Universe Awareness
Inspiring young children with the beautiful universe

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Introduction

We believe that astronomy can inspire and stimulate children's scientific mind and their learning environment. The Universe Awareness programme (UNAWE) hopes to make use of the broader inspirational aspects of astronomy to stimulate tolerant and internationally minded children. UNAWE wishes to foster children's natural talents and learning abilities using the topic of astronomy with the underlying hope to instil a culture of peace. UNAWE adopts a bottom-up approach to engage the communities and their influence on children's value system. This text tries to highlight some of the ways in which the goals of UNAWE can be achieved.

UNAWE

Universe Awareness is an initiative for a worldwide scientific culture. By exposing children between 4 and 10 years of age to the inspirational aspects of astronomy, UNAWE hopes to broaden their perspective, enhance their understanding of the world and demonstrate the power of self-determined thought.

UNAWE is motivated by the premise that access to simple knowledge about the Universe is a birthright and that the ages of 4 to 10 years play an important role in the development of a human value system. This is also the age range in which children can readily appreciate and enjoy the beauty of astronomical objects and can learn to develop a feeling for the vastness of the Universe.

Universe Awareness is aimed at very young children because cognitive and cultural disparities among children increase with age. UNAWE focuses on underprivileged and economically disadvantaged children, because they are less likely to gain knowledge of the Universe by other means and therefore the most needy. UNAWE is being developed as a bottom-up programme that will carry out or participate in projects in several countries starting in 2009, proclaimed as the International Year of Astronomy.

Ingredients of the programme include (i) the production of entertaining material localised into several languages and cultures, (ii) the organisation of training courses for coordinators and others involved in the delivery of the programme and (iii) a network where teachers and people involved in astronomy outreach can exchange ideas and experiences. These ingredients follow three principles.

- This programme is about inspiration rather than education.
- The bottom-up approach means that the development of the programme is driven by the needs and recommendation of the educators in the UNAWE partner countries.
- The approach should be general and inspire a sense of citizenship of the Earth and an awareness of our place in the universe.

a. UNAWE children

Between the ages of 4 to 10 children develop their social skills and engagement with the outside world. At an early stage, they mix the real world with fantasy, displaying their creativity, a sense of adventure and self-expression. If children's imagination and excitement are stimulated while the world is presented to them within a consistent and rational picture we believe that they develop a balanced sense of responsibility (by developing their own sense of fantasy vs. reality) and a positive self-esteem. This contributes greatly to their identity as individuals who can play a role, interact and influence the world around them. This in turn leads them to develop a healthy sense of judgement, of competence and an enjoyment of intellectual stimulation.

Imitation is an important process of learning. Imitation of social patterns will influence how children apprehend the outside world as adults. By exposing children to cultural and social diversity in an entertaining way, they will become familiar with different patterns of communication and behaviour that will lead to a better understanding and tolerance of cultural diversity later in life.

Astronomy for Peace

Astronomy is more than a costly field of fundamental research. By nature, astronomy encompasses all aspects that link us to the heavens and is one of the most intuitive sciences by its aesthetic appeal and availability.

a. Astronomy as Science

Science calls upon children's natural curiosity and sense of adventure while containing rational explanations. Astronomy in particular is multidisciplinary (physical sciences, chemistry, biology, etc.), which allows for a wealth of easily accessible concepts to be drawn upon when talking about outer space. For example, water is found on Mars, hot things glow, shadows on the moon are the same as shadows on the Earth, etc.

Astronomy has this particularity of being 'super-history', i.e. a visible way of travelling into the past. Just like rings in a tree trunk can fascinate children, the knowledge that the light they are seeing from the stars comes from different times is thrilling. While stars don't move with respect to each other[1], the light we see from each star was emitted at different times. This confronts the usual concept that children's surroundings are seen simultaneously but in different places and moving independently. This example shows that simply observing the night sky calls upon children's imagination and challenges they rational and emotional comprehension of the world.

b. Astronomy as Culture

Astronomy is also part of humankind's scientific and cultural heritage. Not only has astronomy been a tool for navigation and positioning, it has also served as a clock and a calendar. In every culture and civilisation, there are myths and legends about the sun and the moon, the planets, stars and constellations. Preceding the emergence of organised religion and schooling, these had educational and entertainment purposes that can be identified and utilised in modern programmes.

