EU Universe Awareness and UNAWE

A Europe-wide and global effort to bring astronomy to children

Pedro Russo

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t. @pruss | @unawe

Universiteit Leiden

United Nations Educational, Scientific and Cultural Organization

International Astronomical Union

Partners for the International Year of Astronomy 2009

THE UNIVERSE YOURS TO DISCOVER

BEYOND

INTERNATIONAL YEAR OF ASTRONOMY

EU UNIVERSE AWARENESS

Universe Awareness

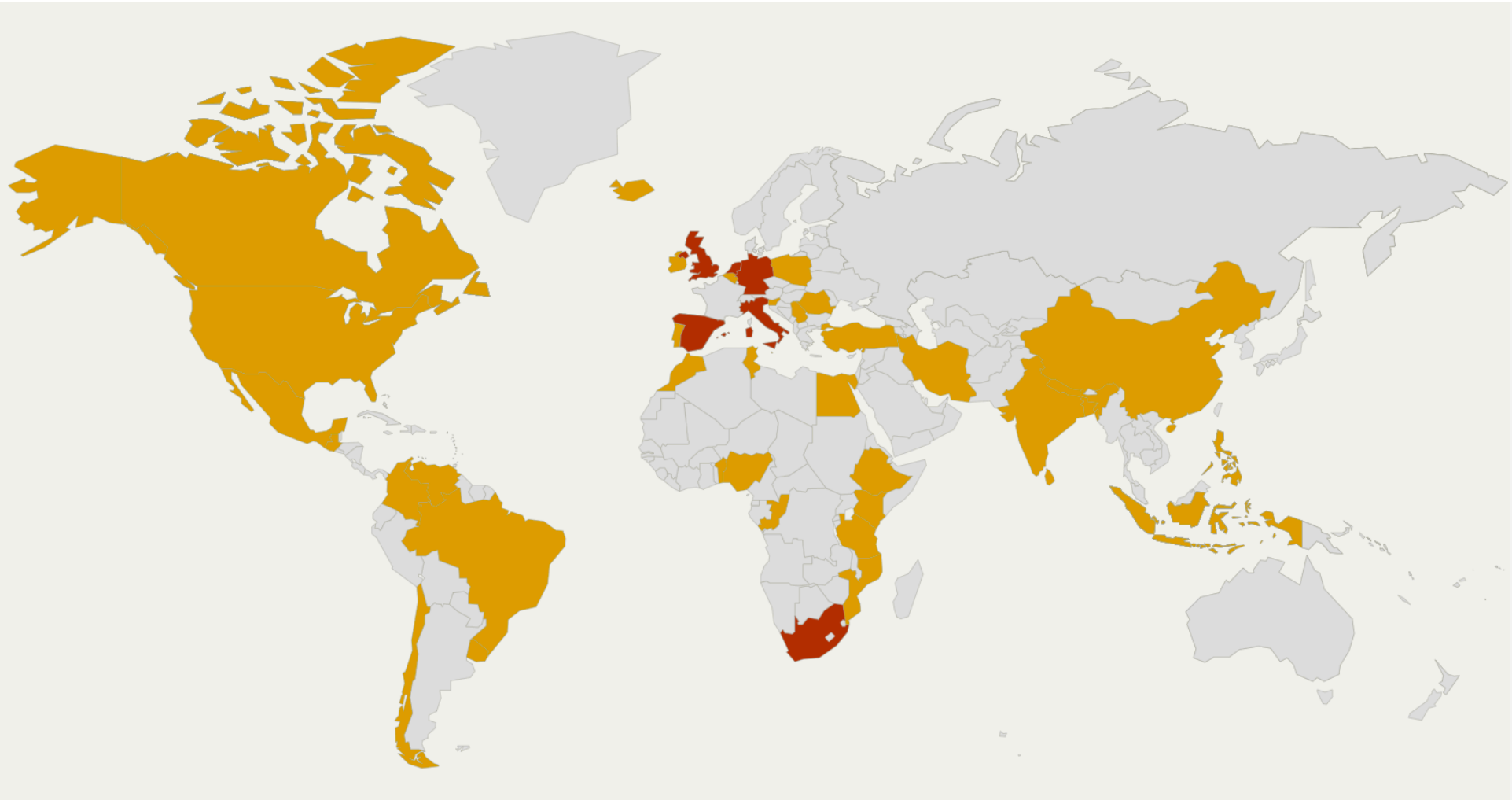
- Use **perspective**, **inspiration** and **fun** of astronomy to:
  - Introduce young children from disadvantaged backgrounds to the excitement of science
  - Enhance their understanding of the world and demonstrate the power of critical thinking
  - Broaden children's minds
  - Stimulate world citizenship

EU Universe Awareness

2011: Grant provided by European Union : 2 000 000 EUR

1. Network
   - Global platform for teachers and educators
   - Exchange of ideas, experience and materials
   - Coordinators and managers in each participating country, tailored to each country/ community.
2. Educational Material
   - Games, cartoons, songs, hands-on material, etc.
   - Follow new learning methods: Inquiry based learning
3. Teacher Training
   - Give teachers the confidence to introduce astronomy and other science topics in their classrooms

UNAWE: Network



57 Countries
(many from the developing world)

6 EU-UNAWE

800+ Educators, Teachers & Astronomers

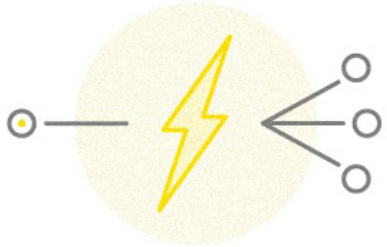
Network: Coordination

Following Int. Year of Astronomy 2009 Coordination Model:

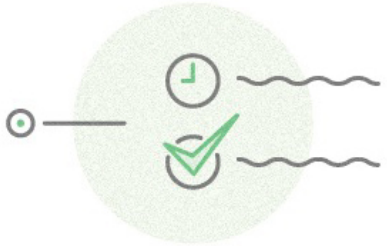
- Umbrella central communication/support hub
- Think globally, act locally
- Provide best practices, guidelines, opportunities, resources and some seed funding.
- Provide some flagship projects: Universe in a Box

