Standardising Astronomy Outreach Practices at Research Institutions

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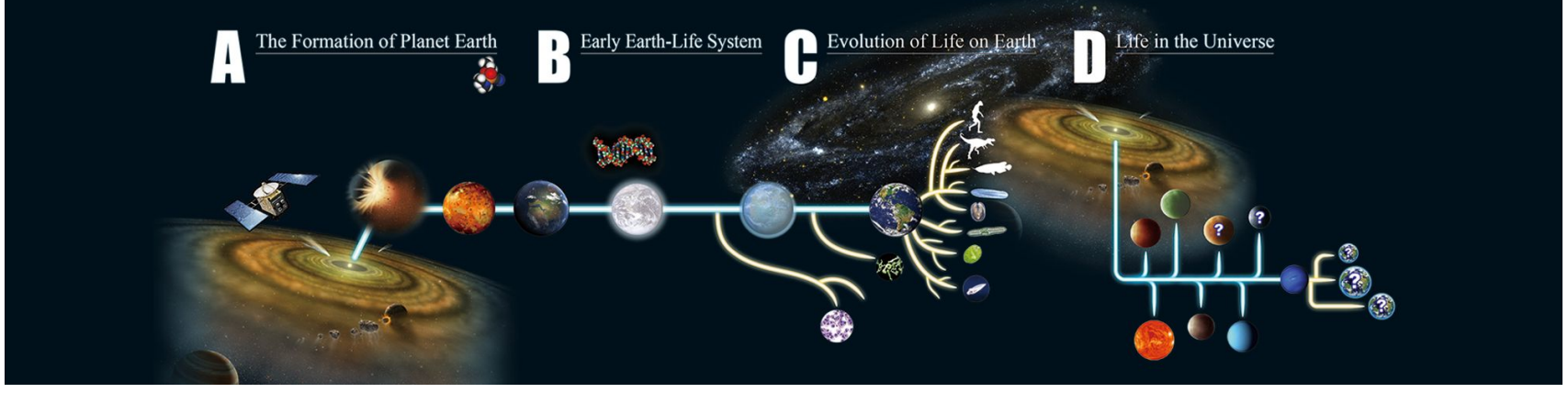
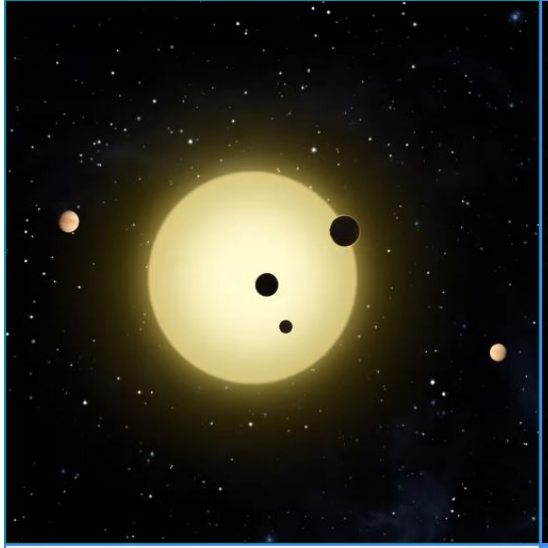
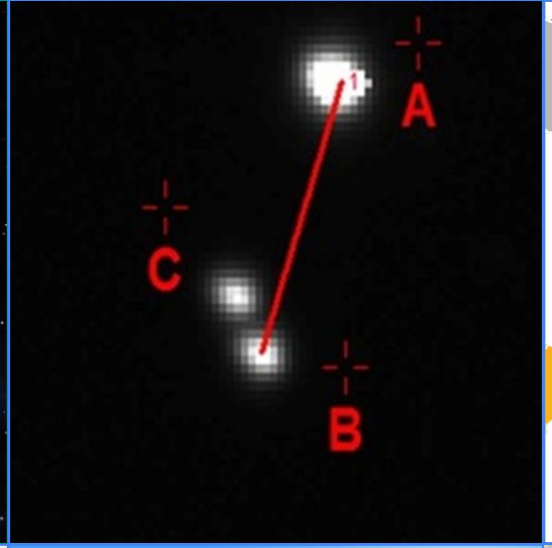
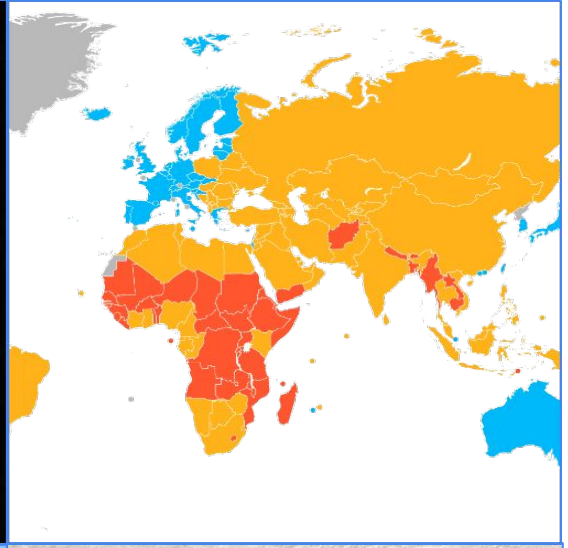