[1] This fact is intuitive for children who identify and recognise patterns in the sky, as demonstrated by the existence of constellations and children's eagerness to recognise them.

These stories often stimulate children's imagination. Their association with learner's culture is also important in emotionally linking them to the sky. If astronomy is presented only as a rational discipline, it leaves room in for emotional catches like superstition or astrology. Folklore can provide the essential emotional link associated with astronomy and contribute to children's development of a sense of identity, self-esteem and self-confidence.

The same applies to the history of astronomy, for example in migrant communities. Very young children in immigrant communities are considered to be foreign (either directly or by proxy through how their parents are treated) and privileged "natives" with access to and ownership of the latest technologies will interact with them as if they came from somewhere else and belonged to some other home. This is most often a natural and unconscious behaviour that does not necessarily constitute racism or ethnic discrimination, but can influence young children nonetheless. Parents and adults in the community may have memories and a sense of belonging to another place, but it is not the case for young children born in a host country or too young to remember another home. Therefore they are not enabled to feel the same ownership of the surrounding culture nor of that of their family's country of origin. Showing them that present state-of-the art science and technology results from a long history of development of human knowledge spanning all cultures (including their own) places the modern day world into a uniting evolutionary context that makes it difficult to segregate cultures.

c. Astronomy as an ambassador for Diversity

Awareness of cultural diversity at a very young age contributes to children's tolerance to difference and helps them enjoy and respect such differences in other aspects in life. The folkloric heritage of astronomy, neutral and peaceful as it is, represents a rich tool for exposing children to such diversity. The wealth of astronomical mythologies, the exotic animals associated with constellations, the magic stories about their origin and fate showcases diversity in a fun and enjoyable context. It is hoped that children will incorporate an appreciation of diversity in their value system by association with entertainment.

These are just a few aspects in which astronomy can potentially contribute to the development and sustained stimulation of children's scientific mind. UNAWE materials will be designed to increase children's eagerness to learn and hopefully a number of sensory and intellectual activities to develop new paths of learning.

d. Astronomy as Heritage

In the broader context of the learner's environment, UNAWE hopes to make astronomy "part of the landscape". The UNAWE training courses will not necessarily be based on teaching astronomy to adults. They will serve as a platform for a dialogue between those who look after the children, those who will deliver the UNAWE programme, astronomers and others involved. One property of such an exchange is an effective enactment of the evolution of human understanding and allows science to be discussed while stimulating collective reasoning.

By making the adults closest to the children talk about astronomy UNAWE will hopefully stimulate a sense of ownership of astronomy among both children and adults. In that sense, even discussions about fears and dogmatic beliefs are likely to contribute to the children's social and intellectual acumen. Debate among adults illustrates that they do not possess absolute knowledge and while some consistency and rationality is favourable, this potentially equips children from being attracted by comforting unconditional dogma later in life.

e. Astronomy as Social common ground

The bottom-up approach adopted in the development of the UNAWE programme results in a richness in input for the development of the programme, a cultural awareness equally importantly an appraisal of people's contribution. Children are sensitive to how respected their community is by the outside world and how self-respecting it is. They will reproduce these patterns by imitation. If their parents, teachers, minders, etc. are valued and motivated in the development of the programme, not only will their sense of belonging to the UNAWE programme and ownership of science be enhanced but the children will also construct a better image of their community and self-confidence.

Conclusion

Not only is astronomy a rich toy to for children's mind, it is also one of the rare disciplines that includes science and culture and is emotionally strong while remaining peaceful.

UNAWE hopes to foster these properties to broaden and improve children's perspectives on their environment and their life, but it also hopes, by involving the community at large, to create a stimulating learning environment in which children and adults are engaged. UNAWE hopes to influence the social well being of the learner's environment. While the goal of UNAWE is to cause a broader scientific culture and awareness, a probable side effect might be an eventual increase in enrolment in scientific disciplines.

This short contribution aims at explaining some of the desirable implications of the UNAWE philosophy in terms of children's scientific mind by addressing communities at large and serves no other purpose than being a starting point for further discussion.