Cosmos Education
2001 Under African Skies Project Report

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1. Executive Summary

Cosmos Education is a non-profit/non-governmental organization dedicated to education in developing countries. In particular, the organization seeks to enhance science and technology education in primary and secondary schools. Along with teaching about science and technology, the Cosmos Education team addresses the issues of sustainable development, appropriate technologies, the environment, and health. The team is composed of graduate students and young professionals from around the world.

Between June 11th and July 19th of 2001, the Cosmos Education team traveled by land from Johannesburg, South Africa to Nairobi, Kenya. Along the way we visited over 34 schools, museums, and villages. Over forty presentations were given and more than 4000 students and teachers were reached. At each school, educational materials were donated and the school's address was recorded for the sake of mailing future educational resources and materials.

In addition to the above mentioned Under African Skies Education Expedition, the Cosmos Education team also worked with students and professors at the University of Zambia in Lusaka, Zambia to host a three-day conference dedicated to science and technology education. Over 550 people attended the conference and the event culminated with a total solar eclipse.

Cosmos Education is now in the process of delivering materials to the schools visited during the 2001 Education Expedition. Plans are also in development for our 2002 Under African Skies conference and expedition.

Children in a school in Northern Zambia show off their drawings of the solar system and the Earth. Along with donating books and scientific toys to schools, Cosmos Education also donated basic materials such as pencils, pens, papers, crayons, and chalk.

2. The Cosmos Education 2001 Team

The diversity of nations and variety of skills represented by the Cosmos Education team was critical to our strength and effectiveness in the classroom. The members chosen for this year's project were selected based largely on their academic and professional commitment to international cooperation and the peaceful uses of science and technology. Many of the team members first met through participation in the United Nations' UNISPACE III Space Generation Forum (July, 1999), and subsequent activities with the United Nations' Office for Outer Space Affairs.

Due to academic and professional commitments, many team members joined us in Africa for periods of ten days to two weeks. Additionally, several students from the University of Zambia became such valuable and enjoyable assets to our team that we invited them to join us for part of the education expedition after the conference.

During the first week of the expedition our team consisted of twelve people from six different countries. As the dates of the conference approached, our team grew in size and breadth; over thirty people representing thirteen different nations on five continents. For a period of approximately ten days, our team size stayed in the range of 20-30 people. As we headed into Northern Zambia and Tanzania, team size decreased to roughly 15 people. The team remained at this size for the remainder of the expedition. A full list of Cosmos Education team members can be found in Appendix I.

The Cosmos Education 2001 Team. Over 12 different countries and 5 continents were represented by our team. Our goals for Under African Skies 2002 include improving the representation of women on our team. During the 2001 project the male to female ratio was approximately 4 to 1.

2.1. Value of Diversity

While fostering a life-long love of learning may have been the team's primary goal, two secondary goals played an integral role in defining the success of our project. First, our team had to be very international – representing as much of the globe as possible and as many different cultures as possible. Second, this international team had to demonstrate cooperation and integration to the students we encountered. Cooperation is critical to the future of development and it was essential that we served as role models for the younger generations.

This summer these goals were thoroughly achieved. Over twelve different nations were represented, including seven different countries from within Africa and one Eastern European country. In the classroom, students saw us working, teaching, and having fun together as we presented a variety of topics. In addition, the young African students saw intelligent and successful Africans giving presentations on difficult topics. Our team mates from Niger, Burundi, South Africa, Uganda, Zambia, Tanzania, and Kenya served as role models for these students. Having such role models enables the student to connect their future with success. At the end of our presentations, our African and female team mates often devoted time to discussing their history and how they reached their present level of education or profession.

Nzeyimana Félicien (Right) of Bujumbura, Burundi and Katiellou Gaptia Lawan (Below) of Naimey, Republic of Niger, were part of the Cosmos Education Team from start to finish. Félicien, an educator and Director of Youth Programs for Burundi, focused on connecting students with their rich heritage and history and the role of science in sustainable development. Katiellou, a meteorologist, talked with students about the use of satellites, remote sensing, the weather, and the cycles that are important to life on Earth (e.g. the water cycle).

3. Under African Skies Eclipse Conference
   3.1. Attendance

Over 550 people attended our three-day conference. The majority of attendees were students and professors at the University of Zambia and secondary school students from area schools.

Cosmos Education arranged for transportation for 20-35 students from each of eight area secondary schools. In addition, coffee and tea were provided for all attendees and lunches were provided for over 350 attendees on all three days.