A The Formation of Planet Earth
B Early Earth-Life System
C Evolution of Life on Earth
D Life in the Universe



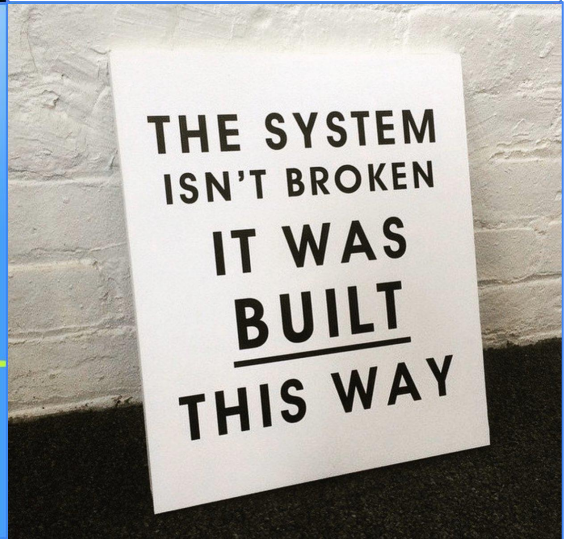




Engagement Evaluation

Evidence-based Outreach

Communication Strategies



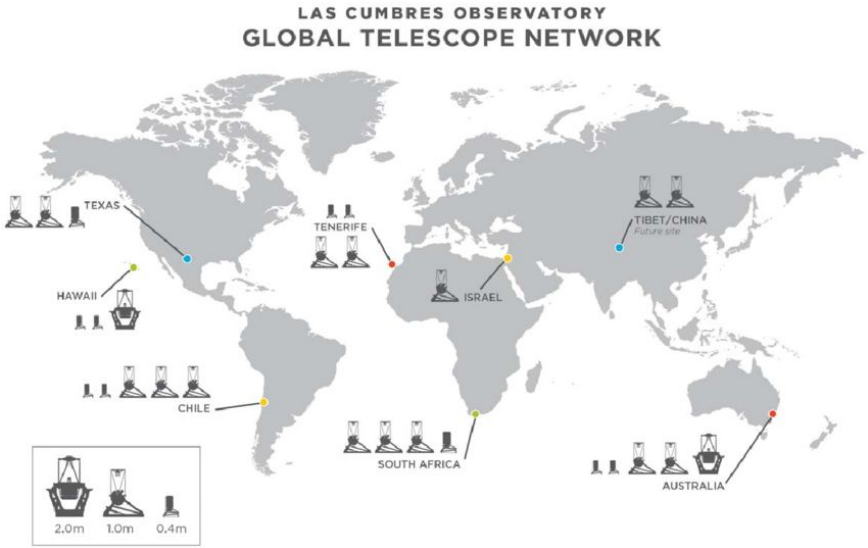
01. Selected work:

Astronomy Research

Las Cumbres Observatory

01.