Network: Communication

Building Blocks for the UNAWE Communication



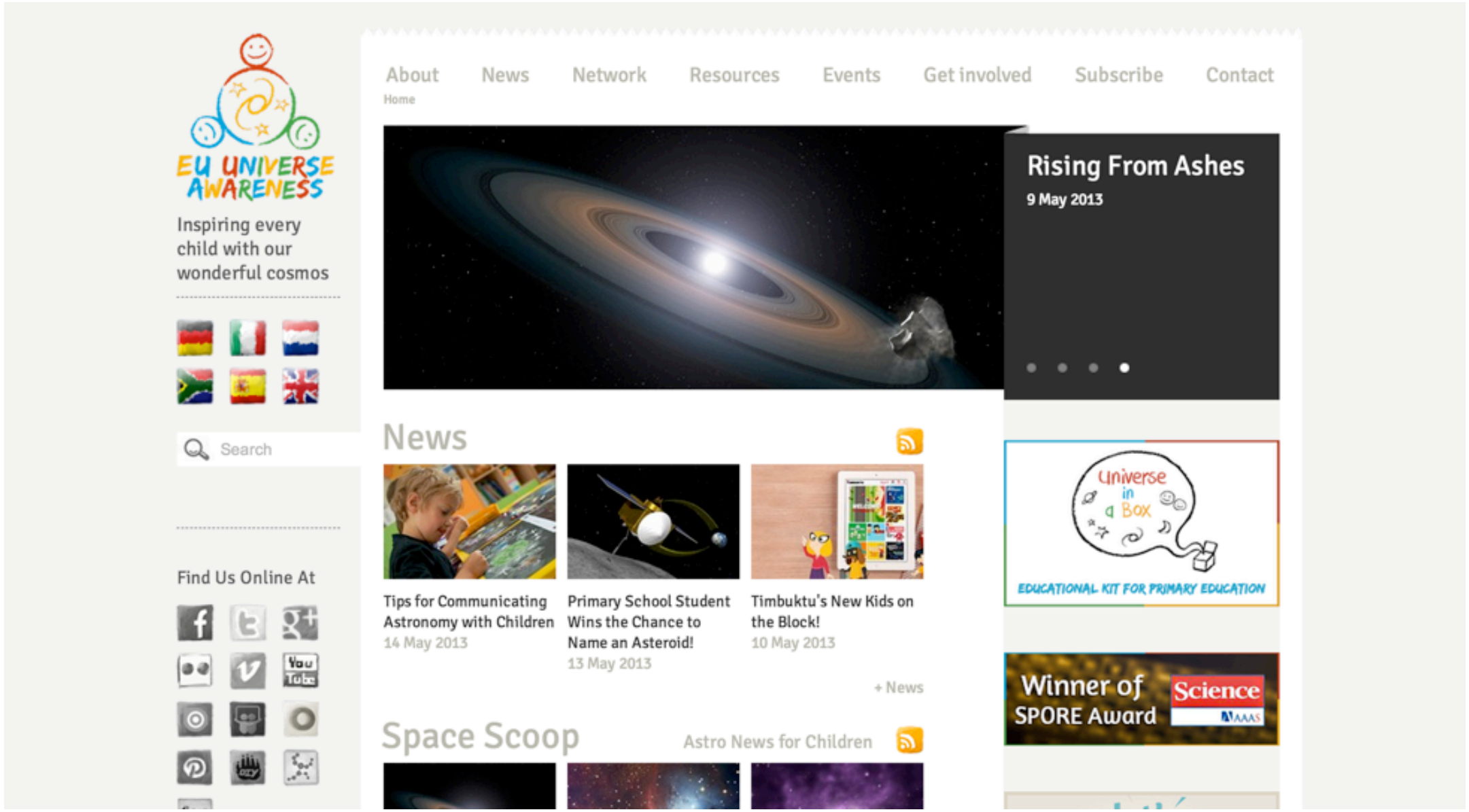
POST: Spark new ideas, conversations and actions.



DO: Discovery good resources, contacts and ideas to use and implement.

SHARE and CONNECT:Through social networks, on-line platforms, networks, etc..

Network: Communication



EU UNIVERSE AWARENESS
NEDERLAND

Inspireert ieder kind met ons fantastische heelal

Over Nieuws Netwerk Middelen Evenementen Meedoen Nieuwsbrief Contact
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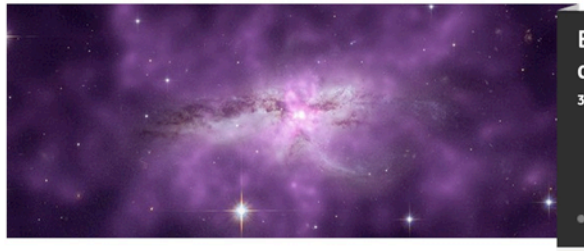


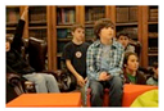
Een kolossale crash
30 april 2013

Zoek

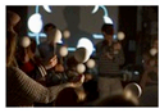
Aanmelden voor nieuwsbrief

Nieuws

Word zelf wetenschapper voor één dag!
19 april 2013



Astronomers vs. Kids nu online
16 april 2013



Family Science deel 2: De Maan
15 maart 2013

+ Nieuws

Volg ons

Space Scoop

Astro nieuws voor kinderen

EU UNIVERSE AWARENESS
DEUTSCHLAND

Inspiriert jedes Kind mit der Schönheit unseres Universums

Über Neues Netzwerk Materialien Events Mitmachen Newsletter Kontakt
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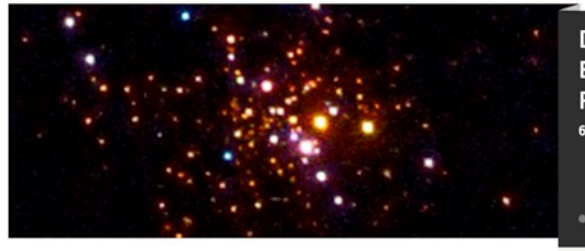


Das geheimnisvolle Endstadium von Riesensternen
6. März 2013

Suche

Folge uns

Neues

National Science Festival Südafrika 2013
1 März 2013

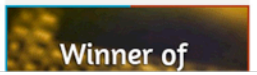
BBC Stargazing LIVE 2013!
10 Januar 2013

Explore Science öffnete heute wieder seine Tore
20 Juni 2012

+ Neues

Space Scoop

Astro News for Children



EU UNIVERSE AWARENESS
ESPAÑA

Los niños en contacto con las maravillas del universo

Qué es UNAWE Noticias Red Recursos Eventos Participar Subscribirse Contacto
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Caminos del cielo
3 de mayo de 2013

Buscar

Noticias

Encima del horizonte
3 mayo 2013

Caminos del cielo
3 mayo 2013

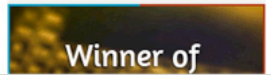
Buscando el Norte
24 abril 2013

+ Noticias

Siguenos

Space Scoop

Astro News for Children



EU UNIVERSE AWARENESS
SOUTH AFRICA

Inspiring every child with our wonderful cosmos

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Rising From Ashes
9 May 2013

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Summer Library Programme
13 December 2012

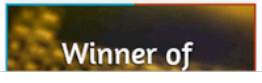
Intercultural Skype Conference
5 December 2012

A Look at the Southern Cross
6 November 2012

+ News

Space Scoop

Astro News for Children



宇宙へのとびら
日本

すべての子どもたちに、驚くべきこの宇宙を感じてもらおう

検索

フォローお願い

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わたしたちの宇宙のゆがんだかたち
2013年4月25日

お知らせ

+お知らせ

宇宙スクープ

Astro News for Children

灰の中からよみがえる
9 5月 2013

星の誕生は雲の中で
2 5月 2013

わたしたちの宇宙のゆがんだかたち

EU UNIVERSE AWARENESS
POLSKA

Z nami każde dziecko sięgnie gwiazd

Szukanie

Bądź na bieżąco

O nas Wiadomości Sieć Zasoby Wydarzenia Dołącz do nas Newsletter Kontakt
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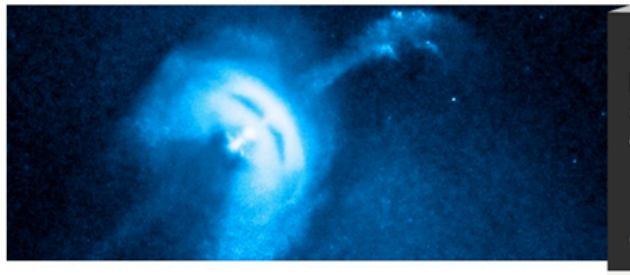


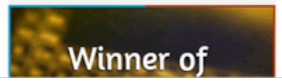
Czy ktoś wezwał pogromców duchów?
9 stycznia 2013

Wiadomości

Kieszonkowy kosmos
18 Grudzień 2012

Przedszkolaki sięgają gwiazd
30 Wrzesień 2012

W Holandii parlamentarzyści z trzech krajów otworzyli konferencję dotyczącą programu, który wkrótce ma zostać zainaugurowany także w Polsce



Network: International Workshops

- 55 participants
- 28 countries
- 3 Members of National and European Parliament
- Representatives from the EU Commission

- **Curricula for Different Ages:** Suitable resource packages should be provided at various levels: e.g.: EU-UNAWE Universe in a Box
- **Evaluation:** Develop a EU-UNAWE evaluation quick guide
- **Educational Resources:** Peer review platform
- **Culture in Astronomy Education:** Activity list for cultural aspects