3.2. Opening Ceremony

The conference began with several notable speeches and welcoming words. In particular, the Vice-Chancellor of the University gave a very warm and appreciative welcoming address and the Zambian Minister of Science and Technology, the Honorable Valentine Kayope, gave the first keynote address. In his remarks, the Minister thanked Cosmos Education and the United Nations Office for Outer Space Affairs for making the conference possible and emphasized the need for continued international cooperation in science and technology.

The second keynote address was made by Dr. Mazlan Othman, Director of the United Nation's Office for Outer Space Affairs. Dr. Othman stressed the need for the peaceful uses of outer space and noted the benefits of space applications to developing nations. In addition, Dr. Othman outlined the goals of her office and discussed the recommendations put forth to the United Nations with regard to the peaceful uses of outer space. Dr. Othman discussed the 1999 UNISPACE III Space Generation Forum and was proud to see so many familiar faces among the Cosmos Education team.

The Honorable Valentine Kayope, Zambian Minister of Science and Technology, gave the keynote address during the Under African Skies Conference opening ceremony. Dr. Mazlan Othman (foreground) of the United Nations Office for Outer Space Affairs, also address the audience during the opening ceremony.

3.3. Conference Format

Each day, the conference began with a morning session involving all attendees. On day one, this session included the opening ceremony and three talks given by renowned scientists from South Africa, Austria, and the United Kingdom. Day two began with talks by scientists from Zambia, the Niger Republic, Uganda, and a historian from Zambia. The final day began with poetry and stories of the Cosmos in Africa. In addition, awards were given to student participants and attendees were educated by a theater performance re-enacting a total solar eclipse of 1835.

After the morning sessions, the conference participants were treated to lunch at the campus dinning hall. The afternoon sessions were divided into two sessions: a research track designed for university level talks, and an education track designed primarily for secondary school students.

Left: The Cosmos Education Team organizes several hundred students during the Education Track of the Under African Skies Eclipse Conference.

Below: Professor Ken Phillips of the United Kingdom discusses the Sun with a Zambian secondary school teacher

Below Left: Students working in groups, researching the solar system and painting a planet.

3.3.1. Research Track

A variety of topics were presented and discussed during the research track sessions. Subjects ranged from astronomy and astrophysics to alternative energy and women in science. In addition, talks on religion and history were given. Each talk was approximately thirty minutes long and was followed by a fifteen-minute discussion period.

3.3.2. Education Track

Students participating in the education track were divided into ten teams: one team for each planet and one team for the Sun. Each team was then given a copy of Cambridge University Press' "Unfolding Our Universe" and a variety of Sky & Telescope, Astronomy, and The Planetary Report magazines. Teams were also given bowls of paint, brushes, and a one-meter by two-meter piece of strong cardboard. Using all of these materials, each team had to research their solar system body and write a 'Visitor's Guide' to the planet or Sun. The guide had to describe the surface conditions of the body and convey a sense of what it would be like to visit that world. Along with the visitor guide, the teams had to create a large painting of their planet or the Sun. On the final day of the conference awards were given for 'Best Guide', 'Best Painting', 'Best Overall', and 'Best Place to Live' [best overall was a tie between Earth and Mars, as a result we created the fourth prize for the Earth team]. For each award, team members were given copies of magazines, posters, educational materials, and some candy.

Above: Students receiving prizes for their teamwork during the Education Track.

Right: Katiellou Lawan of Niger discusses remote sensing and satellites he uses for meteorology in Africa.

3.4. Eclipse Day

On June 21st, 2001 the first total solar eclipse of the millennium occurred. The shadow of the moon passed over southern Africa and the only major city to lie in that path was Lusaka, Zambia.

The final day of our conference coincided with the total solar eclipse. The city of Lusaka hosted a celebration on the University of Zambia grounds and thus in the hours leading up the eclipse we found ourselves overwhelmed by thousands of people curious to know more about the eclipse and eager to receive a free pair of solar eclipse viewing glasses. Over 1500 glasses had been donated to our project and every attendee received a free pair. Nevertheless, we were still left with close to 1000 glasses to distribute. Sensing the potential for chaos, we gave the remaining glasses to the Zambian Assistant Secretary and his soldiers. The glasses were then distributed by the Zambian soldiers.

Members of the University of Zambia Theatre Group and the Lusaka Players treated conference attendees to a fantastic portrayal of the folklore and legend of the events surrounding the total solar eclipse of 1835. This eclipse – the last eclipse visible from Zambia – is believed to have coincided with the crossing of the Zambezi River by Ngono tribe. The stunning eclipse was seen as a dark omen, but the tribe continued its adventure and settled in what is now Zambia.

Over 1500 pairs of eclipse glasses were handed out for free to conference attendees and the general public. Note that in the background of both images one can see some of the pictures of planets painted by the secondary schools students attending the conference.