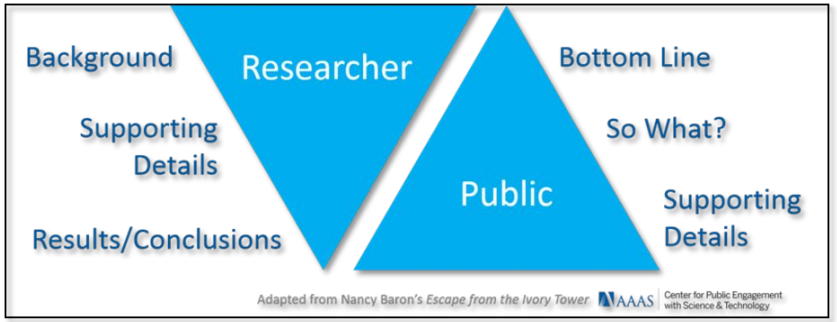
- Research on exoplanet spectroscopy and double star astrometry
- With students from developing countries (undergraduate and master level) (Sri Lanka, Nepal, Kenya, …)
- Training on python, data analysis, telescope control, access to papers,
- As a part of credited work / final year project / master's research project



Outreach and Engagement + Evaluation

01.

- Evaluation of outreach activities
- Science Communication teaching for graduates (master and PhD) students
- Science-Art residency project
- Building strategies for research communication at large research institutions



Decolonising Science/Astronomy

01.

- Building awareness, policy changes for issues in astronomy/science the that has colonial approach
- Coordinating decolonising science sessions at UN Science Summit at the UN General Assembly
- Coordinating decolonising astronomy sessions at the IAU General Assembly

02. Astronomers views:

Astronomers’ attitudes towards outreach

02.

- Two major studies conducted to assess the attitudes towards outreach from astronomy researchers 2015 Dang and 2018 Marta
- Both shows the positive attitudes towards recognising outreach and challenges to conduct them

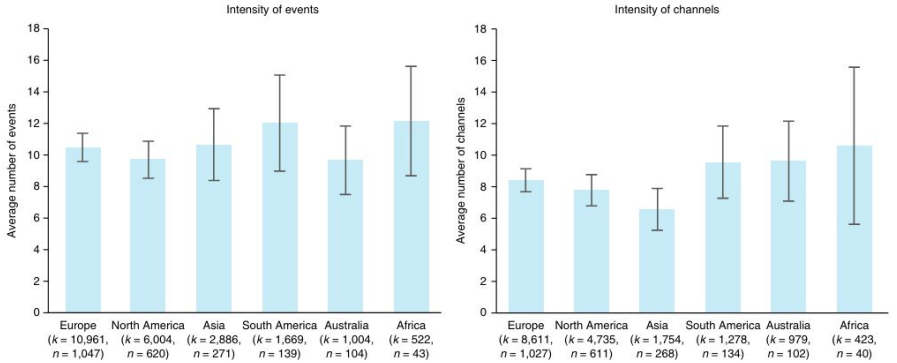


Fig. 3 | Intensity of participation in events and channels by astronomers across regions. Bars show means of activities per astronomer and whiskers show s.e. In parenthesis, we report the number of activities reported for each region (k) and the number of respondents per region (n).

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Time spent on outreach

02.

- The study shows astronomers spend both ‘work’ hours and ‘free’ hours on outreach
- Time constraints are not the main factor influencing astronomers when deciding to take part in outreach activities

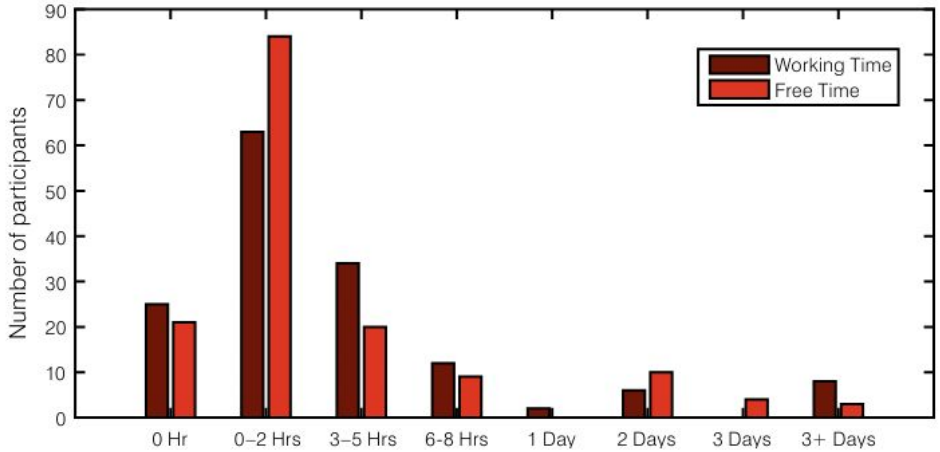

Figure 2. *Distribution of working and free time spent on EPO activities per week on average.*

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Money spent on outreach

02.

