Communicating Astronomy in Underserved Nigerian Communities: The Adventure Thus Far

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Abstract

Communicating Astronomy in Underserved Nigerian Communities: The Adventure Thus Far

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Abstract

Communicating astronomy to underserved communities is an adventure that requires collaborative efforts among stakeholders to ensure its goals are achieved. In Nigeria, our project team has conducted several outreach programmes and workshops to advance astronomy development in underserved communities and achieve the SDGs. These underserved communities include the rural regions, correctional facilities (prisons), and special needs. This project adopted the cascade approach for scalability and knowledge diffusion. From 2023 to date, this project has organised seven educator training workshops and twelve outreaches. The project team has visited four correctional facilities in Enugu and Anambra States, reaching over 350 inmates. To ensure inclusivity for students with special needs, the project team has organised workshops at selected tertiary, secondary, and primary institutions. The target audience determines the learning goals, approach and workshop activities. The project lecture and hands-on activities (including tactile and Braille) are centred on the pale-blue dot, the observable universe, the birth and death of stars, solar system planets, the working principles of telescopes, stargazing, cultural astronomy, and astronomy for mental health. This initiative has reached a total of 3,650 participants with a gender ratio of 55% female and 45% male. The project impact was assessed using quantitative and qualitative methods. Adopting the use of pre- and post-assessment methods, there has been a significant 50.2% increase in understanding about astronomy post workshops and outreaches. The average post-assessment of the project activities showed a 76.2% interest in STEM among participants. The overall assessment of the objectives of the project has shown 79.6% success. There is a need to cover more geopolitical regions across Nigeria. The development of astronomy in these underserved communities is vital to fostering a greater understanding of the universe and inspiring future generations of scientists.

- Introduction
- Key Partners Over the Years and Funding
- Adopted Method
- Impact Assessment Methods
- Workshops and Outreaches
- Correctional Facilities Project
- Astronomy for Visually and Hearing Impaired
- Summary Statistics
- Next Steps
- Conclusion

Introduction

- Understanding the Nigerian Underserved communities. Affects over 55% of the population due to poverty . Largely rural and Northern-based.

- Prisons
- IDP Camps
- Rural Schools
- Marginalised Youths
- Girl Child Neglect
- Special Needs

Achieving the SDG's & AU Agenda 2063

SDG's 1,3,4 & 5

AU Goals 2, 17 & 18

African Union

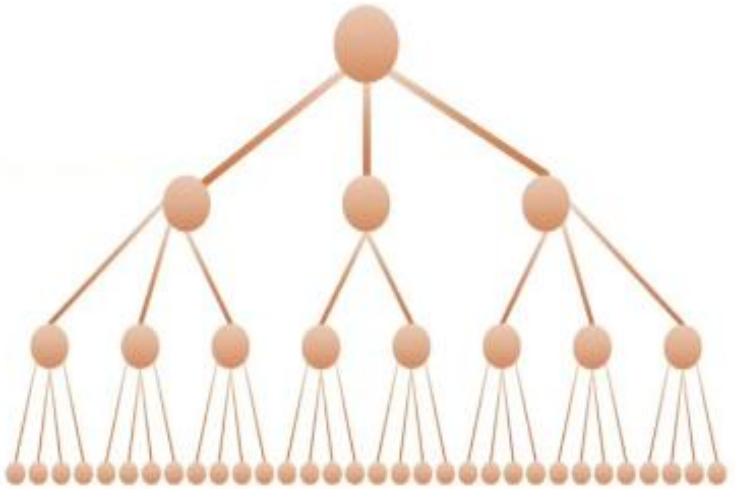
Key Partners Over the Years and Funding

Adopted Method

- The Cascade Approach

- Scalability

- Diffusion



Total Participants and Gender Ratio

This initiative has reached a total of 3,650 participants. Across South East and North Central.

Gender ratio of 55% female and 45% male.

Impact Assessment Methods

- Quantitative (Multi- Choice Questionnaires)

-Qualitative methods (Interviews/Focus groups/ Observation).

-Adopting Pre-and Post-Assessment Methods.