Thanks to Meade Telescopes, we also had the opportunity to share a close-up view of the eclipsing Sun and Moon with many students and citizens. We set the small but powerful telescope up and asked people to line up for a view. Other than a few crowded bumps that knocked the telescope of target, everyone behaved well and several hundred people were able to see the event up close.

The eclipse itself was stunning. Just prior to totality a gentle roar began to emerge from the crowd. Excited viewers yelled with anticipation. The noise grew to a crescendo as the Sun slipped away. Once totality struck, the cheers subsided and an eerie aura overtook the crowd. For over three minutes we all shared the experience of being immersed in the darkest part of the Moon's shadow. When the Sun emerged from the other side of the Moon, cheers again erupted and one could feel a collective sense of relief that the Sun did indeed come back. It was phenomenal.

3.5. Closing Ceremony

Once the Sun had completely re-emerged, we held a short and informal closing ceremony outside in front of the hanging artwork of the students. The primary aim of this event was to thank our local organizing committee and give donations to the University of Zambia.

3.5.1. Donations

Along with many different books and piles of magazines for the students (The Planetary Report, Sky & Telescope, Astronomy), we also gave the University a full set of the audio tape version of the Feynman Lectures on Physics. We also provided the school with a complete Hitachi WorldSpace receiver for use in their computer lab.

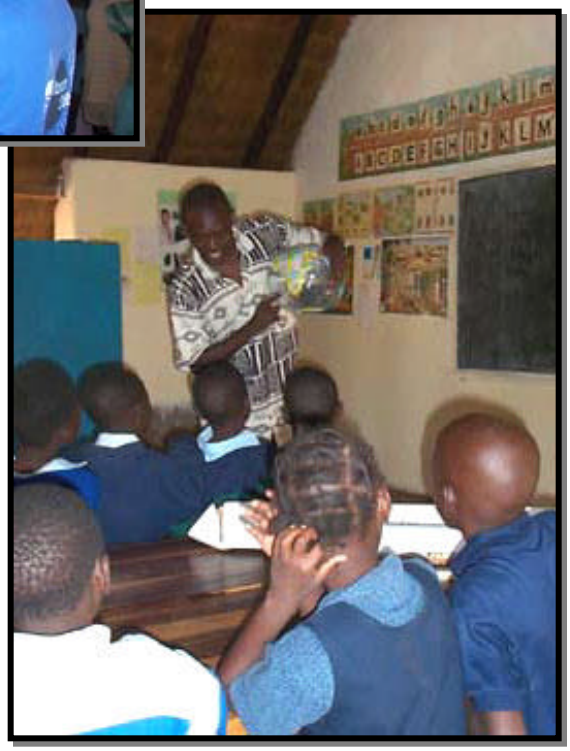
Cosmos Education team member Will Marshall (foreground, blue shirt), helps students observe the total solar eclipse through a telescope. (Telescope courtesy of Meade Telescopes).

4. Under African Skies Education Expedition

Between June 11th and July 19th, 2001 the Cosmos Education team visited over thirty-four different schools, museums, and villages to talk about science, technology, and sustainable development. Over four thousand students and teachers were reached. Along with teaching and assisting teachers, our team members also had the opportunity to be the students on several occasions. Village elders conveyed stories of the night sky, museum curators taught us history, and tribesmen taught us about their culture and the ways in which the night sky is used in their society.

4.1. Schools

Many of the schools we visited were contacted and arranged in advance, however, we often stopped at random schools to see if an impromptu performance was possible. We were always greeted with open arms and with just one exception we were able to present to the students shortly after arriving.



Above: Christian Masawe of Tanzania teaches students in Zambia about plate tectonics and the geologic history of our planet.

Right: Milton Waiswa, a meteorologist from Uganda, teaches young students about the weather and how he works to make accurate predictions about the weather that help farmers decide when to plant their crops.

Curious students gather to inspect the Cosmos Education truck and to greet the team.

4.1.1. Rural and Urban Schools

We chose to visit a diversity of schools – ranging from well funded private schools in urban regions to run-down, empty schools in remote areas. In some cases, the entire school was barely more than a small, dirty, and empty building. During our time in Zambia, teachers at public schools were on strike. As a result, when we visited these schools we would usually find a few dedicated teachers watching over the students as they played a game of football (soccer). Teachers at these schools were always delighted to see us arrive.

4.1.2. Curriculum and Presentation Format

For the majority of schools, we spent more than three hours working with the students and teachers. On some occasions, we spent the entire day at the school. On other occasions we spent a little more than thirty minutes. Much of this depended on the structure and schedule of the school. Ideally, we aimed for a 45-60 minute group presentation after which we broke into smaller focus groups that rotated on a 10-20 minute schedule. This gave the students a chance to talk with us and ask questions on a more personal level and it gave us an opportunity to go into more depth with a given subject.