EU-UNAWE Workshop: Astronomy to Inspired and Educate Young Children

7 -- 11 October 2013

Heidelberg, Germany

UNAWE: Resources

- Astronet EPO Recommendation 3: Encourage European stakeholders involved in **developing educational programmes and curriculum delivery** to realise the inspirational quality of learning using astronomy-related exercises and experiences

UNAWE: Resources

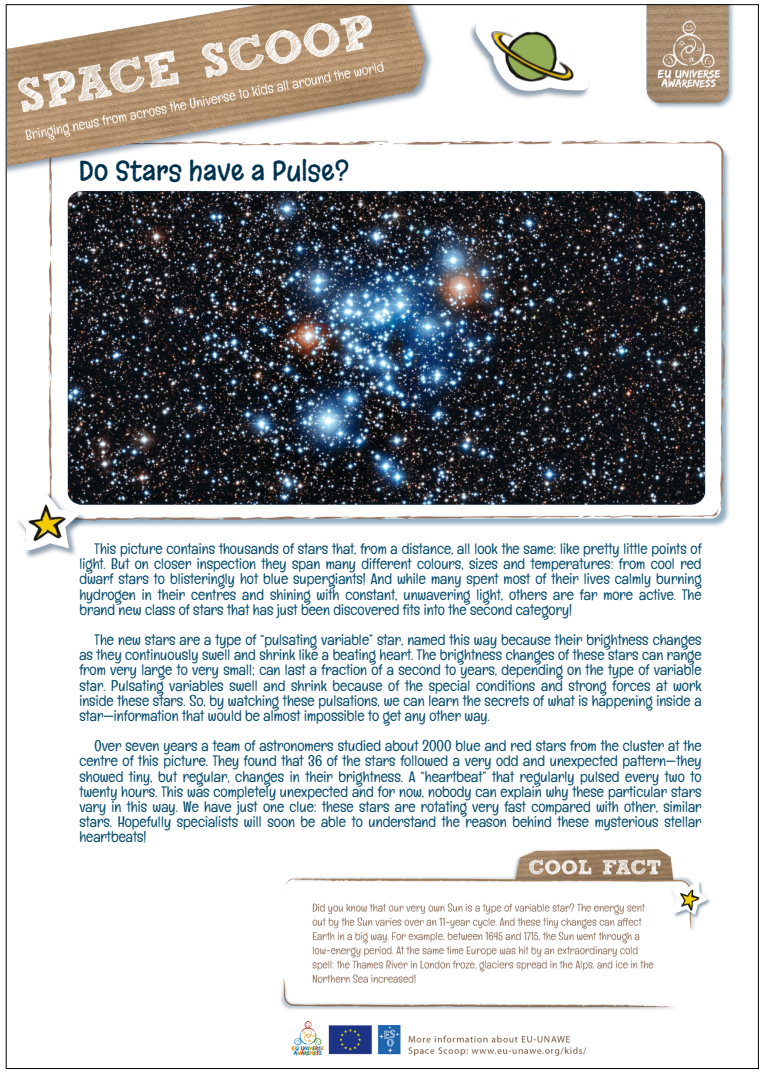
- Online resources: open-source (*creative commons license*)
- ~80 educational resources (from activity plans to books)
- August 2011: *Science Magazine's* **SPORE** (Science Prize for Online Resources in Education) **Award**

Resources: Space Scoop

- Astronomy news service for children aged 8+ in collaboration with **ESO**, **NASA Chandra, ESA, Europlanet, ASTRON, RAS, …**

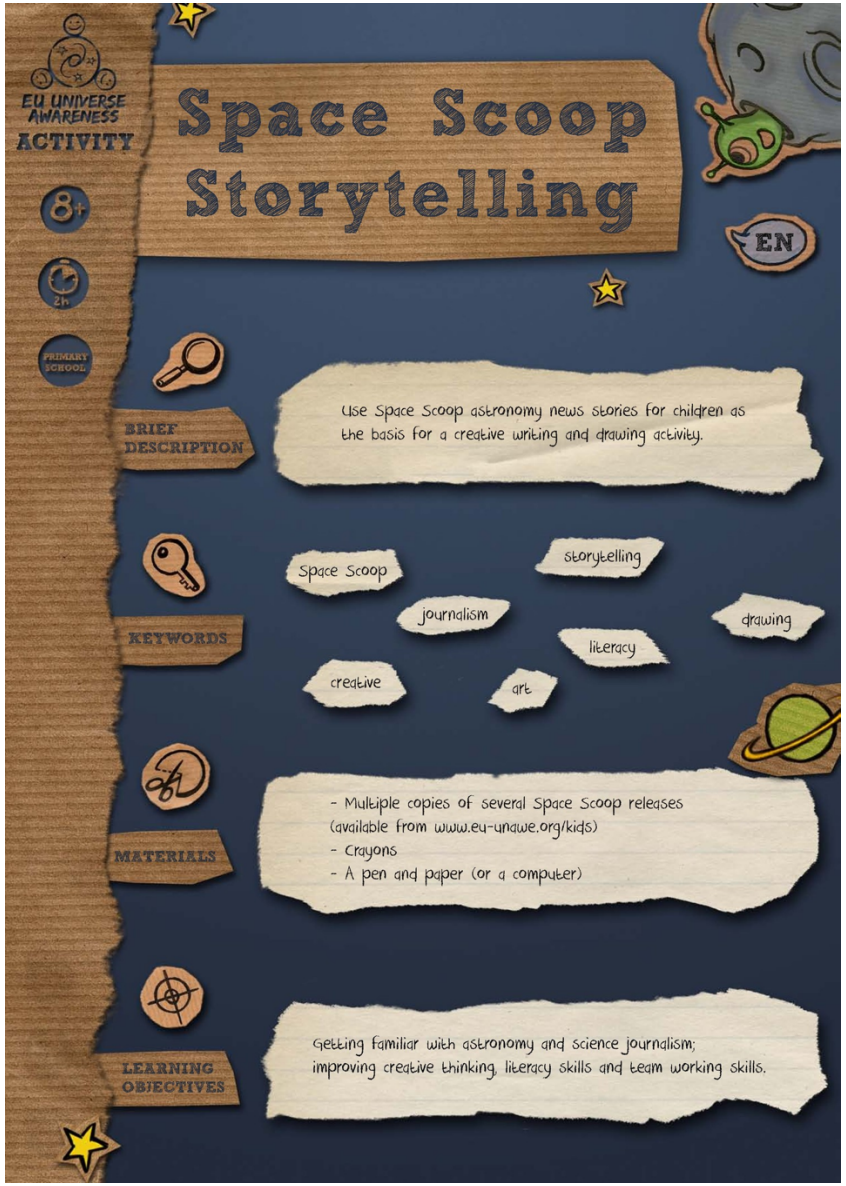
- Share with children the excitement that the *latest* scientific discoveries bring.

- Demonstrate that there is still much to learn about the Universe (research that they could contribute to in the future)



Resources: Space Scoop

- 161 Space Scoops since March 2011
- Translations in 22 languages
- Distributed by AAAS Science EurekAlert! and many national newspapers and magazines.
- Used in many classrooms as noticeboard or activity.



WATNOU? aarde&heelal

Space Scoop

Astro nieuws voor kinderen.