-Significant 50.2% increase in understanding about astronomy post workshops and outreaches.

Achievements Thus Far!

Late 2023-2026

Workshops and Outreaches

- Seven (7) educator training workshops across Nigerian geopolitical zones.
- Twelve Outreaches.
  - Community (3).
  - Tertiary Institutions (2).
  - Secondary Schools (4).
  - Primary & Nursery Schools (3).
  - Participants- 2,316

Space Science Teachers' Training Ngor-Okpala, Imo State. 4 -5, Nov. 2025

Ngor-Okpala Students Outreach, Imo State.

4 -5, Nov. 2025

Lejja and Ede-Oballa Rural Workshops and Outreaches

Oraukwu

Women and Girls

Astronomy Outreach

- Four (4) correctional facilities visited in Anambra and Enugu States, Nigeria.
- Reached out to 555 inmates and 29 warders.
- Over 350 inmates trained in entrepreneurial skills, with correctional centre start-up.
- Start-up support for inmates with few years.
- Bi-annual post-project follow-up and assessment.

Correctional Facilities Project

Astro-Prison

Target Locations

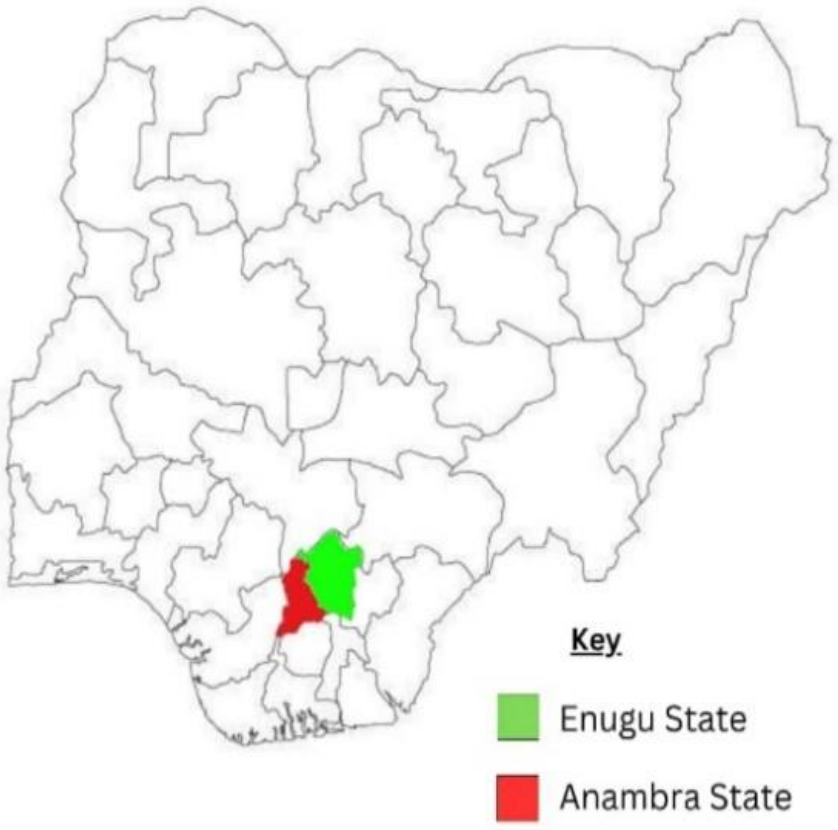


Fig. : Map of Nigeria showing the Target Locations

GENDER DISTRIBUTION OF ASTRO-PRISON'S PARTICIPANTS							
	Enugu State			**Anambra State**			
	Enugu		**Nsukka**	**Onitsha**		**Awka**	**Nnewi**
	Male	Female	Male	Male	Female	Male	Male
	100	20	60	112	72	97	94
Centre's Total	120		60	184		97	94
State's Total	**180**			**375**			
Grand Total	**555**						
Extra Partic.	**29 Warders and 2 Infants**						

