



Can compassion inspire the learning of science

Can science empower compassion

Putting love and logic to work

Premana W. Premadi
Institut Teknologi Bandung

BtSM Colloquium August 2015

Motivation

Understanding the urgent need

- Earth ability to sustain quality life: **unhealthy competition**
- Complexity increases faster than people's knowledge: **more local and global problems and gaps in society**

Empower and Engage

Bring the issues home

- Understand the reason for global sustainability
- Mind and reduce the gap
- Rebuild trust

Black Marble

Blue Marble

Our Home





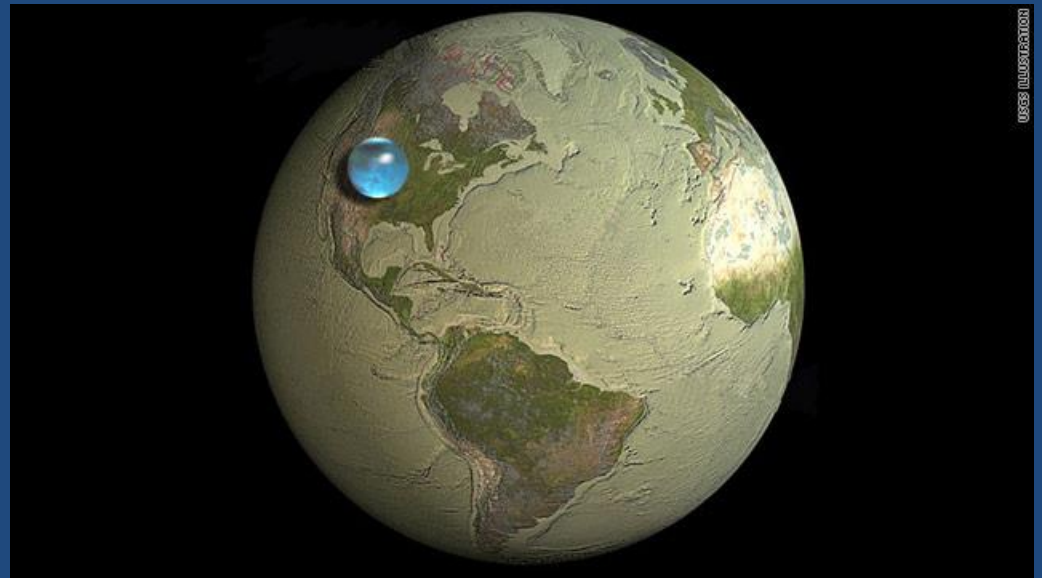
We keep on
multiplying

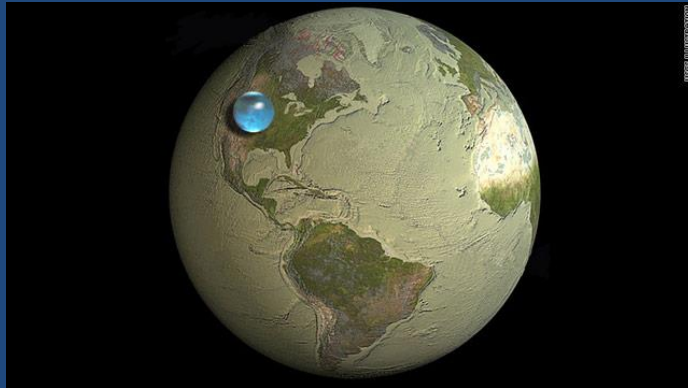
Where and how
are we
supposed to live

while
guaranteeing
our
granchildren's
well being



Not much fresh water



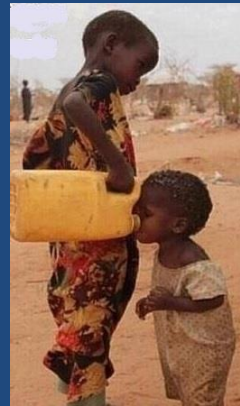


+



+ ...