SPACE SCOOP
SpaceScoop is onderdeel van UNAWE

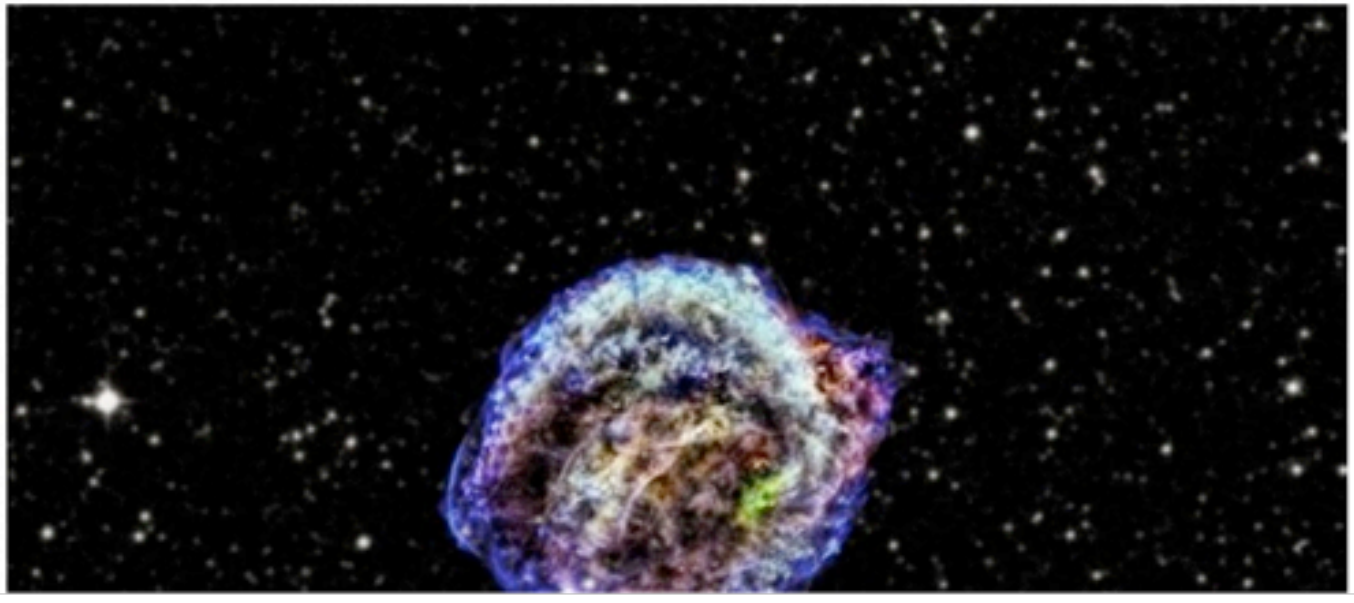
Hieronder lees je de laatste nieuwtjes op het gebied van sterrenkunde, astronomie en ruimtevaart. Elke week hebben we 2 nieuwtjes voor je.

De berichtjes zijn speciaal geschreven voor kinderen vanaf 8 jaar en worden aangeboden door Universe Awareness (UNAWE).

Star Scoop of the Week: The Star That Lived Two Lives

BY KEN DENMEAD 03.21.13 6:00 AM

Follow @KenDenmead



RECENT WIRED POSTS

Wired Space Photo of the Day: Warm Venus Volcano

Geek's Guide to the Galaxy | Humans May Become Tentacled Monsters, and That's OK

10 Superman Tales to Read, Watch, and Hear This Weekend Instead of Man of Steel

Wired Space Photo

EurekAlert!
Science Reporting for KIDS!

7-Jun-2013

Contact: Sarah Eve Roberts
roberts@strw.leidenuniv.nl
31-71-527-8419
Leiden University

All aboard the Mars Express

Space Scoop: Astronomy News for Kids

Ten years ago, the Mars Express blasted its way out of Earth's atmosphere and began its journey to the Red Planet. Six months later, after travelling 400 million kilometres, it floated down to land on the planet's dusty surface. Since then, the Martian probe has been hard at work shedding light on the many mysteries of this alien world. In the last decade the Mars Express has sent home dramatic images of huge volcanoes, gigantic canyons and the planet's Earth-like polar ice caps.

Artist Impression of the Mars Express probe above the Red Planet
Credit: ESA/ D. Ducros

It has shown us that without a doubt, billions of years ago, the fourth planet from the Sun was much warmer and wetter than it is today. With detailed maps and photographs of vast, ancient river beds and flood plains, it has even detected special types of rock that can only form in water! Thanks to this mission, it has become clear that Mars could once have provided the perfect environment for life to thrive.

The spacecraft's probing didn't just find hints that water had existed there long ago, it found ice water that actually exists on the planet today! A thin crust of frosted water sits just below the planet's surface for hundreds of kilometres around the South Pole. And it's not just at the polar ice caps, water is also found in vast, frozen lakes deep beneath the planet's dry, dusty surface. At the poles themselves, the probe found enough ice water that if it melted it would completely cover the planet with an ocean 11 metres deep!

Lastly, once again raising our hopes that this planet could host alien life forms, Mars Express detected a chemical called "methane" in the Martian atmosphere. On Earth, methane is only produced by volcanic activity, or life. Does this mean there is life on Mars today?

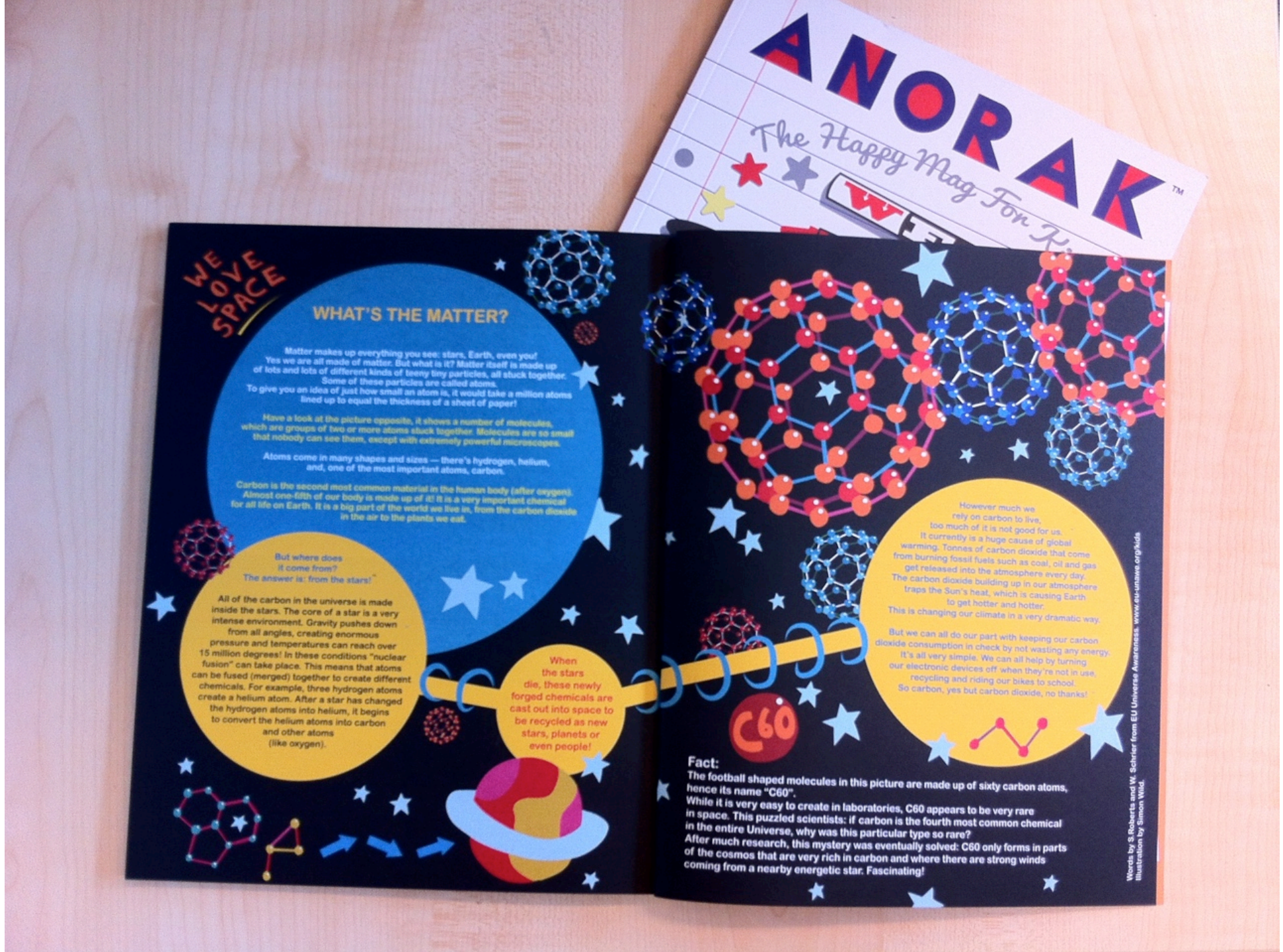
And the adventure isn't over yet, Mars Express still has many years of life in it! Just this week, the mission sent back information about a Great Flood that carved rivers and deltas across one and a half million square kilometres of the planet's surface, three billion years ago! That's a flood plain that would almost fully cover Mexico!