George Whitesides of the United States keeps students in Western Kenya engaged during a presentation on the weather and environment.

Depending on the size of the Cosmos Education team at the time, we would either all visit the same school and work together on one big presentation or we would divide up into teams of three to five and visit separate schools at the same time.

During the group presentation the performance was divided up into roughly 8-12 different modules that merged together very well to create a relatively seemless presentation. The modules could be rearranged with little difficulty and at little expense to the flow of the performance. Each module was presented by a different set of team members. Over the course of our travels, new modules were developed and older ones were perfected. Team members worked together to try and learn as many modules as possible so that the presentation was as adaptable as possible.

4.1.3. Key Themes

All of the presentations began with a sense of scale demonstration wherein an orange or mango was used as the Sun and a small pebble was used as the Earth. Our aim during the first half of our presentation was to capture the imagination of the students and expose them to fun ideas and concepts. Topics ranged from astronomy, cosmology, and space exploration to plate tectonics and the search for life in the universe. By exciting the imagination we hoped to initiate the growth of a life-long love of learning.

Will Clarkson of the United Kingdom discusses a few concepts in physics with students after a presentation in Tanzania.

The second theme of our presentations involved bringing the knowledge back down to Earth. We wanted to show the students how science and technology can help humanity if used correctly. Topics included meteorology, remote sensing, the chemical cycles important to life, sustainable development, pollution, appropriate technologies, and issues related to the environment. In addition, we usually closed with a story from African folklore. Nzeyemana Félicien, from Bujumbura, Burundi, would tell the story of a solar eclipse that occurred in Burundi many years ago. Félicien would tell the story in Kirundi – his native tongue – and the students would recite each line back to him. Along with having fun and being an interesting story, the point of this part of the program was to connect students with their rich heritage and history. We want the students to develop love of learning everything, from history and culture to science and technology.

Will Marshall of the United Kingdom talking with the Head Teacher at the Kayope School in Northern Zambia. Feedback from the teachers will help us create a more effective program and determine which educational materials are most beneficial.

4.1.4. Talking with Teachers

Before each performance, we talked with the teachers of the school to see what the students were learning in school. We then tried to cater our presentation so as to reinforce this curriculum. For instance, in many schools the students were learning about the water cycle and pollution. We then focused time on this topic and related its significance to many other topics (e.g. sustainable development, the environment, health).

After our presentation, several team members would sit and talk with the teachers to discuss ways in which Cosmos Education could serve as a continuing resource for the school. In addition, we talked with the teachers and tried to answer any questions they had about the material we presented.

4.1.5. Donations

At the end of each presentation, Cosmos Education gave posters, books, magazines, pencils, paper, crayons, chalk, and educational toys to the principal or head teacher of the school. Each school received a copy of the Cambridge University Press book "Unfolding Our Universe" and they also received a complimentary membership to The Planetary Society.

Above: Will Marshall presents teachers in Zambia with posters to decorate the bare classroom walls.

Below: Peter Hand gets an enthusiastic thumbs-up from young students at the Tongabezi Trust Primary School.

5. The Cosmos Education Resource Network

Now that our 2001 Under African Skies Eclipse Conference and Education Expedition have reached a very successful conclusion, it is time for our team to focus on the schools visited and our relationships with the teachers.

5.1. Mailing Resources

While we delivered over one ton of educational materials this summer, we still have dozens of boxes full of materials waiting to be shipped. In the coming months, these boxes will be mailed to schools in Africa and our hope is to collect more in-kind donations from publishers and other companies.

Many teachers provided us with lists of resources most needed in their schools. We will use these lists as a guide for the donations we seek.

5.2. Overlap from 2000 to 2001

During the year 2000 education expedition, fifteen schools in Africa were visited. During the 2001 Under African Skies expedition we were able to return to more than a third of the schools visited in 2000.

Our network of schools now tops 50 schools in Africa and as the program grows we hope to continue visiting the same schools while simultaneously adding more to the network.

Thanks to the generous support of our sponsors, we were able to donate over one metric ton of materials to schools in Africa. Materials included books, posters, magazines, pencils, paper, chalk, pens, crayons, and a variety of useful toys and experiments for the classroom.

6. On the Road with Cosmos Education:

6.1.1. Tswaing Crater Museum and Star Party

Our first stop during the education expedition was a campsite just north of Pretoria, South Africa. The campsite is located just a few hundred meters away from a 200,000 year old asteroid impact crater and it is right in the heart of the Shosanguve township district. The first two schools we visited were in this township and on one of our nights at the campsite we hosted a small 'star party' with students and villagers in the area. We set up our telescopes and binoculars and allowed everyone to take a closer look at the night sky. In the meantime, we cooked up a huge meal and shared it with all in attendance.