=



+



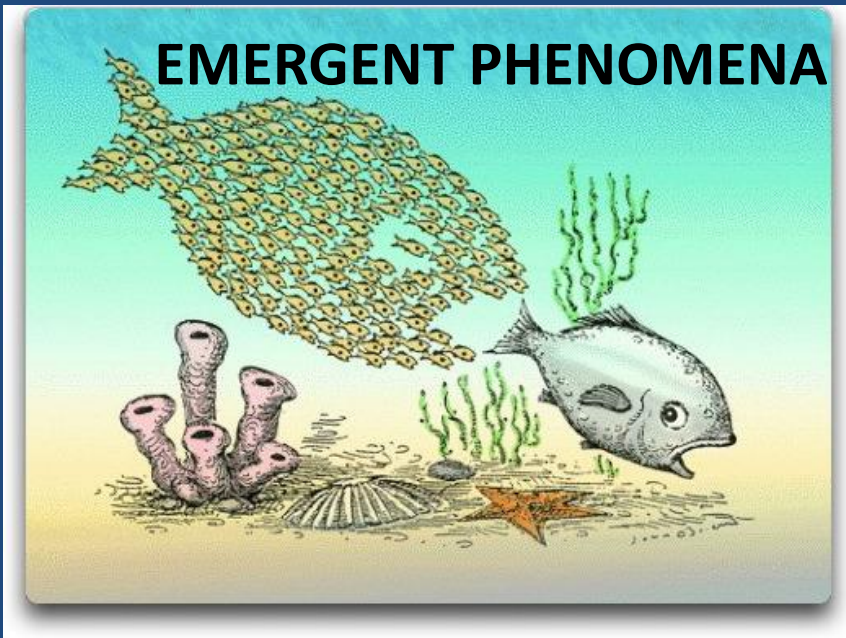
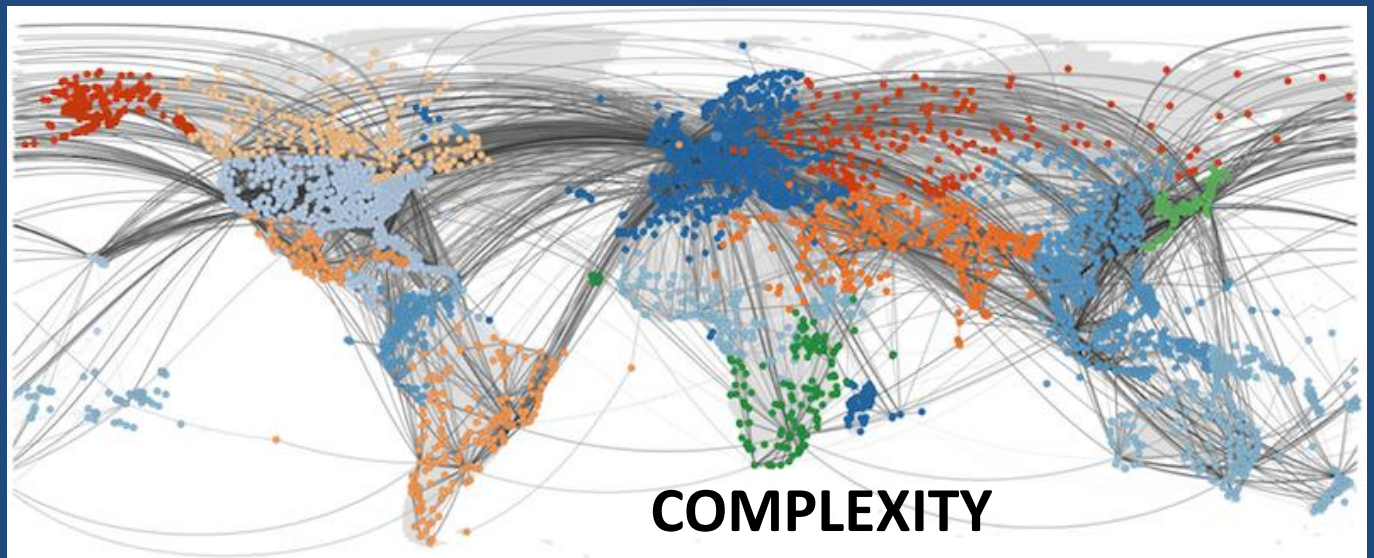
+ ?!?

Sharing the ever depleting natural resources

The Network of Needs

Distribution of human population
follows the distribution of life support





**Long term prediction
is difficult**

How should we prepare the future?

EDUCATION!

What kind of education?

- Produce a robust **competence** with a wide knowledge of the working of inter-relations:
 - **Independence**: ability to adapt and self develop
 - **Professionalism**: work with high competence, ethics, and versatility
 - **Confidence**: able to participate in healthy competition and enjoy personal reward
- Nurture a compassionate citizen **attitude**
 - **Perceptive** and willing to **take charge** in improving self and environment
 - **Inclusive**: respect and embrace heterogeneity

Professionalism
is not an option, it is a must

The expectation of our employees and consultants in this regard is simple:
exude professionalism in all that you do.



It's not the job you do, it's how you do the job.