Cool Fact: Did you know Mars has two moons? They're called 'Phobos' and 'Deimos'. And the Mars express has taken some amazingly detailed photos of Phobos during its mission: see for yourself in this image.

###

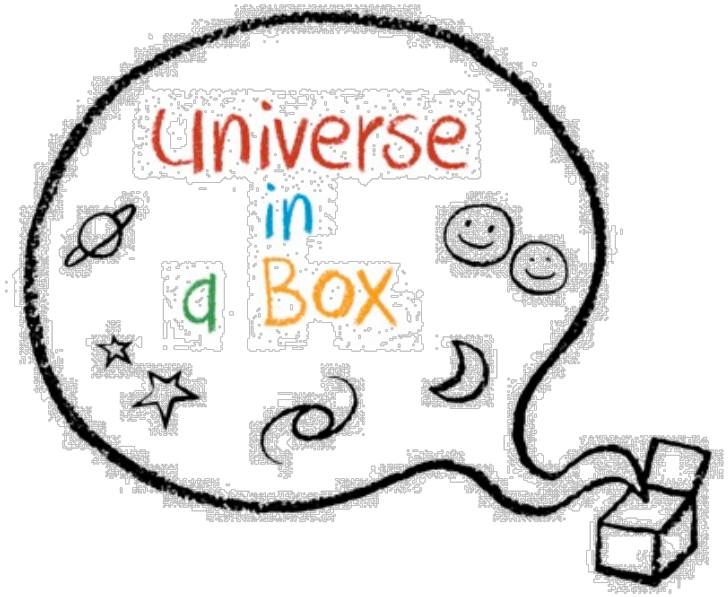
This Space Scoop is based on a Press Release from ESA.

TIMBUKTU
LEARN OUT OF THE BOX


ANORAK
The Happy Mag For Kids
WE LOVE SPACE
WHAT'S THE MATTER?
Matter makes up everything you see: stars, Earth, even you!
Yes we are all made of matter. But what is it? Matter itself is made up of lots and lots of different kinds of teeny tiny particles, all stuck together. Some of these particles are called atoms.
To give you an idea of just how small an atom is, it would take a million atoms lined up to equal the thickness of a sheet of paper!
Have a look at the picture opposite, it shows a number of molecules, which are groups of two or more atoms stuck together. Molecules are so small that nobody can see them, except with extremely powerful microscopes.
Atoms come in many shapes and sizes — there's hydrogen, helium, and, one of the most important atoms, carbon.
Carbon is the second most common material in the human body (after oxygen). Almost one-fifth of our body is made up of it! It is a very important chemical for all life on Earth. It is a big part of the world we live in, from the carbon dioxide in the air to the plants we eat.
But where does it come from? The answer is: from the stars!
All of the carbon in the universe is made inside the stars. The core of a star is a very intense environment. Gravity pushes down from all angles, creating enormous pressure and temperatures can reach over 15 million degrees! In these conditions "nuclear fusion" can take place. This means that atoms can be fused (merged) together to create different chemicals. For example, three hydrogen atoms create a helium atom. After a star has changed the hydrogen atoms into helium, it begins to convert the helium atoms into carbon and other atoms (like oxygen).
When the stars die, these newly forged chemicals are cast out into space to be recycled as new stars, planets or even people!
However much we rely on carbon to live, too much of it is not good for us.
It currently is a huge cause of global warming. Tonnes of carbon dioxide that come from burning fossil fuels such as coal, oil and gas get released into the atmosphere every day.
The carbon dioxide building up in our atmosphere traps the Sun's heat, which is causing Earth to get hotter and hotter.
This is changing our climate in a very dramatic way.
But we can all do our part with keeping our carbon dioxide consumption in check by not wasting any energy.
It's all very simple. We can all help by turning our electronic devices off when they're not in use, recycling and riding our bikes to school.
So carbon, yes but carbon dioxide, no thanks!
C60
Fact:
The football shaped molecules in this picture are made up of sixty carbon atoms, hence its name "C60".
While it is very easy to create in laboratories, C60 appears to be very rare in space. This puzzled scientists: if carbon is the fourth most common chemical in the entire Universe, why was this particular type so rare?
After much research, this mystery was eventually solved: C60 only forms in parts of the cosmos that are very rich in carbon and where there are strong winds coming from a nearby energetic star. Fascinating!
Words by S.Roberts and W. Schrier from EU Universe Awareness. www.eu-unawe.org/kids
Illustration by Simon Wild.

Resources: Universe in a Box

Universe in a Box is an educational kit to assist teachers and educators in bringing astronomy and spaces sciences to 4-10 year old children around the world.



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Resources: Universe in a Box

- Support elementary school curriculum
- Encourage inquiry-based learning
- Link astronomical topics to other subjects to support interdisciplinary learning
- Stimulate environmental and cultural awareness

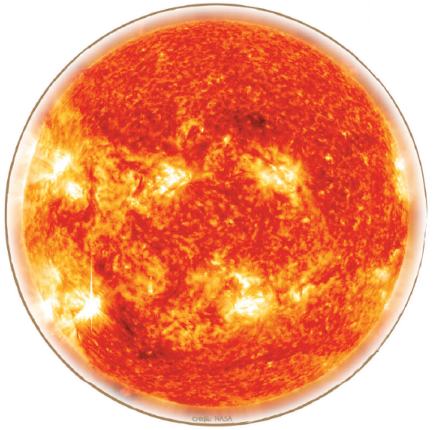
Resources: Universe in a Box

- Inquiry-based learning principles
- Carefully selected topics
- Comprehensive activity book
- Distributed business model
- Easy to use by any type of educator
- Materials low cost and easy to reproduce/replace