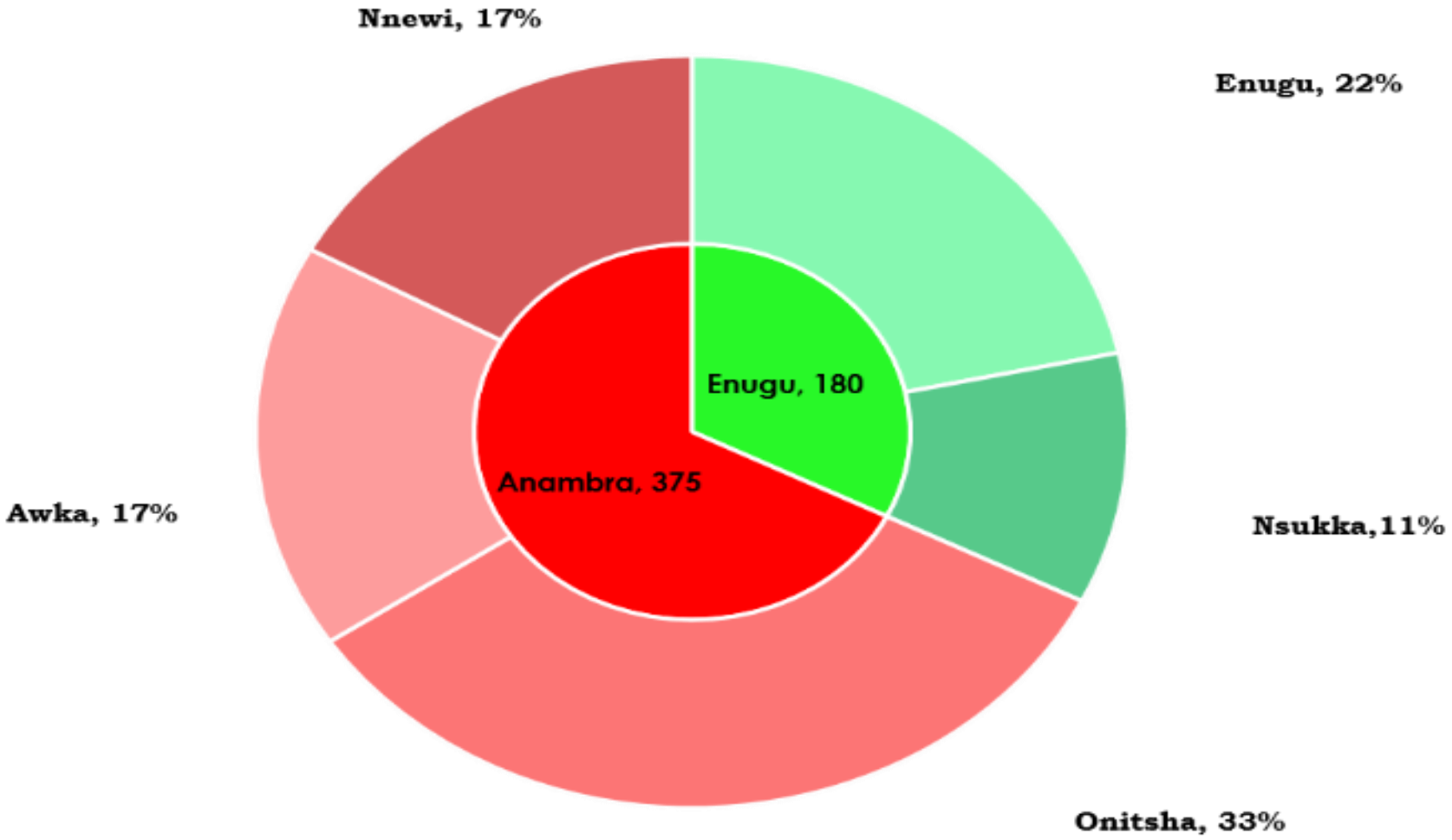
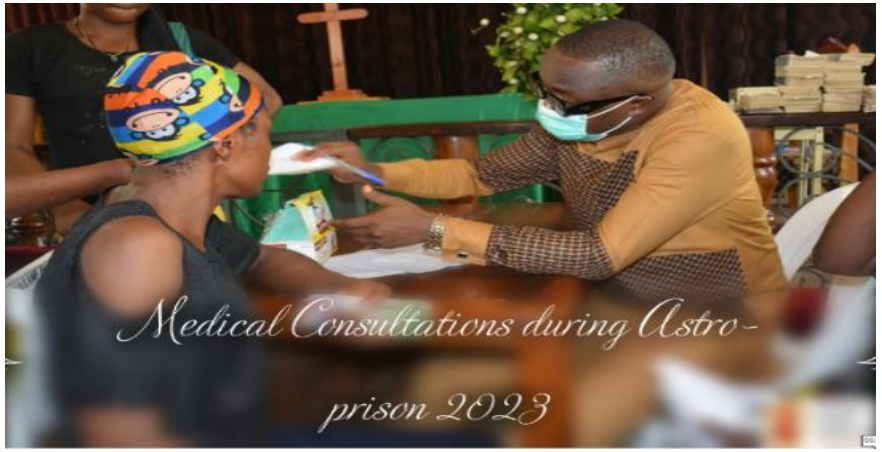