STEP

STEAM Teacher Education Program

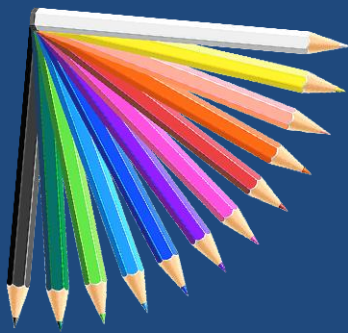


SCIENCE TECHNOLOGY ENGINEERING ARTS MATHEMATICS

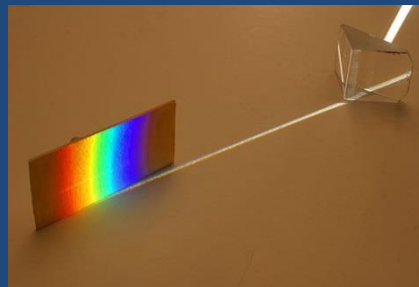
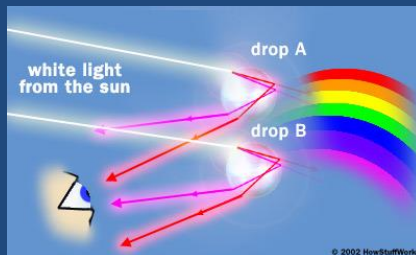
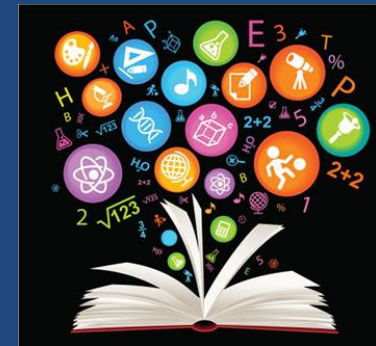
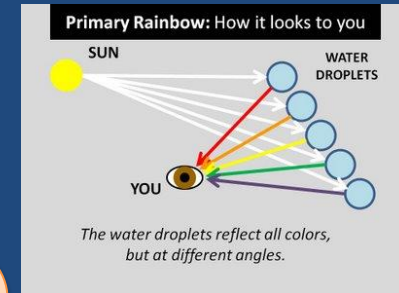
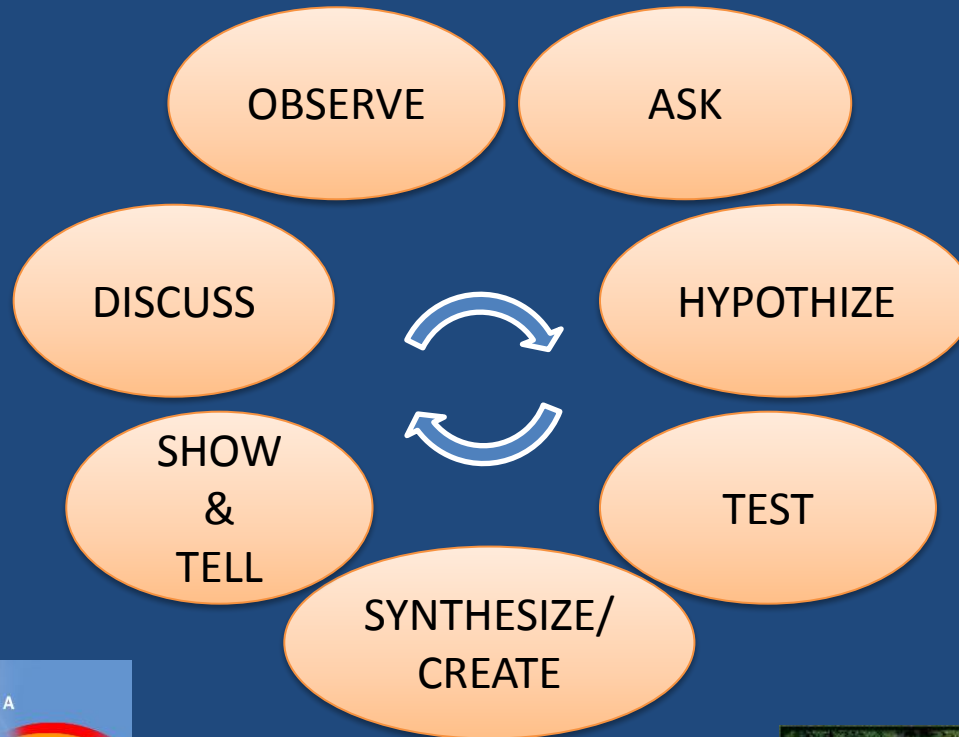
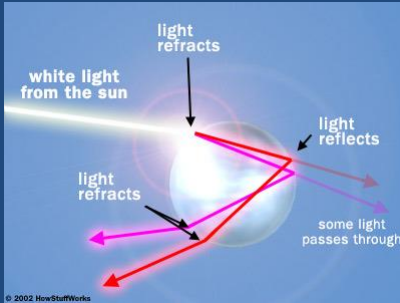
- **STEAM** components: different but inseparable
- Empower **rational capacity** and **artistic imagination** in observation of objects and phenomena, analysis, construction of ideas, and creation
- Integration of **STEAM** yields **holistic mind** and **refined conscience**