Resources: Universe in a Box

Our Fascinating Moon

The Earth, Our Home Planet



The Sun, Our Home Star

Our Solar System

The World of Constellations

Resources: Universe in a Box

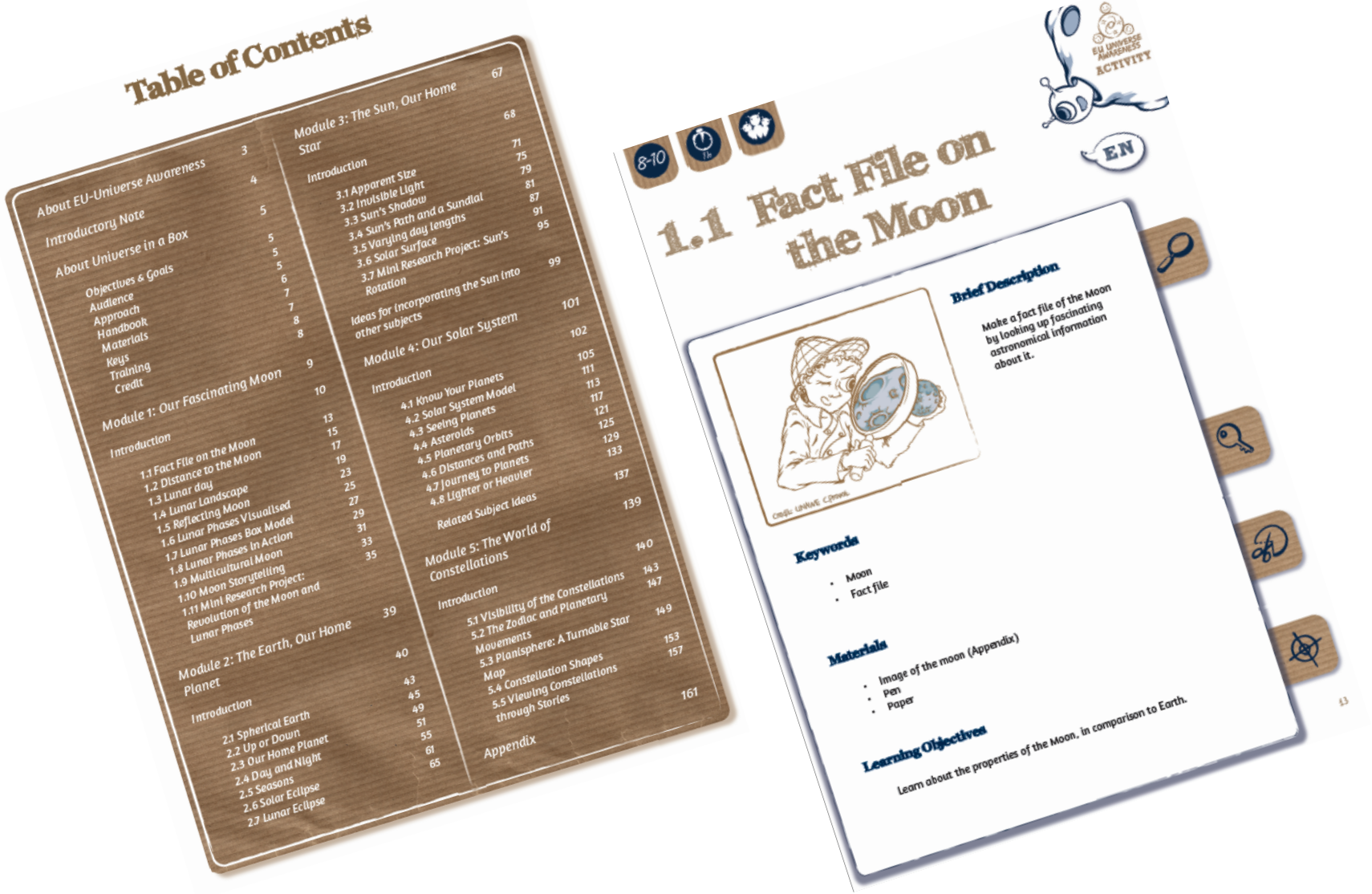


Table of Contents

EU UNIVERSE AWARENESS ACTIVITY

EN

8-10

1.1 Fact File on the Moon

Brief Description

Make a fact file of the Moon by looking up fascinating astronomical information about it.

Keywords

- Moon
- Fact file

Materials

- Image of the moon (Appendix)
- Pen
- Paper

Learning Objectives

Learn about the properties of the Moon, in comparison to Earth.

Prototyping & testing

- 50 prototypes produced and distributed to educators from 30 countries.
- Tests and localisation have started.
- First feedback is very positive.

Germany

Colombia

United Kingdom

India

Resources: Universe in a Box

- Production of 1000 boxes by August 2013 after implementing feedback
- Cost price of bulk production by Indian partner: 27 EUR (including development and production costs)
- Regional production and distribution hubs in over 10 countries across the globe
- Potential spinoff as a co-operative business model

Resources: Activities

- Astronet EPO Recommendation 2: Encourage schools to use their **playgrounds as open-air astronomical observatories** equipped with simple devices.

Resources: Distribution

- Astronet EPO Recommendation 4: Implement a centralised, **web-based distribution system** for educational material in a range of languages.

Project under the framework of the IAU Office of Astronomy for Development

On-line Educational Resources: Problems

- Resources are difficult to find, too many educational resources, too many repositories: Search Engine Optimisation
- Excellent resources are almost impossible to find: Quality Assessment

www.merlot.org/merlot/index.htm

MERLOT
Multimedia Educational Resource for Learning and Online Teaching

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- Music
- Physics
- Psychology
- Sociology
- Statistics
- Teacher Education
- Technical Allied Health
- World Languages

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Not a Member?
Register Now!

As a Member you can:
- Contribute learning materials
- Create a personal collection
- Develop a personal profile
- Share your online expertise
- Receive peer recognition

Become a Campus, System, Corporate or Community Partner

Emerging Technologies for Online Learning
Conference Info
Sloan-C and MERLOT

MERLOT Journal of Online Learning and Teaching

Google Search I'm Feeling Lucky

Google.nl offered in: Nederlands

Google Search I'm Feeling Lucky

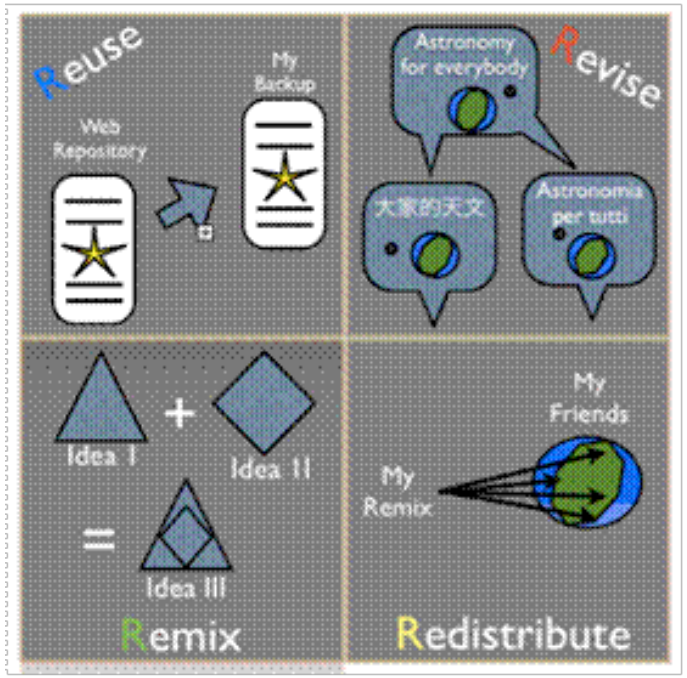
Google.nl offered in: Nederlands

Peer Review Platform for Educational Resources

- A platform for astronomy communicators to discover, review, redistribute, submit and remix educational resources

- A platform to review and obtain objective guidance on the resources, have successful resources published in a central repository and receive IAU approval/accreditation.