- On average, astronomers suggested that 5–10% of research grants should be allocated to EPO activities, which is significantly greater than the amount actually used for outreach.

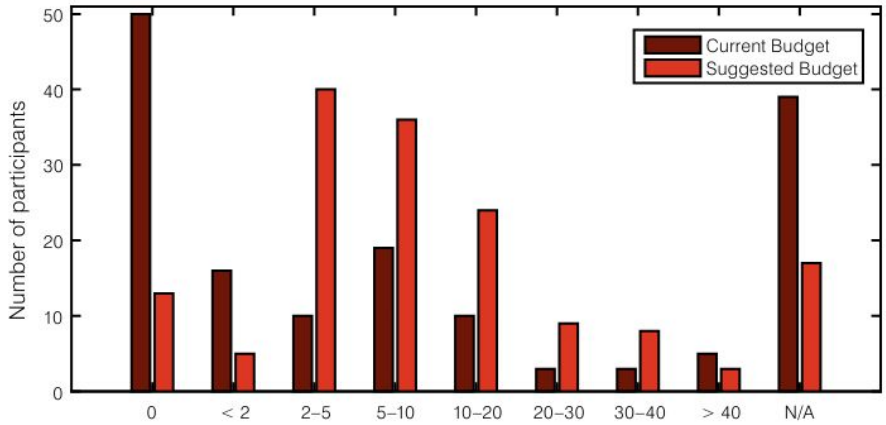

Figure 3. *Distribution of percentage of research grant that astronomers currently invest in EPO compared to the percentage they suggest allocating.*

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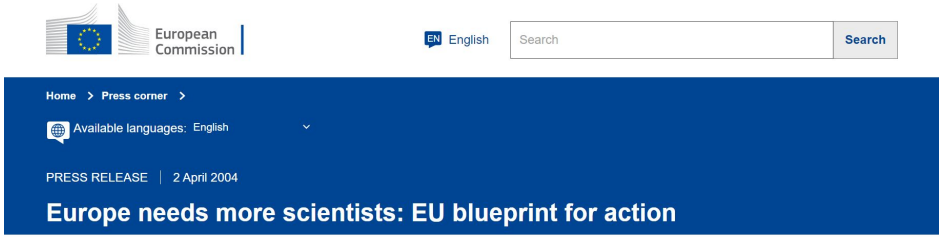
Policy changes for outreach

02.

- European Union issued a major report addressing the need for more scientists and students to be involved in advanced studies of science and technology in order to achieve the desired economic growth. (European Commission, 2004)
- National Academies in the United States published a report discussing the condition of science and technology which emphasized the importance of science education to the economy. (2005)
- Wellcome Trust on the role of scientists in society revealed that many scientists think that time constraints play a significant role in preventing them from participating in EPO activities. (2000)

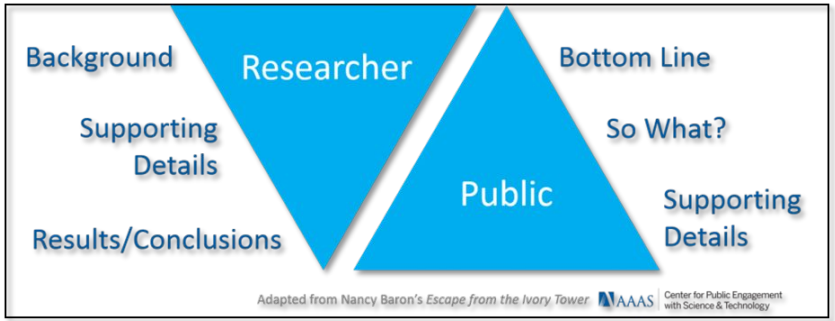


03. Identifying challenges:

Disconnection of outreach and research

03.

