Towards Astronomy for Development: Optimising Impact

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Kevin Govender
kg@astro4dev.org
@govender

Eli Grant
eg@astro4dev.org
@_eligrant

www.astro4dev.org
The IAU Strategic Plan 2010-2020:
OAO - OAD - IAU (Divisions)
Astronomy for Sustainable Development!

- **Social benefits** (common humanity, scientific engagement & discourse)
- **Human capital development** (education, skills, career choices)
- **Economic growth** (knowledge economy, innovation)
- **Human welfare** (all of the above, technology transfer)
OAD Structure

OAD Steering Committee

Regional Coordination

Astronomy for Universities and Research
Astronomy for Children and Schools
Astronomy for the Public

“Astronomy for a better world!”
OAD Structure

OAD Steering Committee

- Claude Carignan (nominated by NRF)
- Megan Donahue (nominated by IAU)
- George Miley (nominated by IAU)
- Khotso Mokhele (Chair – nominated by NRF)
- Kazuhiro Sekiguchi (nominated by IAU)
- Patricia Whitelock (nominated by NRF)

New Steering Committee expected later in 2015
OAD Structure

Staff:
Kevin
Eli Grant
Nuhaah

OAD

Fellows:
Silvia
Tibisay
Ram

Interns:
Laure
Rajin
Eli Kasai
OAD Task Force membership

Task Force 1 (TF1)
Astronomy for Universities and Research
Jean-Pierre de Grève (Belgium, C46)
Richard de Grijs (China)
Michèle Gerbaldi (France)
Edward Guinan (USA – Chair)
Roger Hajjar (Lebanon)
Edward Jurua (Uganda)
Katrien Kolenberg (USA - VC)
Hakim Malasan (Indonesia, Div C)
Shengbang Qian (China)
Nicole van der Bliek (Chile)

Task Force 2 (TF2)
Astronomy for Children and Schools
Rosa Doran (Portugal)
Edward Gomez (LCOGT, Cardiff - VC)
Mary Kay Hemmenway (USA, observer)
Robert Hollow (Australia)
Ofodum Chukwujekwu Nworah (Nigeria)
Rosa Maria Ros (Spain)
Pedro Russo (Leiden/UNAWE/C55, Chair)
Cecilia Scorza (Venezuela/Germany)
Linda Strubbe (Canada)
Akihiko Tomita (Japan)
Jinhua He (China, Observer)

Task Force 3 (TF3)
Astronomy for the public
Thilina Heenatigala (Sri Lanka)
Sarah Kendrew (UK - New Media)
Lars Lindberg Christensen (Germany, IAU C55)
Carolina Ödman (South Africa – VC)
German Puerta (Colombia)
Sze-leung Cheung (Japan, OAO)
Ian Robson (UK - Chair)
Komiko Usida (Japan)
Ziping Zhang (China)
OAD Volunteers

- IAU members, amateurs, professionals, teachers, students, public
- Over 550 worldwide (on this map they are grouped by location)

www.astro4dev.org/volunteers
OAD Partners

• Royal Astronomical Society
• Netherlands Organisation for Scientific Research
• International Centre for Theoretical Physics
• Inter-University Centre for Astronomy and Astrophysics
• University of Central Lancashire
• Haus der Astronomie
• Fiat Physica
• Associated Universities Inc. / Leiden University
Funded Projects (68)

www.astro4dev.org/proposals
Do projects work?

• **Access ≠ Development**

• Humans are complex and embedded in complex social systems

• OAD needs to
  – Identify best practices, allocate resources efficiently
  – Manage risks of unintended consequences
Not All Evidence is Created Equal

- Systematic Reviews of RCTs and Meta-Analysis
- Experimental Evaluation (RCT)
- Non-Randomised Evaluation Studies
- Cohort Studies
- Case Series
- Case Control Studies
- Expert Opinion, Case Reports
Impact Evaluation Design

Random Assignment

Treatment A
Outcome Measures A

Treatment B
Outcome Measures B
Testing Effectiveness of Teacher Training Programme

- 7,258 grade 5 and 7 students and 780 teachers in 79 schools

“What excitement, enthusiasm, team play, motivation, and student engagement I saw throughout the day with all the students in my classes!”

Alabama Math, Science, and Technology Initiative
Buck, Z. (2013) AER, 12(1), 010104
Option A: 4 x less likely to correctly identify dark matter than students exposed to B or C.

Buck, Z. (2013) AER, 12(1), 010104
Starting Simple

MIT JPAL:
http://www.povertyactionlab.org/education
– Information on salary returns to parents
– Deworming
OAD Impact Cycle: Positive Feedback Loop

Resources
Open access project materials; evaluation & measurement tools; summary of evidence base

Project Ideas
Based on research gaps or areas of community need and using innovations from project delivery partners

Evaluation
Rigorous and independent measures of implementation and impact

Optimisation
Incorporate existing evidence on what works/doesn’t work to improve project design & select comparison condition

Knowledge Base
STEM outreach & communication
Education
Management/business
Innovation
International development

Large-Scale Delivery
Education policy/curriculum design
Corporations (training & CSR)
NGOs
Astronomy & other big science HCD
OAD Review 2015

1. Continuation till 2021
2. GA resolution – OAD/SP beyond 2020
3. Increase in funding and staff (fundraiser + astronomer)
4. Simpler oversight structures
5. Consolidation
6. Annual high level meetings
7. Simpler visa processes
A possible vision for 2021

- User-friendly “impact cycle” (positive feedback loop)
- Synergised regional leadership
- Host large externally funded programmes
- Adoption by other sciences
- Strategic partnerships with development organisations
Astronomy for a Better World!

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References