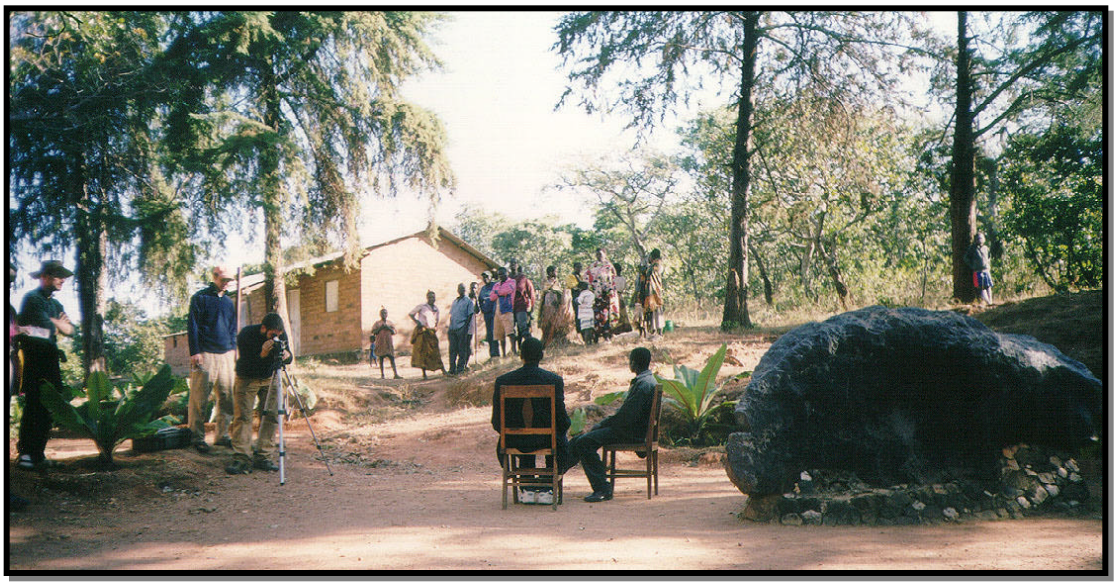
Top: Will Marshall gathers children for a free dinner and star party. Bottom: Naida Kendrick talks with students after our presentation at the Shosanguve Technical High School.

6.1.2. Mbozi Meteorite Museum

The Mbozi meteorite is a twelve ton mass of iron and nickel tucked away in the soil of a farm in Southern Tanzania. In 1930 it was discovered by a surveyor and subsequently excavated for study and display. Today this stone from space still resides in its original position on the farm of Hamo Sassoon near Mbeya, Tanzania.

During our education expedition, we stopped and camped at Hamo's farm and spent a morning working with Hamo to give presentations to his friends and villagers. We organized the event such that Hamo first discussed (in Swahilli) the known history of the rock and then Will Clarkson discussed the scientific value and intrigue of such an object. Elias Xavier, a team member from Tanzania, translated Will's presentation into Swahilli so the local could understand his comments.

This event serves as a perfect example of what Cosmos Education was hoping to accomplish outside the classroom. Our interaction with Hamo and his fellow villagers proved to be a terrific learning experience for all involved. In addition, Hamo had the opportunity to present in front of his peers and let them know more about the curious rock on his farm. The experience was empowering for him and we, the Cosmos Education team, were amazed by his knowledge – both historic and scientific.



Elias Xavier of Tanzania interviews Hamo Sassoon, farm owner and curator of the Mbozi meteorite in Southern Tanzania. The Cosmos Education team worked with Hamo and gave presentations to the villagers about the interesting science of the meteorite. Cosmos Education also donated books and material to help Hamo with his self-education.

6.1.3. The Mkombozi Center for Street Children and Girl-Child Network

Along with visiting schools and local museums, Cosmos Education also visited several centers specifically aimed at helping orphans and children in need. In South-Western Zimbabwe we spent an entire Saturday working with young children at the Girl-Child Network – a small organization that helps care for abused and abandoned young girls in Zimbabwe. In Northern Tanzania we spent time at the Mkombozi Center for Street Children – a refuge for orphaned young boys and girls.

In both cases the children were incredible. Despite facing unimaginable obstacles these young minds were committed to making a positive difference in the world around them. Cosmos Education worked hard to inspire these children to keep learning. In addition, our team had long discussions with the administrators about the ways in which Cosmos Education could help these centers develop and maintain a useful educational program. Since our visits, we have been in contact with these teachers and are in the process of developing this program.