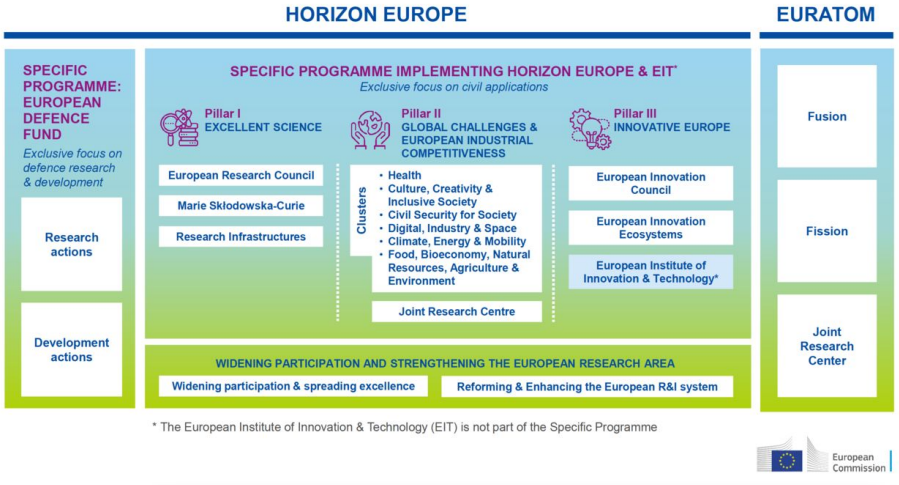
- Disconnection between outreach practitioners and research scientists
- Science talk vs outreach talk - lack of guidance
- Why should scientists spend time and resources on outreach
- Unclear connection of societal impact from both research and outreach



Availability of grants/funding

03.

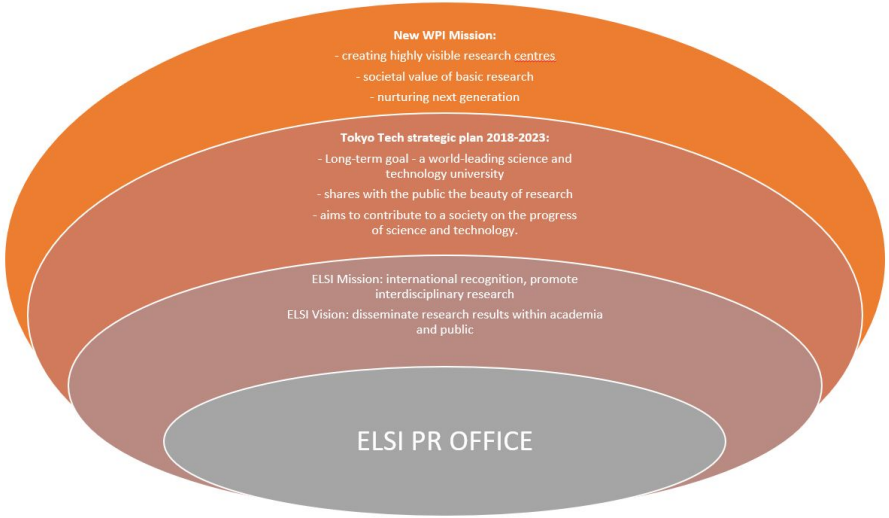
- Lack of availability of grants and funding for outreach and engagement
- Low awareness of cost of outreach and engagement



Identifying the value

03.

- Disconnection with value of outreach for the institution
- How does the value resonate with the institution mission and director's vision?
- Connecting the identified value with the larger societal impact and strategies

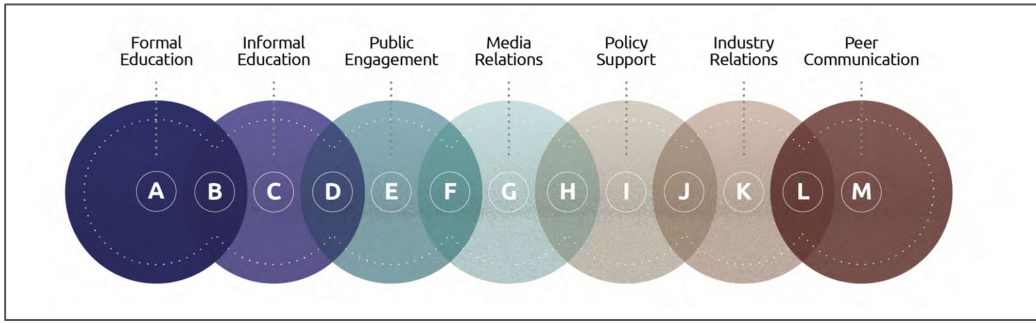


04. Best practices:

Identifying scope

04.

