



**Raising Science and** Math Outcomes Through Creativity and Collaboration in Tajikistan and Afghanistan

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# Welcome!

Outline of today's showcase



#### Introduction

Make a big impact with professional slides, charts, infographics and more.



#### Showcase on girl's science clubs

Make a big impact with professional slides, charts, infographics and more.



### **Closing remarks**

Make a big impact with professional slides, charts, infographics and more.

### The Challenge: Low Learning Outcomes in Science and Math

The cycle of girls missing out on quality education

### Lack of qualified teachers

Not trained on student centered teaching methodologies; high supply of teachers in humanities not science / math; bigger gap in rural areas as unable to travel

## Relevant equipped facilities

Poorly equipped classrooms, libraries, and labs, irrelevant resources, unable to implement hands on learning





#### Social norms

Early marriage; mobility outside of community; limited time to stay after school for extracurricular activities

#### 21<sup>st</sup> century skills

Resilience necessary for girls to want to continue their education as secondary schools closed since 2020; need for skills outside of classroom; female champions

## Education Context In Afghanistan



Begins in grade 4 out to grade 12. Many teachers unable to compete textbook due to low qualifications



#### **Recent changes**

Relocation of teachers; participation of women and older girls in public spaces; female teachers were preferred in the last but now are not permissible even if parents are ok with it



#### Student-led groups

Student School Associations are limited and mainly active in secondary grades. Common in private schools; representation matters!; lack of female role models from local community in STEM..



#### Access to higher education

Difficulty passing university entrance exam, for many is the only pathway to HE and therefore the labor market.; unable to travel outside of community due to poverty / social norms

What iOS the context of education today, including challenges and the state of Schools2030 in Afghanistan?



### Evidence of Challenge & Additional Skills

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### **Evidence of Challenge**

#### Other project reports

STAGES endline shows the importance of extracurricular programs, female champions, learning outcomes dip at grade 4



#### Review of existing data & literature

National Education Strategic Plan III; student exam results; curriculum review

#### Interviews with educators

TTC and high school teachers on areas they need the most support on



#### Interviews with students

High school girls share feedback on biggest challenges they face in achieving their goals

### **Evidence of Solution Impact**

#### Interest & Motivation

99.7% of club members expressed clubs were fun and helped their learning. Confidence

#### **Quality Preparation**

Won bronze medal 2019 IJSO in Qatar. 10 points higher on exams than non club students

#### Sustainability

Local leaders and authorities well engaged. Gave prizes to girls. Organized events to celebrate girls achievements.

#### Equitable access

Girls entering STEM higher education and preparation classes for university exams (39% Improvement on pre/post test)



## Schools2030 Context & Learning Domains



#### Schools2030 in Afghanistan

- 34 schools and 10 ECDs = 100 cohorts as most so have both primary and secondary grades
- Enrollment begins at 7-10 years old (grade level instead of age due to internal displacement and diff ages attending school)
- Currently no grade 7 (age 15) cohort due to school clo for secondary level for girls



#### Learning domains

Academic: Literacy, numeracy, science and technology Non-Academic: creativity and communication collaboration Encompasses almost all of Afghanistan's learning domain cohort 10 and 15 (grade 4 and 7)

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# Design Process of Science Club Pilot

#### Club structure

13 pilot clubs; 5 subgroups each; division of responsibilities

#### Timeline

New cohort of 30 members per club enrolled each academic year; grade 7-12

#### Outcome

Improved quality and relevance of teaching, school environment, and student learning outcomes (knowledge, value, attitudes, skills); and community support for girl's pursuit of STEM fields



## Designed with

technical consultant

Training package, handbook, guidelines, revised during first 2

AKA **AKA Mombasa** on club handbook and Olympiad guidelines. IJSO guidelines. MoE consultation Iterate years Adaptability WhatsApp groups during COVID;

# Solution to the Gap of Science and Math Learning **Outcomes: Science Clubs**

#### Qualified teachers

- 21-day training and mentoring on science experiments and
- Olympiad jury panel
- Club volunteer

#### **Social Norms**

- Newsletter distribution
- Attendance in events • celebrations
- Engagement with local authorities



#### 21<sup>st</sup> C Skills

- Olympiads
- Peer mentoring
- Group projects
- Exhibits
- Newsletters
- Field visits / STEM guest speakers

#### Facilities

- Relevant and quality science lab materials
- Updated science books for library
- Stationary for clubs



### **Creating Positive Change** What additional skills were developed beyond academic knowledge (literacy, numeracy, and science)?



#### Academic learning outcomes

10% higher science and math scores compared to control groups

#### Access to higher education

11% higher graduation; 3% higher rate of continuing to higher education compared to control

#### Resilience

75% of club members transitioned to WhatsApp during school closures

#### Interest & motivation

99.7% club members expressed clubs were fun and helped their learning

#### Community involvement

Increase 37% community support for girls pursuing STEM

#### Sustainability

Local authorities organize events; visit clubs regularly; Olympiad jury







# **Closing Remarks: Looking to the Future**

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#### **Reaching girls** while schools are closed

Need for adaptation to find a way to reach cohort of 15 y/o girls (grade 7) if schools remain closed beyond 2022

#### Finding balance with solutions

Teachers not often involved in decisionmaking so having them in this important position take times to nurture balanced solutions

What do we expect to see within Schools2030 and the education context?



#### Expansion

Start clubs at grade 4 instead 7; separate girls and boys clubs

#### Home-based learning

More activities that can be done at home with support of parents / siblings



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Click here for a short video to learn more about AKF's girls in science program in Afghanistan









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