Above: Cosmos Education entertains and educates on the lawn of the Girl-Child Network center in Hwange, Zimbabwe.

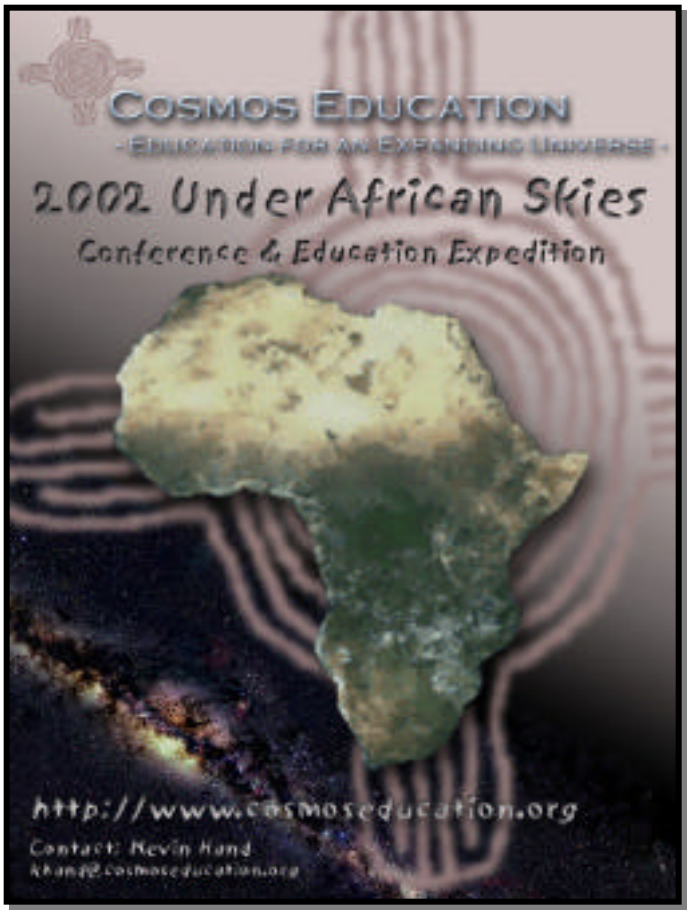
Right: Julia Tizard of the United Kingdom stands with several young children at the Mkombozi Centre for Street Children. On the chalkboard is a list of all the careers the children dream of pursuing. Among the careers listed are doctor, teacher, engineer, lawyer, carpenter, and president.

7. Proposal for Under African Skies 2002

While still in Africa, we were already in the planning stages for our 2002 Under African Skies conference and education expedition.

Next June our conference will be held at the University of Nairobi in Nairobi, Kenya. This location offers many advantages for holding a conference and it will allow us to host the conference at the beginning of our trip as opposed to half way through the adventure.

Additionally, one of our team members is an assistant professor at the University and we met with a number of students and teachers interested in helping us with the event. This past summer we visited the Kenya Science Teacher's College in Nairobi. We hope to get many of the students at this college involved with the conference and education expedition.



While in Nairobi we also visited the United Nations' Center and talked with a gentleman from the United Nations' Environment Program Office (UNEP). We hope the 2002 Under African Skies Conference will be a forum for bringing together youth involved with many different offices of the UN. In particular, along with OOSA we hope to involve UNEP, UNESCO, WHO, the UNDP, and UNICEF.

After the Under African Skies conference, our 2002 team will then travel south. The final destination is likely to be Johannesburg, South Africa.