Peer Review Platform for Educational Resources



4R Resource Repository Model (David Wiley, 2009)

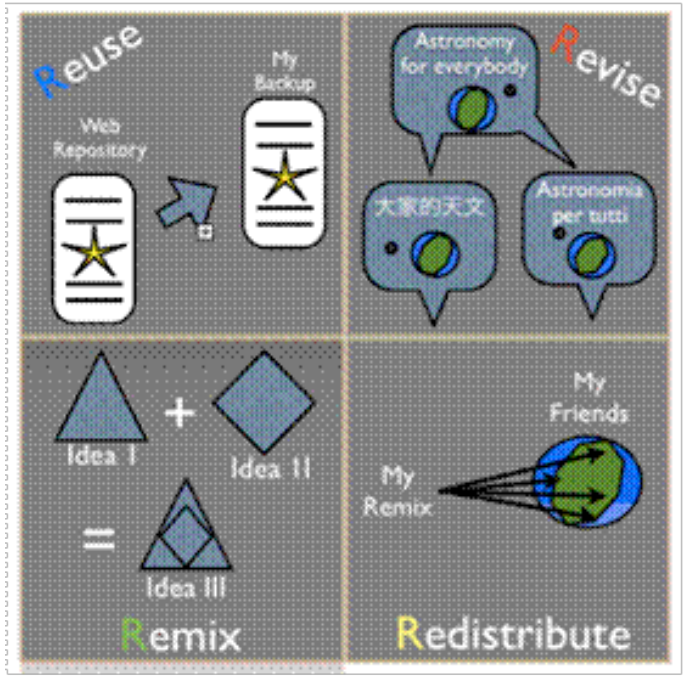
1.Reuse - e.g., make a digital copy of the content

2.Revise - e.g., translate the content into another language or modify a learning activity

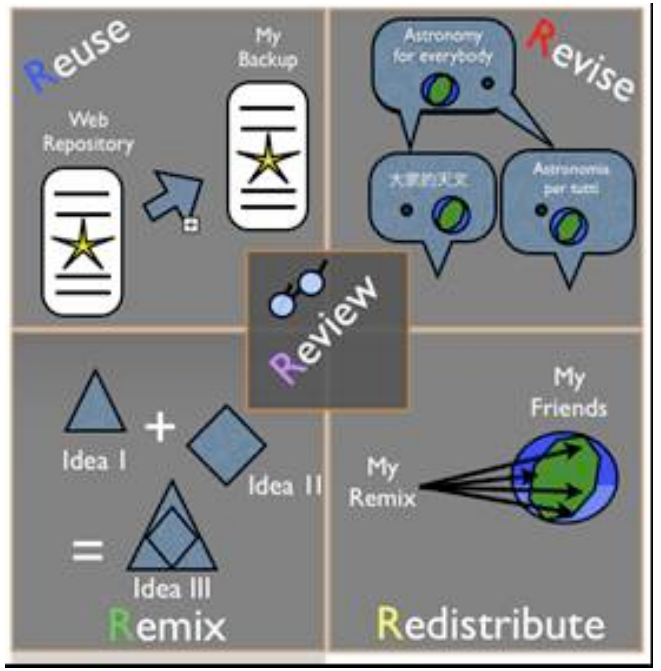
3.Remix - e.g., incorporate the content into other content

4.Redistribute - e.g., give a copy of the content to a friend

Peer Review Platform for Educational Resources



4R Resource Repository Model

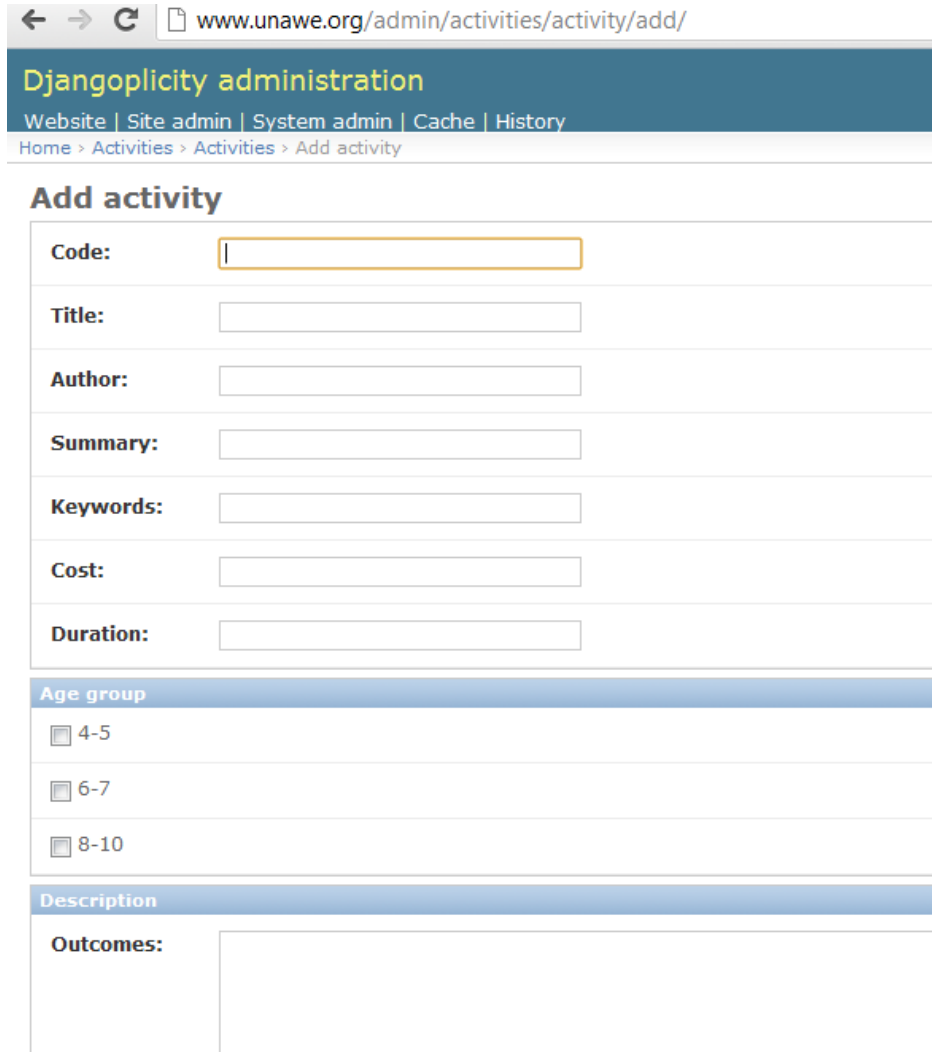


5R Resource Repository Model (Russo et al. 2012 in prep.)

+1 : Review: Content and quality reviewed (and improved) by the community peers

Peer Review Platform for Educational Resources

- output in many different formats - PDF (print quality and low-res), .odt, HTML, epub, mobi, etc.
- Syndicated through document sharing sites (OER, Issuu, Slideshare, Scientix, other social media networks or repositories).
- Status: Testing



Change activity

History | View on site

Code: act001
Code identifies the Activity; it is used as part of the URL.

Title: Levitating Astronaut
Title is shown in browser window. Use a good informative title, since search engines normally display the title on their result pages.

Age: 8+

Level: Primary School
Specify at least one of "Age" and "Level"

Time: 40mn

Group: Group

Supervised: ---------

Cost: ---------

Location: ---------

Language

Language: English

Publishing

Published

Release date: Date: 09/12/2012 Today | Time: 19:33:49 Now |

Embargo date: Date: Today | Time: Now |

Description

Brief description:

Styles | Format

The Levitating Astronaut activity uses the amazing power of magnets to help children to learn about magnetism and leads on to a brief introduction of gravity.

Brief Description

The Levitating Astronaut activity uses the amazing power of magnets to help children to learn about magnetism and leads on to a brief introduction of gravity.

Materials

- Neodymium magnet
- Paper clip
- 4x 3 mm screw
- Large piece of wood
- 2x small piece of wood
- Cup hook
- Thread
- 2x astronaut image

Learning Objectives

- Introduce the concept of magnetism in a fun and engaging manner
- introduce children to the basic concept of gravity
- use invisible magnetic fields to teach children the importance of questioning
- observing and investigation.

Keywords

magnets, magnetism, magnetic fields, force, charge, attraction levitation, gravity

Connection to National Curriculum

Physics, Magnetism.

Source

Adapted from Curion Education Pvt. Ltd. (www.curioneducation.com)

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Attachement

Astronauts to print

Download

8+ | 40mn | PRIMARY SCHOOL

EU UNIVERSE AWARENESS ACTIVITY

EN

Levitating Astronaut

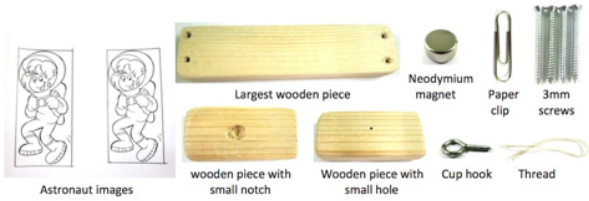
BRIEF DESCRIPTION

The Levitating Astronaut activity uses the amazing power of magnets to help children to learn about magnetism and leads on to a brief introduction of gravity.