Fig. 3: Pie chart showing the distribution of the audience

UNIQUE FEATURES OF ASTRO-PRISON

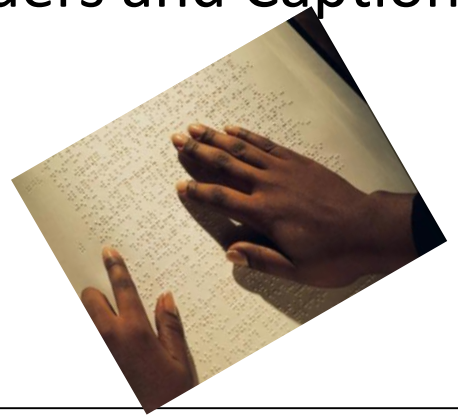
- Multilingual
- Innovative Content
- Long-term Strategic Collaboration
- Post-program Visit



Special Needs Outreach

Astronomy for Visually and Hearing Impaired

- 2 Workshops
- 2 Educator Workshop/Training
- 750 participants at Tertiary, Secondary and Primary Schools.
- Adopted Methods are: Use of Posters, Visual aids, Braille, Tactile Resources, Audio resources, Screen Readers and Captioned Videos



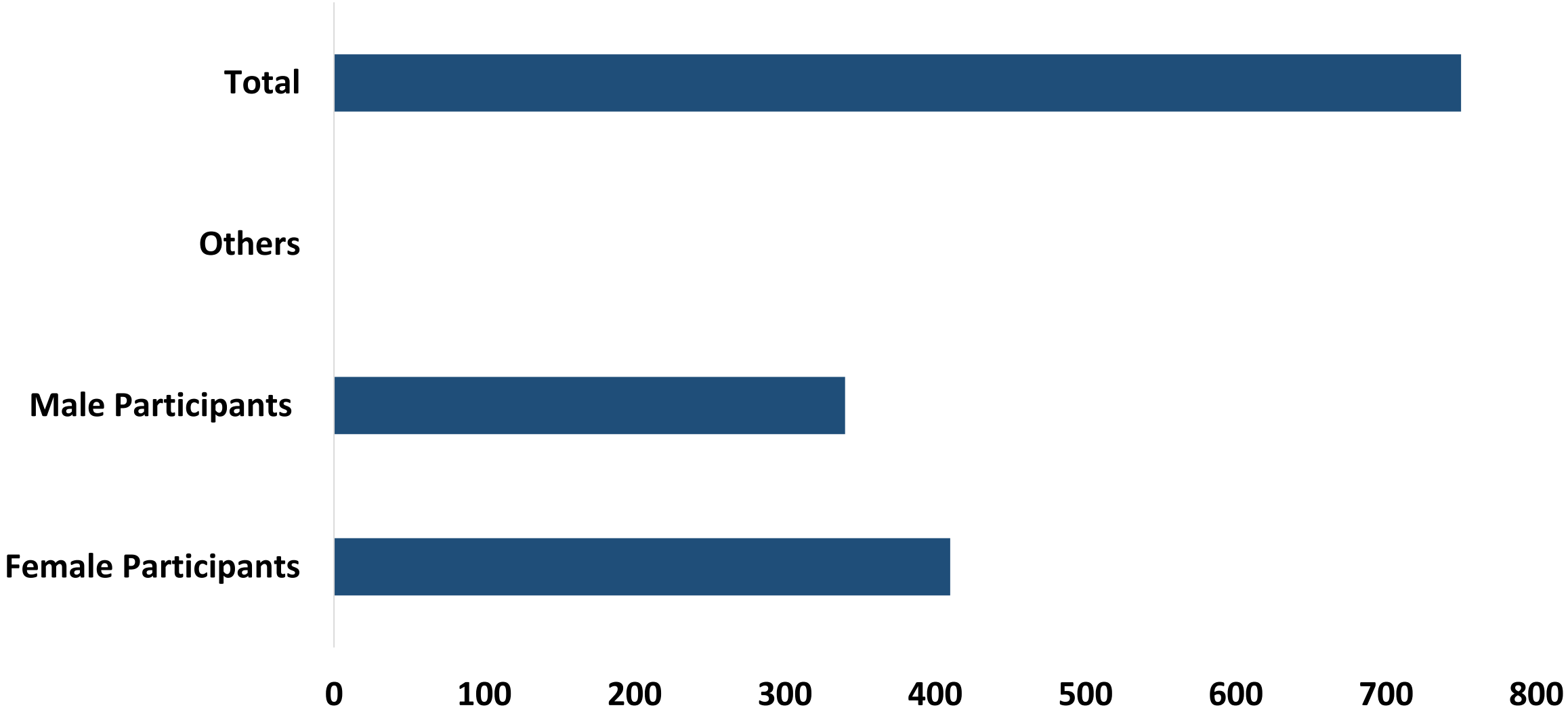
The Birth of Inclusive Astronomy in 2024


GALILEOSCOPE
50-MM (2-INCH) F/10 REFRACTOR KIT
WITH 20-MM EYEPIECE (25X) & 2X BARLOW LENS
DEVELOPED BY LEADING ASTRONOMERS, OPTICAL DESIGNERS & EDUCATORS
FREE EDUCATION ACTIVITIES & OBSERVING GUIDES
GALILEOSCOPE
50-MM (2-INCH) F/10 REFRACTOR KIT
WITH 20-MM EYEPIECE (25X) & 2X BARLOW LENS