8. List of Schools

LIST OF SCHOOLS

	Date	Country	Name of School	Type of School	# of Students
1	13th June	RSA	Retumitse High School	Secondary	150
2	13th June	RSA	Shoshanguve Technical	Secondary	150
3	13th June	RSA	Tswaing Crater Museum	Children, Village	10
4	14th June	RSA	Haenertsburg	Primary	50
5	14th June	RSA	Appel	Primary	80
6	15th June	Zimbabwe	Milton Boys	Secondary	350
7	15th June	Zimbabwe	Bulawayo Girls	Secondary	100
8	16th June	Zimbabwe	Girl-Child Network	Primary age	100
9	19th - 21st June	Zambia	Eclipse Conference (8 schools)	Secondary	200
10	19th - 21st June	Zambia	Eclipse Conference	University	500
11	19th - 21st June	Zambia	Eclipse Conference	Teachers	35
12	22nd June	Zambia	Nkwanzi Trust	Primary	150
13	25th June	Zambia	Tongabezi Trust	Primary	50
14	27th June	Zambia	Kapoko Secondary	Primary	50
15	28th June	Zambia	Shiwangandu	Secondary	70
16	28th June	Zambia	Timba Basic	Secondary	50
17	28th June	Zambia	Matero	Primary	50
18	29th June	Zambia	Chakunkula Basic	Primary	50
19	29th June	Zambia	David Kaunda Tech.	Primary	50
20	29th June	Zambia	Evelyn College	Primary	50
21	2nd July	Tanzania	Mbozi Meteorite Museum	Adult, Villagers	20
22	2nd July	Tanzania	Mbeya	Secondary	40
23	8th July	Tanzania	Masai Tribe	Adult, Villagers	10
24	10th July	Tanzania	Arusha Day	Secondary	20
25	10th July	Tanzania	Oldadai	Secondary	30
26	10th July	Tanzania	Arusha	Primary	150
27	11th July	Tanzania	Kibo	Secondary	20
28	11th July	Tanzania	Mkombozi Ctr. for Street Children	Orphanage	30
29	11th July	Tanzania	Weruweru	Secondary	500
30	13th July	Kenya	Kenyan Science Teachers College	Teachers College	50
31	14th July	Kenya	Pentecostal Academy Church	Church Primary	40
32	16th July	Kenya	Buhuyi	Primary	300
33	16th July	Kenya	Buhuyi	Secondary	100
34	17th July	Kenya	Mumias	Adults, Village	10
35	17th July	Kenya	Aga Khan	Secondary	35
36	17th July	Kenya	Uthiru	Secondary	500
37	17th July	Kenya	Kianda	Secondary	120
	Totals			**37 Schools/Museums/Villages**	**4270 Students**

9. Cosmos Education Team Members

TEAM MEMBERS

1.	Kevin Hand	USA
2.	Will Marshall	UK
3.	George Whitesides	USA
4.	Julia Tizard	UK
5.	Bojan Pecnik	Croatia
6.	Peter Hand Jr.	USA
7.	Katiellou Lawan	Niger Republic
8.	Nzeyimana Felicien	Burundi
9.	Will Clarkson	UK
10.	Elias Xavier	Tanzania
11.	Christian Massawe	Tanzania
12.	Fezile Vuthela	Republic of South Africa
13.	Benjamin Moalusi	Republic of South Africa
14.	Iago Lowe	USA
15.	Erin Hardie	USA
16.	Loretta Hildago	USA
17.	R. McKell Carter	USA
18.	Mr. M Mooshi	Tanzania
19.	Milton M. Waiswa	Uganda
20.	Naida Kendrick	USA
21.	Nicholas Ochanda	Kenya
22.	Frank Bwalya	Zambia
23.	Peter Nsombo	Zambia
24.	Elias Mwambela	Zambia
25.	Julia Birch	Australia
26.	Joanne Thomas	USA
27.	Andrew Ferrone	USA
28.	Miranda Johnson	USA
29.	Takei Takanora	Japan
30.	Eddie Hawkey	South Africa/Zimbabwe

10. List of Sponsors

The Tilenius Charitable Fund
The British National Space Centre
The Musk Foundation
The Planetary Society
Lockheed Martin Space Operations
The Space Frontier Foundation
Yuri's Night
The MacAusland Fund
The 2111 Foundation
The San Jose Astronomical Association

UN Office for Outer Space Affairs
Telescope House, London
Cambridge University Press
National Academy Press
Klutz Press
Sky & Telescope Magazine
Astronomy Now
Libra
Earth & Sky
Armagh Planetarium
Eclipse99 Ltd.

11. Eclipse Conference Agenda

2001 Under African Skies Eclipse Conference

Hosted by Cosmos Education and the University of Zambia

June 19-21st, 2001

University of Zambia, Lusaka, Zambia

Conference Agenda

The Under African Skies Conference is organized into two parallel tracks that will take place in separate rooms. The first track is focused on education and is primarily for secondary school students. The sessions in this track will involve hands-on learning and interaction. In the second track, university-level research will be discussed by professors, scientists and university students.

Tuesday, June 19th

8:00	Registration: Upper Dining Hall	
9:00	Opening Ceremony	Chairs: Dr. Peter Nsombo and H.W. Mweene
	Welcome Speech by Vice-Chancellor, Professor Mutale Chanda	
	Opening Speech: Guest of Honor, Minister of Science and Technology, The Honorable V. Kayope	
	Remarks by Cosmos Education President, Kevin P. Hand	
10:00	International Cooperation and the Role of Science and Technology in Sustainable Development	Dr. Mazlan Othman, Director United Nations, Office for Outer Space Affairs
10:15	Meteorite Impact Craters on the Earth	Professor Christian Koeberl, Univ. of Vienna, Austria
10:45	Impact: An African Perspective	Professor W. U. Reimold, Univ. of Witwatersrand, RSA
11:30	Organizational Comments	E.Mwambela, G. Whitesides
	Track 1: Education	**Track 2: Research**
11:40	*Our Cosmos* *Session Chairs:* *Benjamin Moalusi, SAAO and Julia Tizard, Manchester University*	*Astronomy & Physics:* *Session Chair: Fezile Vuthela* Prof. Ken Phillips, Rutherford Appelton Laboratory, U.K., "Why is the Sun's Atmosphere so Hot?"
12:30	Lunch: UNZA Sylva Café Dining Hall	