KEYWORDS

- magnets
- magnetism
- magnetic fields
- force
- charge
- attraction levitation
- gravity

MATERIALS



- Neodymium magnet

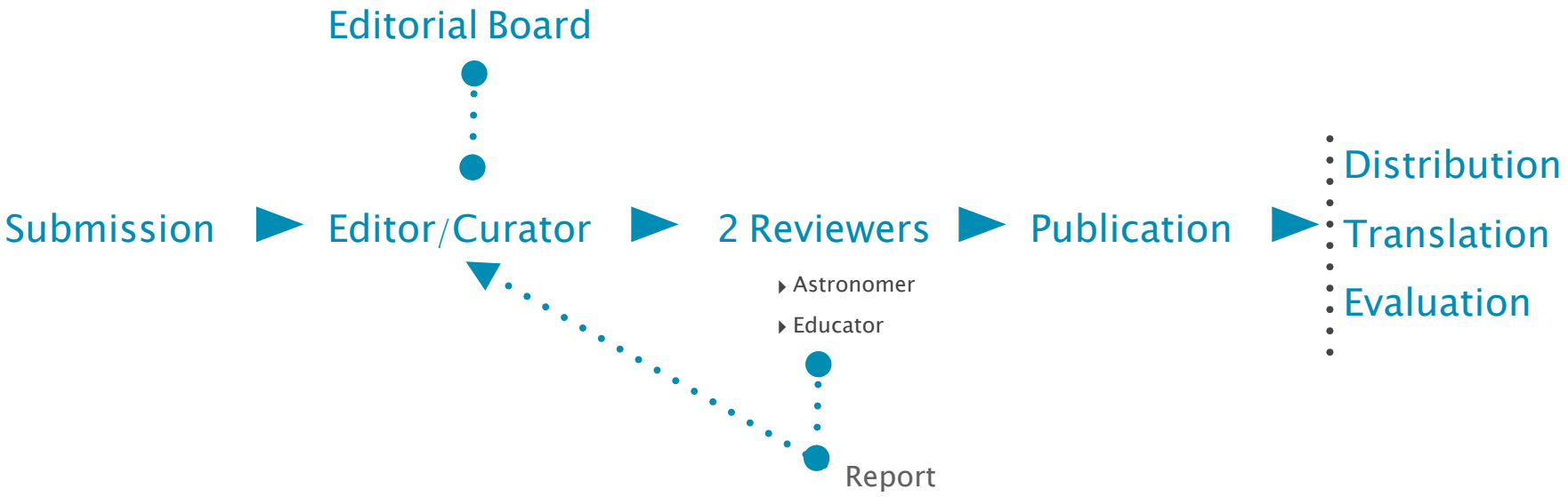
Levitating Astronaut

BRIEF DESCRIPTION

The Levitating Astronaut activity uses the amazing power of magnets to help children to learn about magnetism and leads on to a brief introduction of gravity.

MATERIALS

PEER reviewed astroEDU

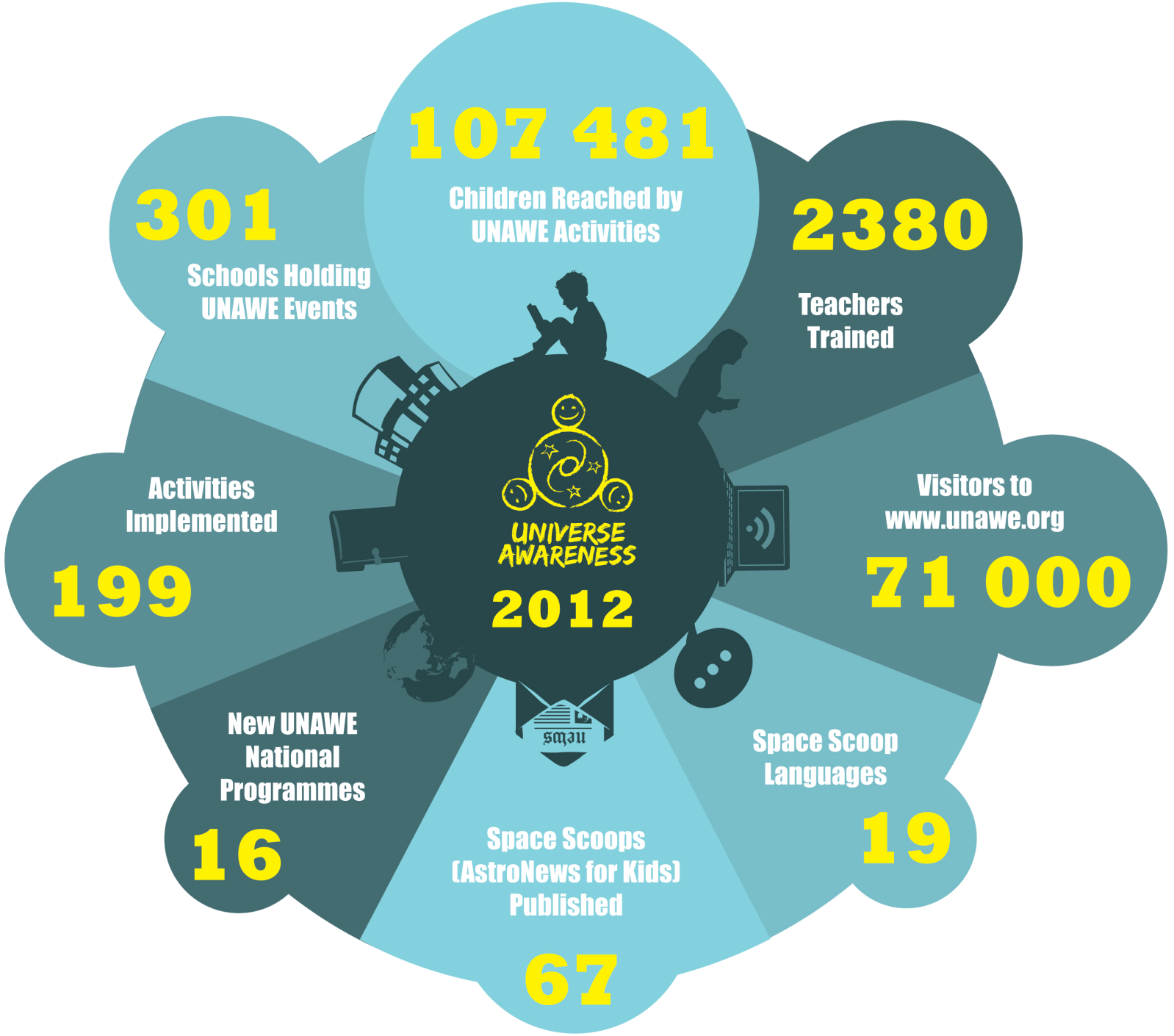


UNAWE: Teacher Training

- Astronet EPO Recommendation 1: **Create new and support existing training courses** for the career and professional development of teachers, which include practical observations, modern topics and examples.

UNAWE: Teacher Training

- Training Schools and In-service training.
- Give teachers confidence through hands-on astronomy activities
- Multiple teacher trainings per country each year.
- Number of teachers trained by EU-UNAWE (since 2011): 1 306


107 481
Children Reached by UNAWE Activities
301
Schools Holding UNAWE Events
2380
Teachers Trained
Activities Implemented
199
Visitors to www.unawe.org
71 000
UNIVERSE AWARENESS
2012
New UNAWE National Programmes
16
Space Scoops (AstroNews for Kids) Published
67
Space Scoop Languages
19

Conference: Communicating Astronomy with the Public 2013

14 -- 18 October 2013

Warsaw, Poland