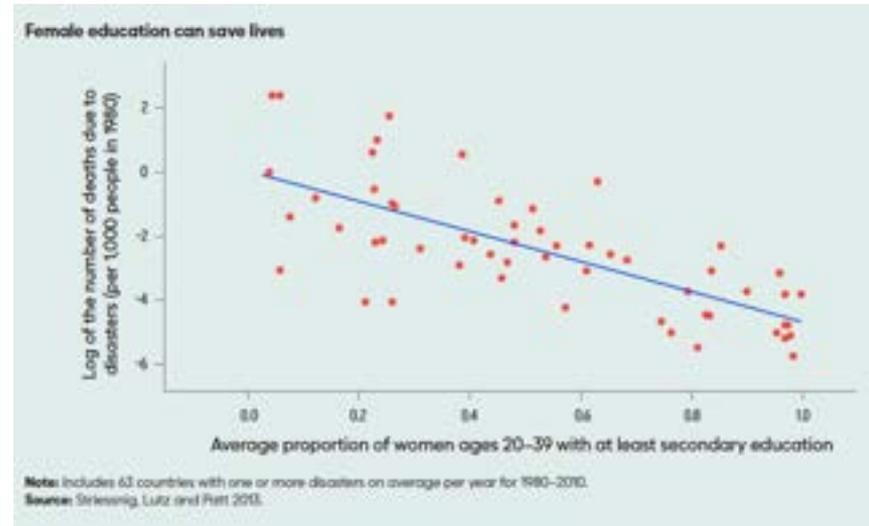


# EDUCATING GIRLS - > MOST EFFECTIVE PATH TO SUSTAINABLE DEVELOPMENT

Girls' education saves lives ([UNDP, HDR, 2020](#))

Girls' education is the 6th most effective strategy for reducing CO<sub>2</sub> emissions ([Project Drawdown](#))

Real-world problem solving with AI = Diverse pipeline for emerging jobs ([WEF Global Skills Taxonomy, 2020](#))



# **TECHNOVATION**

**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)



SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



# 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





# 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



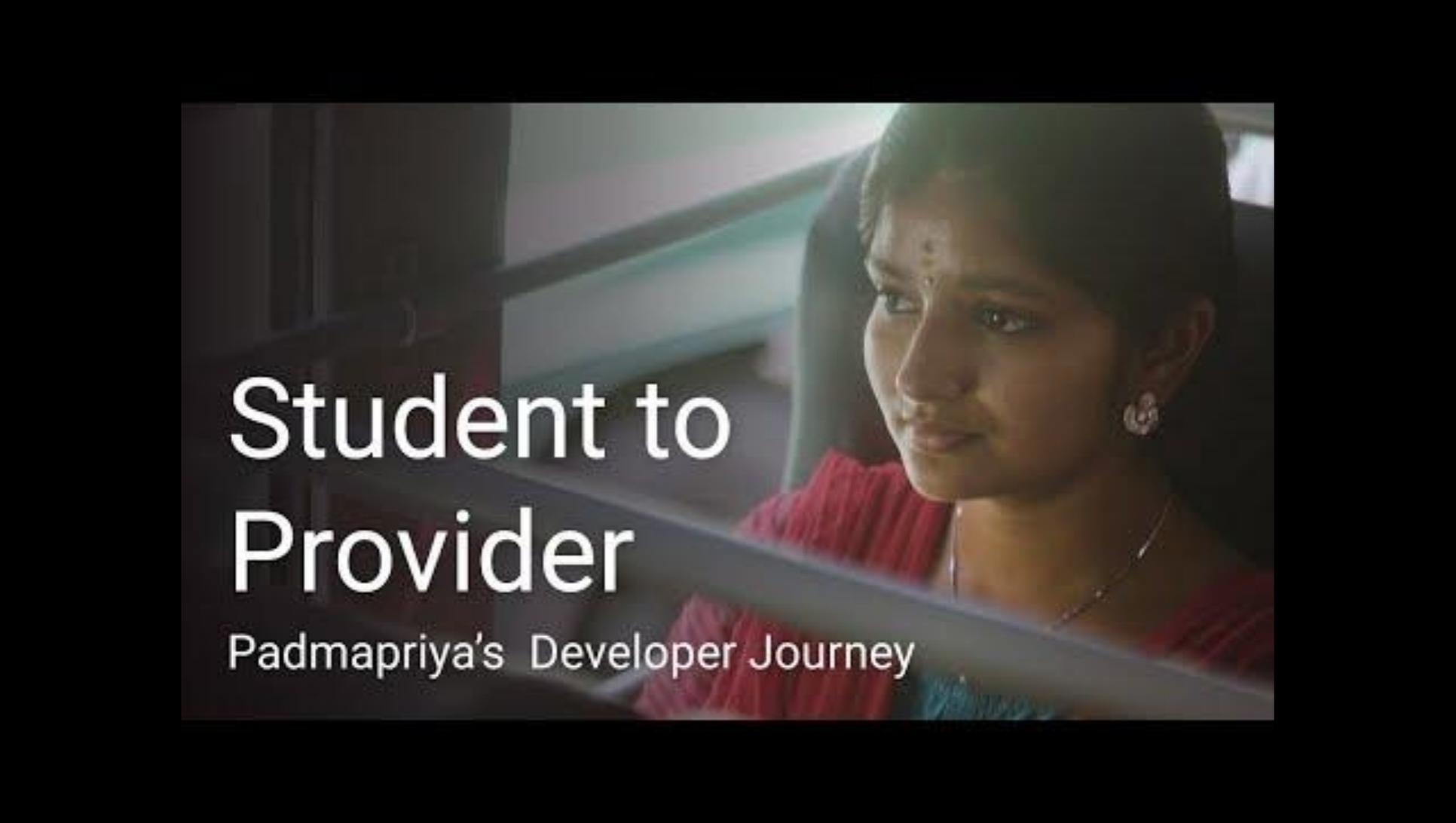
Emma Yang, Featured in Apple's 2018 WWDC keynote