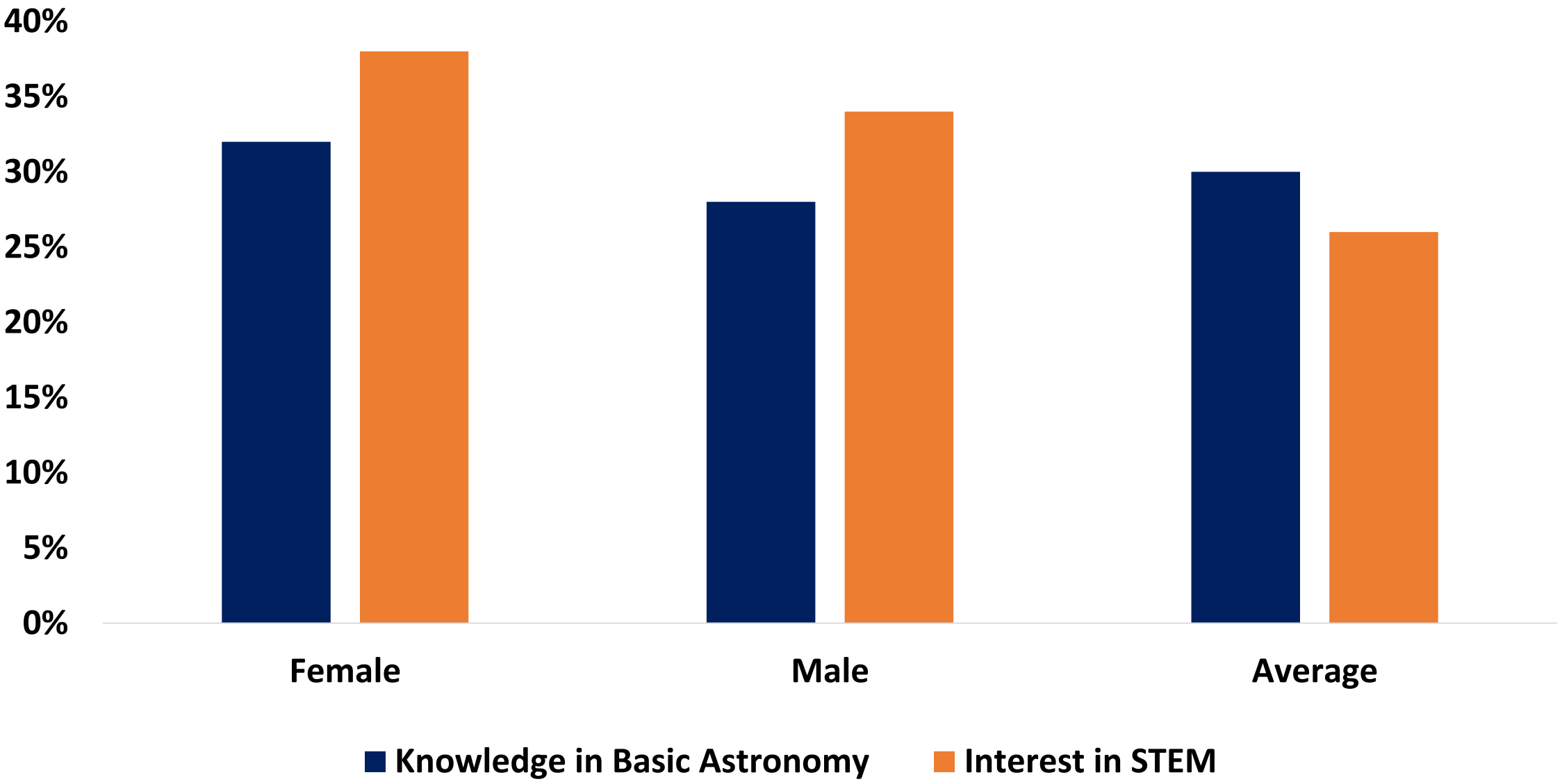

LASSA FEVER
NOTATION OF BASIC SHAPES

Accessibility