Tuesday, June 19th

13:30	Student Workshop: Hands-On Learning Activities Directed by Cosmos Education	
	Track 1: Education	**Track 2: Research**
14:00	(Workshop Continued)	*Astronomy & Physics:* *Session Chair: Benjamin Moalusi* Mr. Bojan Pecnik, Univ. of Zagreb, Croatia "Proto-Gas Giants: The Birth of Massive Planets" Mr. Lazarus Mwanza, Zambia "The Teaching of Science in High School"
15:00	*The Universe* *Session Chairs:* *B. Pecnik & W. Marshall*	Mr. William Clarkson, U.K. "The History of African Astronomy"
15:30		Break
16:00	End	Seshamani Sharmistaa, UNZA "Women in Computer Engineering" Mr. Peter Kalebwe, UNZA "Variable Stars" Mwenda Moses, UNZA "The Bible and Science"
17:30		End

Wednesday, June 20th

8:30	Coffee/Tea	
9:30	Welcome to Under African Skies, Day 2	G. Whitesides, E. Mwambela
9:40	The Search for Sustainable Energy Futures - Reality or Utopian Dream	Prof. Prem. C. Jain, UNZA
10:30	Enhancing Poverty Alleviation Efforts for Rural Development through the use of World Space Information Technologies	Milton M. Waiswa, Uganda & Katiellou G. Lawan, Niger
11:15	Folklore and Legends of the African Cosmos	Professor M. Mtonga, UNZA
	Track 1: Education	**Track 2: Research**
12:00	*Our Planet* *Session Chairs:* *Fezile Vuthela, SAAO* *and Julia Tizard,* *Manchester University*	*The Living Planet:* *Session Chair: Nzeyimana Felicien* Mr. George Whitesides, USA "Environmentalism and Space"
12:30	Lunch: UNZA Sylva Café Dining Hall	
13:30	Student Workshop: Hands-On Learning Activities Directed by Cosmos Education	
	Track 1: Education	**Track 2: Research**
14:00	(Workshop Continued)	*The Peaceful Uses of Outer Space:* *Session Chair: Julia Tizard* Dr. F. Tembo, UNZA, Dean of School of Mines "Chemical Composition & Structure of the Earth: The Significance of other Planetary Bodies in Space" Andrew Ferrone, USA "Integrating the Internet: Economic, Political and Social Transformation in a Connected World"
15:00	*The Living Planet* *Session Chair:* *Elias Xavier, UNDP*	Dr. Mushikita Nkandu, M.D., University Teaching Hospital, Lusaka "The Incidence of Kaposi's Sarcoma in Zambia."

Wednesday, June 20th

	Track 1: Education	Track 2: Research
15:30		Break
15:45	End	H.V. Mweene, UNZA-Physics "Quantum Mechanics and the Lande Aprroach" Dr. I. Nyambe, UNZA-Geology & Ms. Anayawa Nyambe, St. Mary's Secondary School "Life Forms in the Geologic Timescale" Mr. Kevin Hand, Cosmos Education, Stanford Univ, USA "The Search for Life in the Universe" Mr. Iago Z. Lowe, Dartmouth College, USA "The Need for Creative Alternative Energy Sources: Nanocrystalline Dye-Synsitized Photocells, A Case Study"
17:30		End

Thursday, June 21th

8:30 Coffee/Tea
9:30 Welcome to Under African Skies, Day 3 G. Whitesides, E. Mwambela
- Eclipse Day
- Opening Remarks, Stories, Student Awards

9:40 Performance: UNZA Theater Group and the Lusaka Players, excerpts from a play about the crossing of the Zambezi during the last total solar eclipse visible from Zambia.

10:30 Conference moves to UNZA lawns for Eclipse viewing.
- Student Activities and Projects
- Unveiling of Student Mosiac
- Eclipse Glasses Distribution

12:30 Lunch: UNZA Sylva Café Dining Hall

Eclipse Viewing Begins

13:42 First Contact

15:09 Second Contact: **Totality 3 minutes 14 seconds**

15:13 Third Contact: Total Eclipse Ends

16:27 Fourth Contact: End of Solar Eclipse

16:30 Reception and Closing Ceremony

17:00 End of 2001 Under African Skies Eclipse Conference