Gitanjali Rao,  
3-time  
Technovation  
participant



GraAkpoiroro, 2015 Technovation winner & finalist in 2020 XPRIZE Next-Gen Mask Challenge

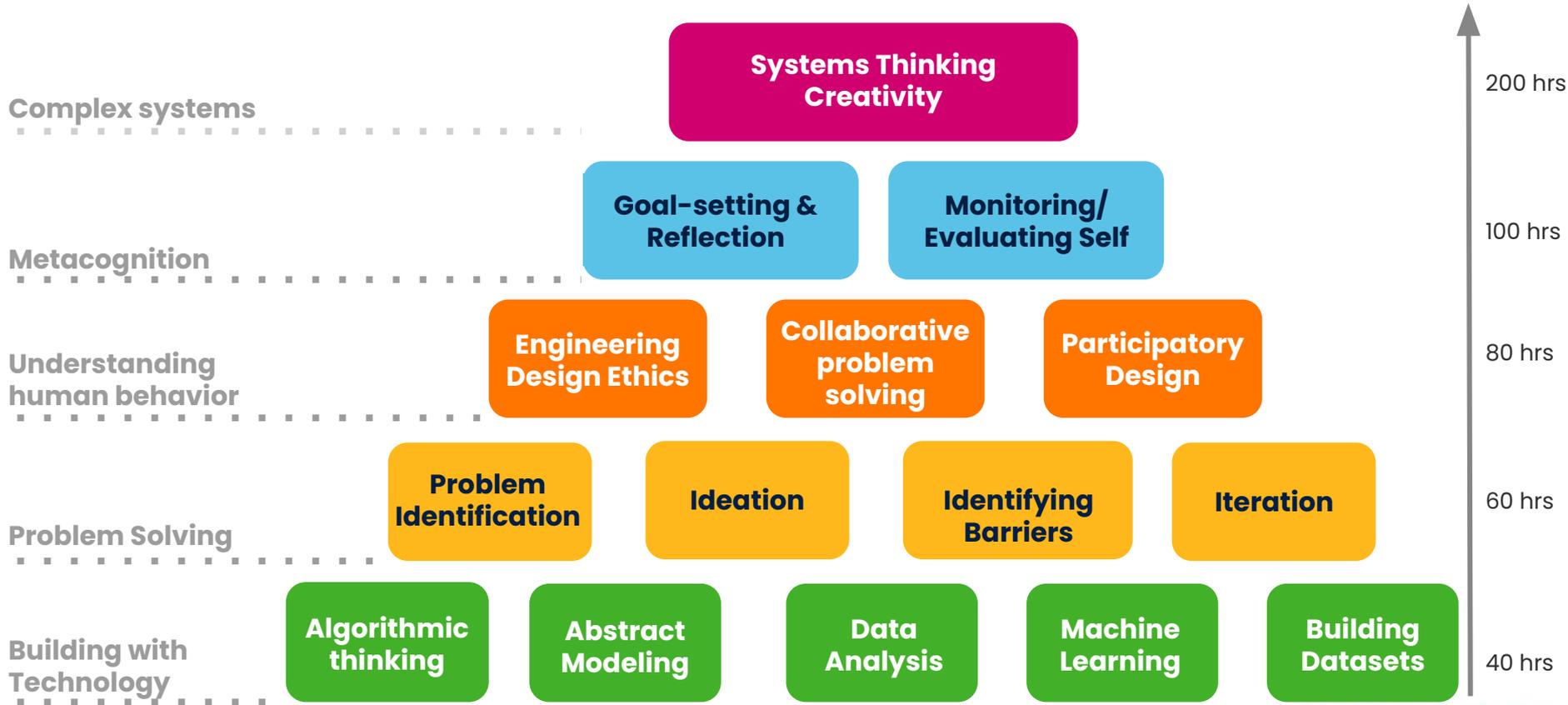


# Student to Provider

Padmapriya's Developer Journey

# **CURRICULUM & TRAINING**

# BEYOND LEARNING TO CODE



# 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



# 20,000 CHILDREN & PARENTS SOLVING REAL-WORLD PROBLEMS WITH AI



[Kuwait Birds Tracker](#) uses image-recognition tools to identify and protect local endangered bird species

**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

**2022**

**SEASON**

# A CONTINUUM OF SUPPORT FOR GIRLS & YOUNG WOMEN



8-12 year old girls  
supported by  
**Parents** & Mentors

**BEGINNER  
DIVISION**



13-15 year old  
girls supported by  
Mentors

**JUNIOR  
DIVISION**



16-18 year old  
girls supported by  
Mentors

**SENIOR  
DIVISION**



Alumna  
support

# 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



# APPROACH

- 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)