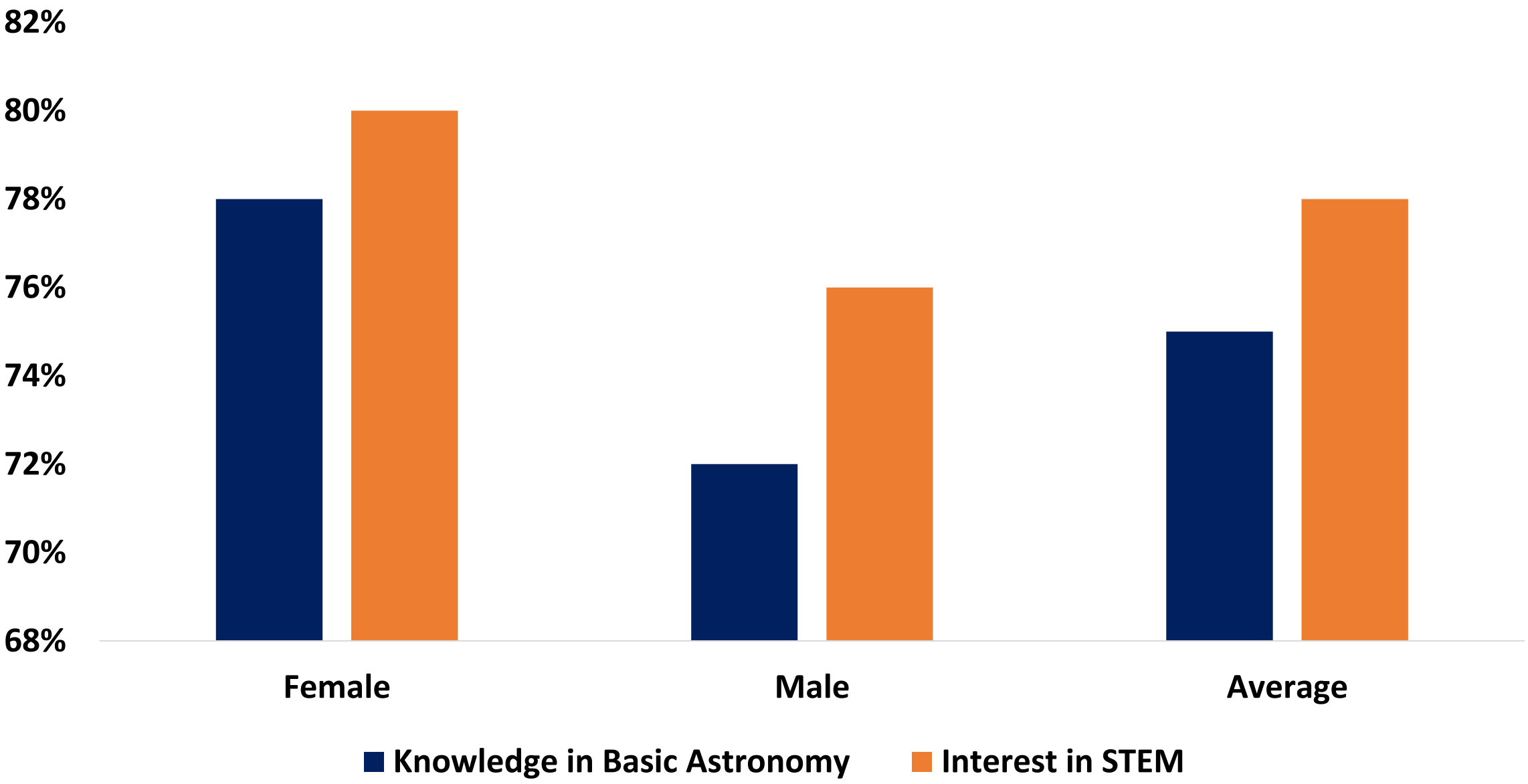
- Wheelchair Accessible
- Deafblind (Older)
- Educators
- Enthusiasts



