MOBILE PLANETARIUM AS A TOOL FOR ASTRONOMY EDUCATION IN NAMIBIA

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Introduction

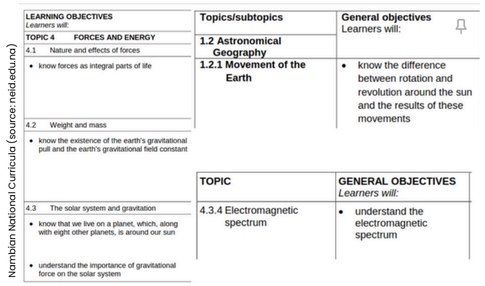
The Africa Milimeter Telescope Mobile Planetarium (AMT MP) is a student-led initiative that promotes astronomy learning in Namibia by strengthening STEM engagement and stimulating scientific curiosity. It provides an accessible, interactive simulation of outer space, allowing learners and communities to explore astronomical concepts in an immersive environment. The program aligns with national curricula, integrates Indigenous knowledge systems, and supports astro-tourism through training for tour guides. In recognition of its impact, the team received the Annie Maunder Medal in 2024 from the Royal Astronomical Society (UK). The initiative continues to expand its outreach and strengthen collaborations across Africa.

Project Overview

Map of all places the AMT MP has visted

- Student-led outreach program with 24 student presenters.
- Portable inflatable planetarium dome (height: 2.95 m, diameter: 5.90 m).
- Provides interactive educational experiences in astronomy and space science.
- Reached over 33,000 visitors in 3 years & has visited all 14 Namibian Regions.

Role in Astronomy Education



Namibian National Curricula (source: neid.edu.na)

LEARNING OBJECTIVES *Learners will:*	Topics/subtopics	General objectives Learners will:
TOPIC 4 FORCES AND ENERGY	1.2 Astronomical Geography	
4.1 Nature and effects of forces	1.2.1 Movement of the Earth	
• know forces as integral parts of life		• know the difference between rotation and revolution around the sun and the results of these movements
4.2 Weight and mass		
• know the existence of the earth's gravitational pull and the earth's gravitational field constant		

TOPIC	GENERAL OBJECTIVES *Learners will:*
4.3 The solar system and gravitation	
• know that we live on a planet, which, along with eight other planets, is around our sun	
• understand the importance of gravitational force on the solar system	
4.3.4 Electromagnetic spectrum	• understand the electromagnetic spectrum

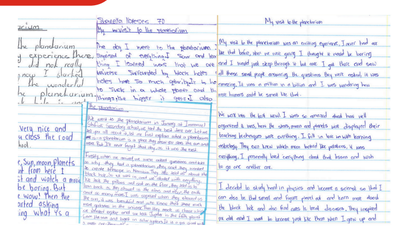
- The AMT MP supports national curricula and is used as an instrument to teach astronomy in educational settings.
- Contributes to United Nations Sustainable Development Goals (SDGs).
- Strengthens astronomy community in Namibia and beyond by linking with other astronomy initiatives.

Educational Approach & Strategy

- In the works: Integration of indigenous knowledge and cultural astronomy to enhance relatability.
- Collaboration with Nambian Academy for Tourism & Hospitality (NATH) equips tour guides with astronomy knowledge to support astro-tourism.
- Engagement with Indigenous communities to preserve traditional sky knowledge.
- Cultural astronomy initiatives contribute to expanding Namibia's science and tourism sectors [4].
- Partnerships aim to bridge scientific research, education, and economic development.
- The planetarium in addition collaborates with the Namibian Scientific Society to host stargazing events, enhancing public engagement with astronomy.

Impact and Achievements

The project was awarded the Annie Maunder Medal for Outreach from Royal Astronomical Society (UK), 2024



Sentiments from learners

TABLE 1

SUBJECT	Year of exams	Grade A*	Grade A	Grade B	Grade C	Grade D	Graded entries	Ungraded
		%	Cum %	Cum %	Cum %	Cum %	Cum %	%
Mathematics	2023	0.7	2.9	6.5	12.7	24.8	72.4	27.6
	2024	**1.2**	**4.5**	**10.0**	**18.1**	**31.4**	**74.4**	**25.6**
Chemistry	2023	1.0	4.2	11.4	24.7	37.9	90.8	9.2
	2024	**0.9**	**3.6**	**12.5**	**28.2**	**43.1**	**89.7**	**10.3**
Physics	2023	0.7	2.9	10.1	24.0	37.1	89.2	10.8
	2024	**1.7**	**6.5**	**17.5**	**36.3**	**51.7**	**94.0**	**6.0**
Biology	2023	1.1	4.1	11.7	25.4	38.6	85.7	14.3
	2024	**1.3**	**5.1**	**12.6**	**25.6**	**37.9**	**82.7**	**17.3**
Agricultural Science	2023	0.8	3.3	14.1	32.4	58.0	98.3	1.7
	2024	**0.6**	**2.6**	**14.3**	**35.4**	**64.1**	**98.98**	**0.02**
Computer Science	2023	3.9	16.5	33.6	51.7	64.1	93.9	6.1
	2024	**3.7**	**12.9**	**29.5**	**50.0**	**63.7**	**96.1**	**3.9**
National Average Cumulative %	2023	1.4	5.7	14.6	28.5	43.4	88.4	11.6
National Average Cumulative %	**2024**	**1.6**	**5.9**	**16.1**	**32.3**	**48.7**	**89.3**	**10.7**

Learners' academic results showed improvements in subjects such as physics & mathematics.

Acknowledgements

- Namibian Academy for Tourism and Hospitality: Collaborating on tour guide astronomy training
- Namibian Scientific Society: Partnering for Southern Star Party and stargazing events
- All our generous sponsors in particular, Netbank and Bank of Namibia.

Learn More

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[3] Backes M, Steenkamp R, Kasai E and Matengu K K 2023 The Namibian Multi-wavelength Observatory—Towards Sustained Astronomy in Namibia Space Fostering African Societies pp 31–44
[4] Auala, S., & Dalgleish, H. (2023). Can dark sky tourism benefit indigenous communities in Namibia?. EASST Review, 42(1), 1-5.