Course Content for Astronomy Textbook of High Schools in Least Developed Countries

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SPACE GENERATION ADVISORY COUNCIL

1.Space education

- Space education is very crucial for sustainable space development as young students are the next generation astronauts, scientists and engineers.
- Space education should motivate children toward the adventure of the universe .
- In many least developed countries, astronomy is not integrated into the formal science curriculum in high schools.
- This future class program is designed to provide a non-technical overview of basic astronomy topics.
- The course contents , which is the main part of the syllable, have to be very interactive and interesting.

Conti…

- This curriculum guide should use hands-on activities to help students and teachers to understand the significance of astronomical observations.
- The course should give a description of astronomical phenomena using the laws of physics and principles of chemistry and biology.
- It also should treat many standard topics which uses algebra and geometry.
- In these countries, the course must be given with high cost effective methods .
- So we can made Astronomical Tools can with home-made materials.

2.Brief Contents of Astronomy books

1. First year: Introduction to Astronomy and the Universe
2. Second year: Solar System
3. Third year: Stars and Stellar Evolution
4. Fourth year: Galaxies and Cosmology

2.1 First year: Introduction to Astronomy and the Universe

1. Preview: The Cosmic Landscape - Charting the Heavens
2. Navigating the night sky -Discovering the Night Sky
3. History of Astronomy
4. Electromagnetic waves and Atoms
5. Telescopes: Optics,Simple telescopes, earth-based and space- based

Activities

- ✓ Stargazing using apps like Starry Night , Sky Map
- ✓ Modeling Earth using a ball tilted with a small flag and a flash light to show for season variation,
- ✓ Building simple telescopes using lens and mirrors

2.2 Second year: Solar System

1. Survey of Solar Systems : Comparative Planetology and Formation Models
2. The Inner Planets
3. The Outer Planets
4. Solar System Debris: Dwarf Planets, Asteroids and Comets
5. Exoplanets: Planetary Systems Beyond Our Own
6. Space Exploration

Activities

✓Modeling the sizes and distances of Sun and the planets using balloons , small billards

✓ Building water rocket

2.4 Third year: Stars and Stellar Evolution

1. The Sun
2. Measuring the Properties of Stars: Temperature ,Radius and mass
3. Classification of Stars: Giants, Dwarfs, and the Main Sequence
4. Stellar Evolution: The formation, Life and Death of a Star
5. Stellar Explosions: Novae, Supernovae, and the Formation of the Elements
6. Stellar Remnants: White Dwarfs, Neutron Stars, and Black Holes

Activities

- ✓ Determining the size of the Sun by using Pinhole Camera
- ✓ Building Spectrometer using prism and a lens
- ✓ Watching documentary videos

2.5 Fourth year: Galaxies and Cosmology

1. The Milky Way Galaxy: A Spiral in Space
2. Types of galaxies
3. Galaxies: Building Blocks of the Universe
4. Galaxies and Dark Matter: The Large-Scale Structure of the Cosmos
5. The evolution of the Universe
6. Life in the Universe: Are We Alone?

Activities

- ✓ Modeling galaxies with printed or drawn papers ,
- ✓ Determine Doppler's effect of sound using a car's horn

Conclusions

- It's very important to carefully arrange the course syllable that will adapt with the facilities and materials that these countries can provide.
- We should encourage students and teachers to create new innovative techniques to simulate Celestial bodies and how they works
- Therefore, we can accomplish space education in high school with less budget and complexity.
- However, international cooperation is needed for advanced Space education.

Thank You