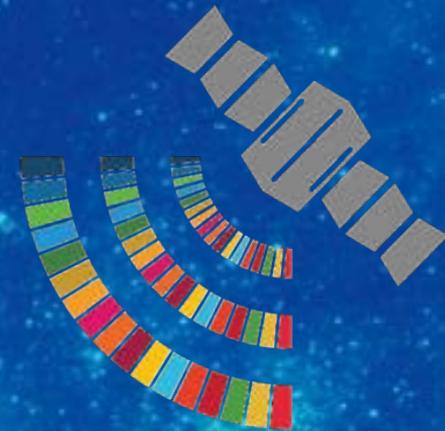
**PLANETARY INTEGRITY**

**MATERIAL NEEDS**

**PEOPLE**

**PROSPERITY**

**PEACE**



**SPACE4SDGS**



UNITED NATIONS  
Office for Outer Space Affairs

**TECHNOVATION**

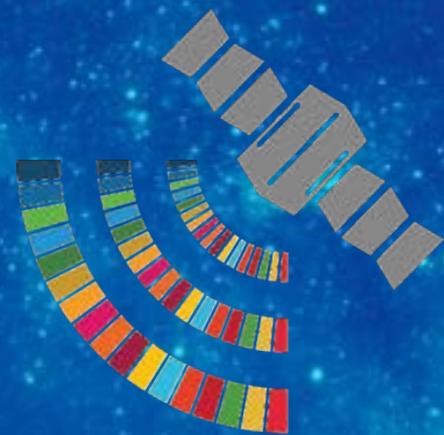


UNITED NATIONS  
Office for Outer Space Affairs

**TECHNOVATION**

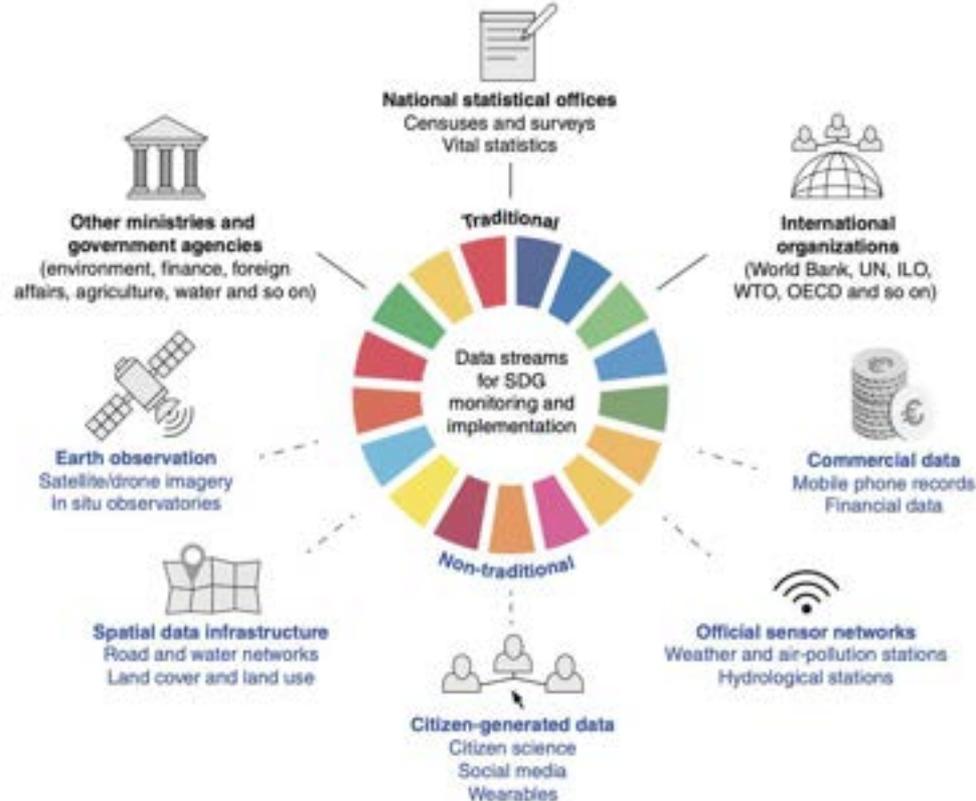
# UN Office of Outer Space Affairs & Technovation

Empowering girls to use space technology  