- Every research institution should identify the engagement scope
- Research areas, knowledge area, financial resources, human resources, other resources



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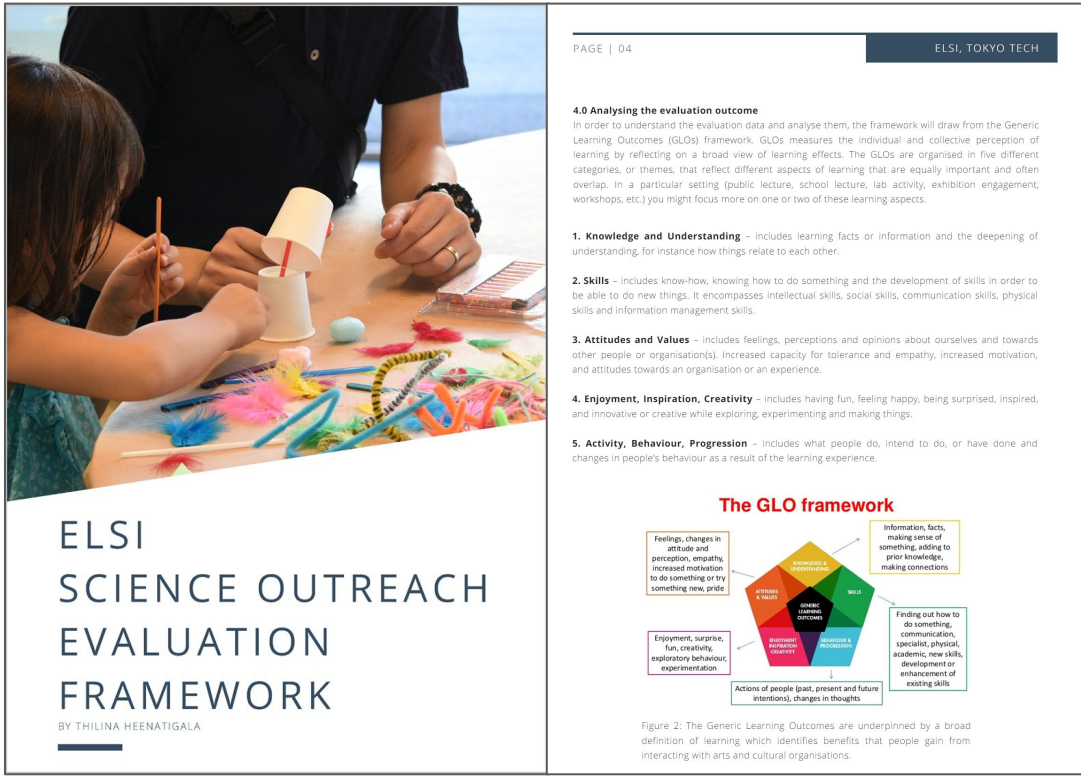
Evaluating outreach

04.

- Creating or adapting an evaluation framework for the outreach activities
- These helps to conduct evidence-based outreach activities
- The results can be used to improve outreach, show the societal impact, for grants



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From ‘fun-learning’ to ‘dialogue-model’

04.

- Identify the patterns of understanding OoL/astrobiology studies shows the difficulty in understanding ‘life’ as a broader concept
- Interest in further studies or engagement is higher in younger female and older male participants