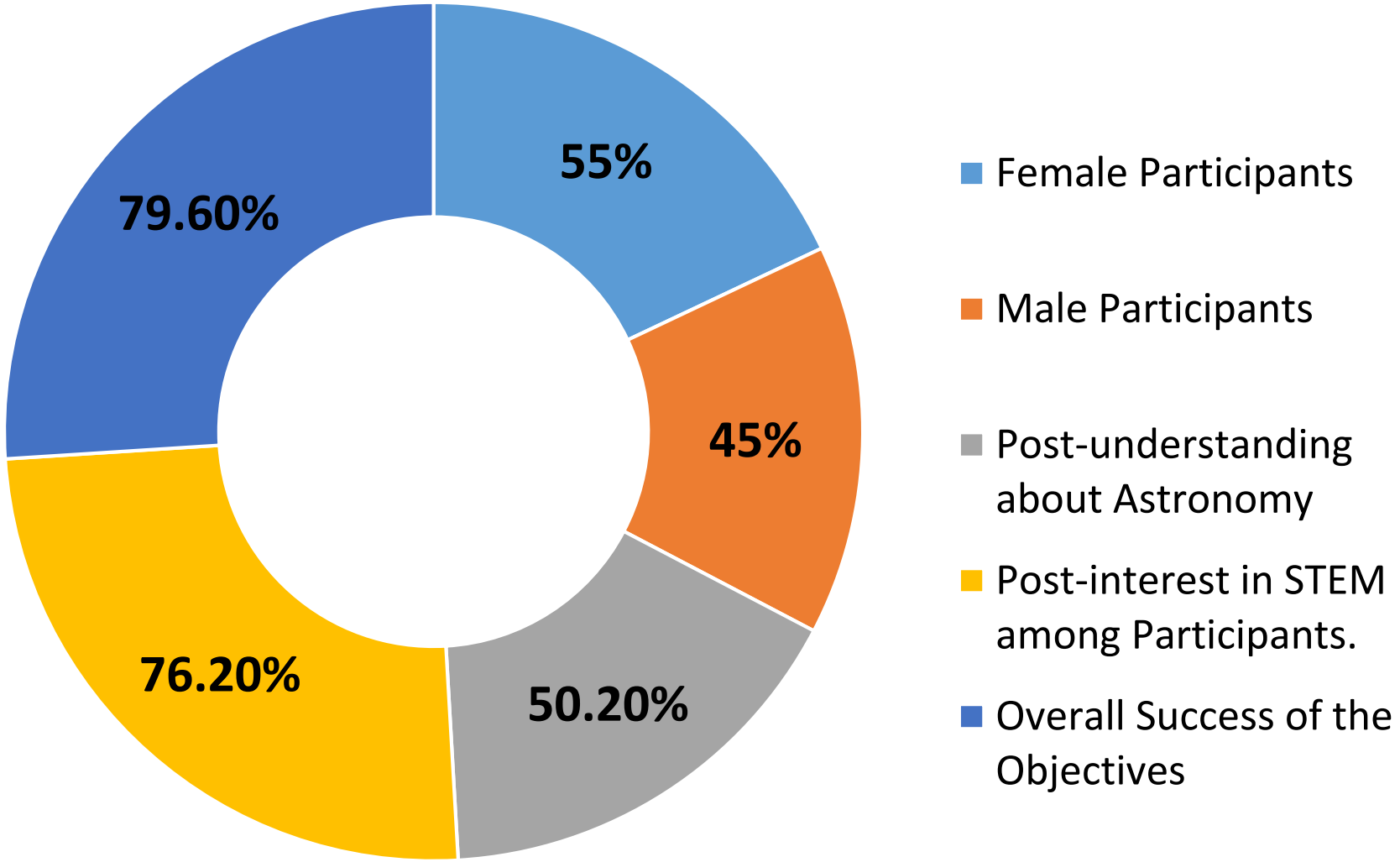
Gender Ratio Among Participants



Pre-workshop Assessments

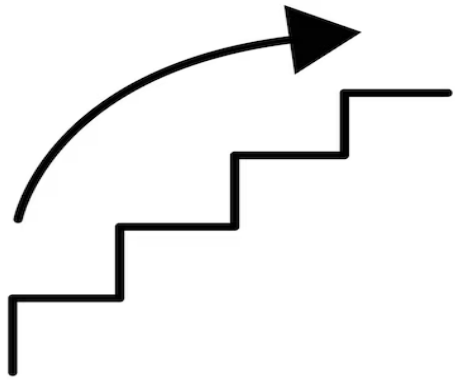


Post-workshop Assessments



Summary Statistics

Next Steps



- Cover of More Geopolitical Zones.
- Print of Project Materials.
- Expanding of Ambassadors Program.
- Partnership with Locals for Funding .
- Publication of Papers in Sci. Comm. J.

Team's Wins & Acknowledgement

- Maiden Prison Reforms Program Using Astronomy Concept.
- Maiden Inclusive Astronomy Education across Institutions.
- Development of Indigenous Inclusive Education Materials.
- Encouraging of Students to pick Interest in Physics, Astronomy and Related-fields.
- Increased Industrial Training Students at NASRDA-CBSS.

Major Challenges

- Access to Remote Regions
- Internet Failure
- Limited Funds

Conclusion

- Communicating Astronomy in underserved communities is a fascinating task that requires collective efforts.
- The challenges of today, is for the better tomorrow.
- The time to leave our comfort zones is now!!

Media Links

-https://nannews.ng/special-education-nasrda-calls-for-inclusive-astronomy-education/

- https://astro4dev.org/tactile-astronomy-workshop-for-bvi-students-in-nigeria/
- https://gazettengr.com/sdg4-nasrda-makes-case-for-science-teachers/
- https://astro4dev.org/overview-astro-prison-consolidation-in-nigeria/
- https://www.nasrdacbss.com/astro-prison/

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