& AI to tackle climate change! 



**SPACE4SDGS**

# CITIZEN SCIENCE MODELS + MOBILE, GROUND-DATA + SATELLITE DATA + AI → INNOVATIVE SOLUTIONS TO THE SDGS



# CURRICULUM & TRAINING IMPROVEMENTS

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



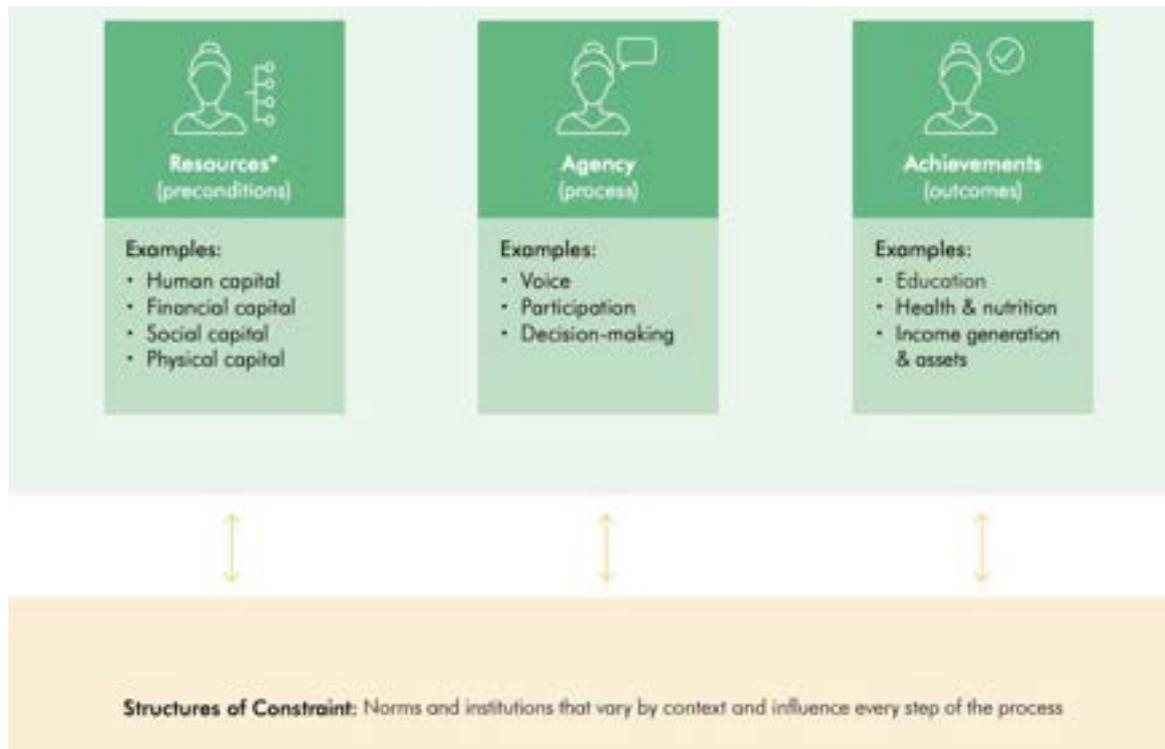
Implement  
& Track



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:

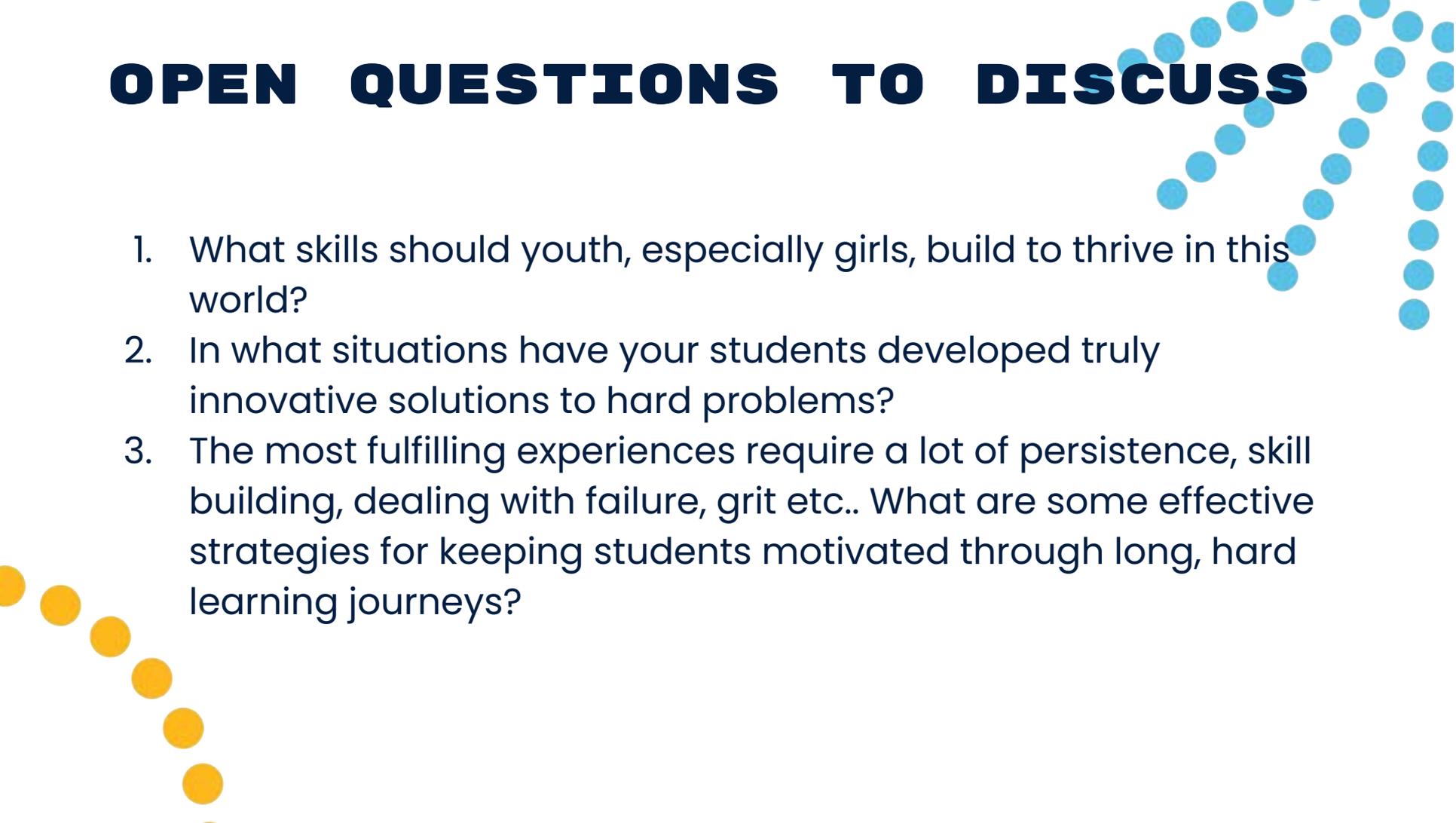
- AI capacity for underserved communities
- Social capital (mentors) for underserved communities
- Open-mindedness and ability to accept change for community members
- Volunteerism and civic engagement





# **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

## Exposure

Stories in the media

TV shows

Trained Mentors

In-person modeling

## Experience

Easy to start

Quick, specific, unpredictable feedback

Social interactions

Goal Setting

Reflection

## Expectations

Parents

Peers

Educators

Mentors

## Energy

Social interactions

Adrenaline/drama /competitions

Basic human needs are met (not hungry/sleepy)

Bandura, 1997