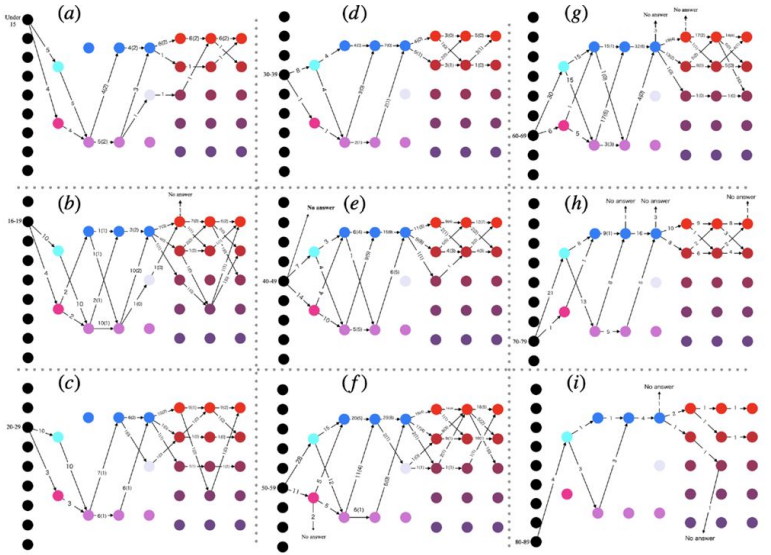
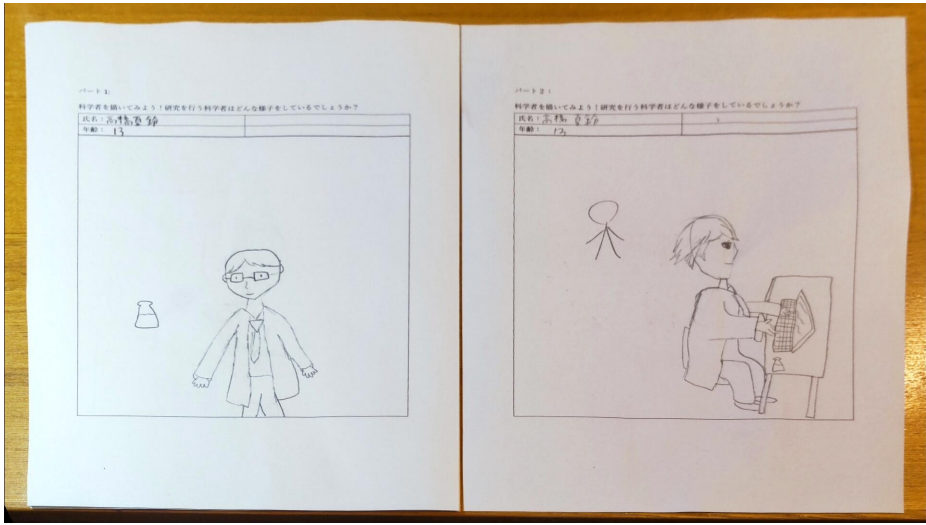


Figure 2: The flow of responses to questions 9-11 for each age. (a) under 15 (b) 16-19 ages (c)20-29 ages (d)30-39 ages (e)40-49 ages (f)50-59 ages (g)60-69 ages (h)70-79 ages (i)80-89 ages. The parentheses indicates

Even the younger participation

04.

- Draw-A-Scientist Test (DAST) is an open-ended projective test designed to investigate children's perceptions of the scientist
- Helps to identify ‘paradigm shift’ in children towards scientists and scientific process



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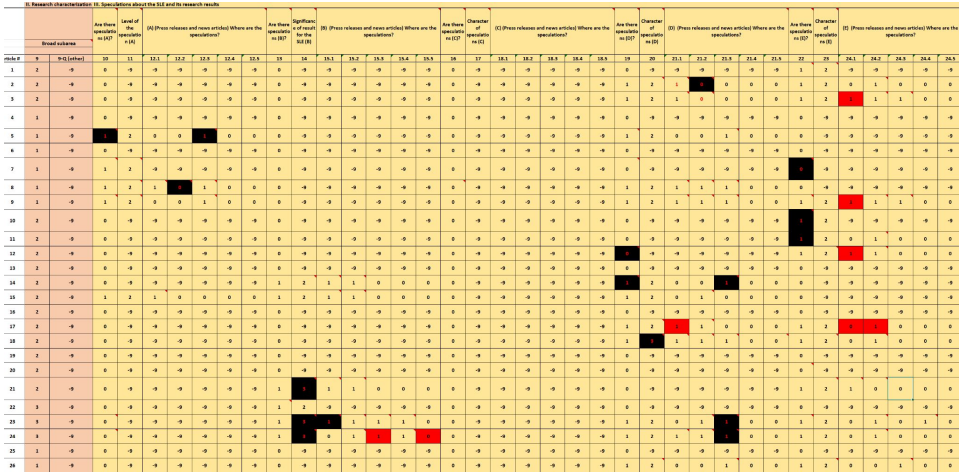
Science in the media

04.

- Analysis of how research papers that has an output through a press release effects the news media coverage
- The study focused on astrobiology; search for life elsewhere as speculation or a promise/expectation
- Helps to reflect on scientific results communication



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Providing training

04.

- Provide training for researchers on outreach, engagement practices,
- Providing training for outreach practitioners

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Identify funding sources

04.

We call upon European institutions, national governments, and research organisations to:

1. Incentivise science communication within research environments through better recognition and support. Funding support should be provided for dedicated training in communication skills; for the further integration of communication activities into career paths; and to foster national and international collaborative platforms to share best practices. Researchers should be recognised and rewarded for their efforts in science communication as part of research assessment systems.

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