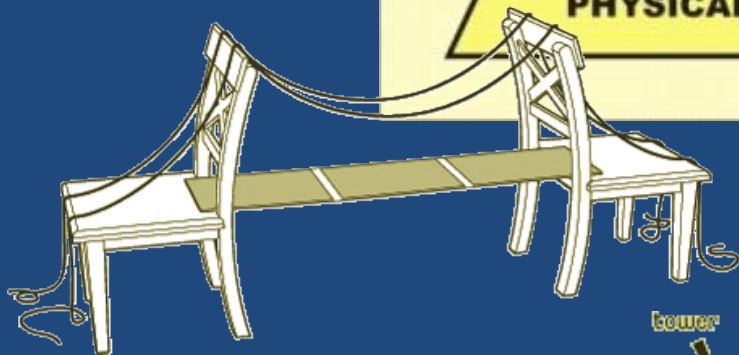
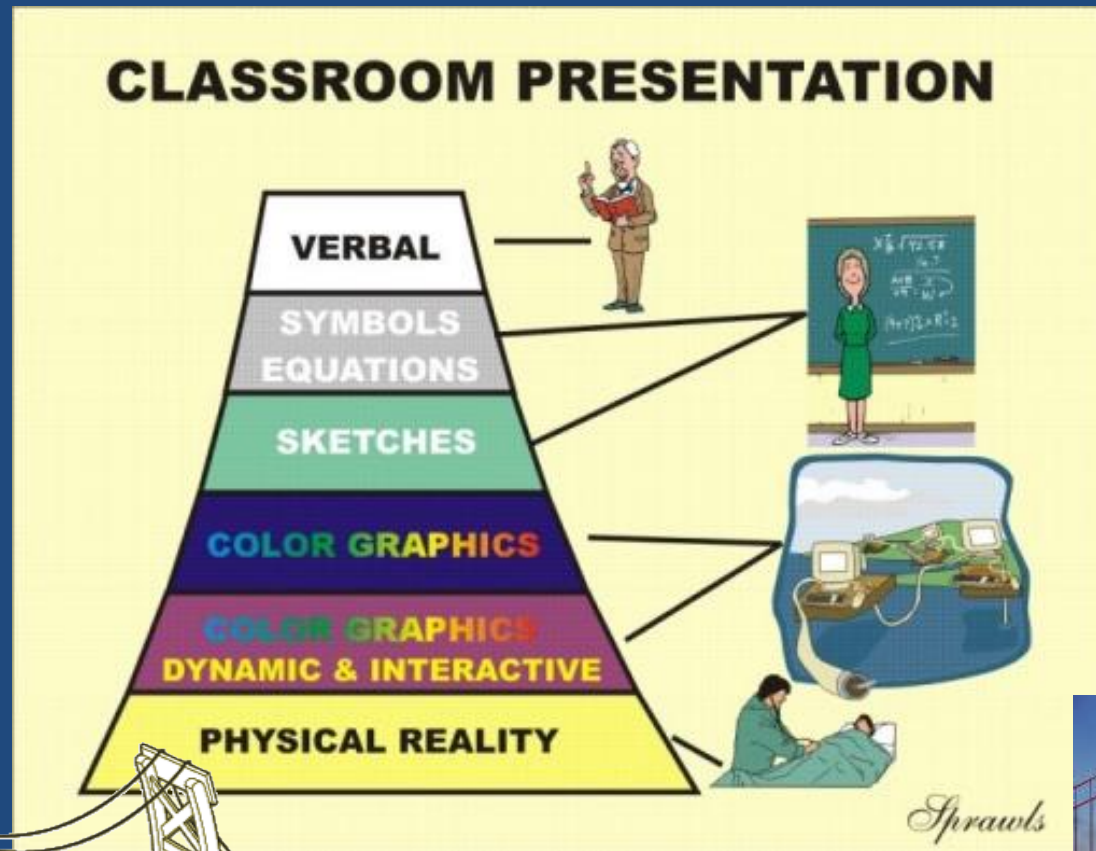
Active Learning
Inquiry Method
problem/project-based
in **team**



COLOUR



Optimal Learning Experience?



With STEAM

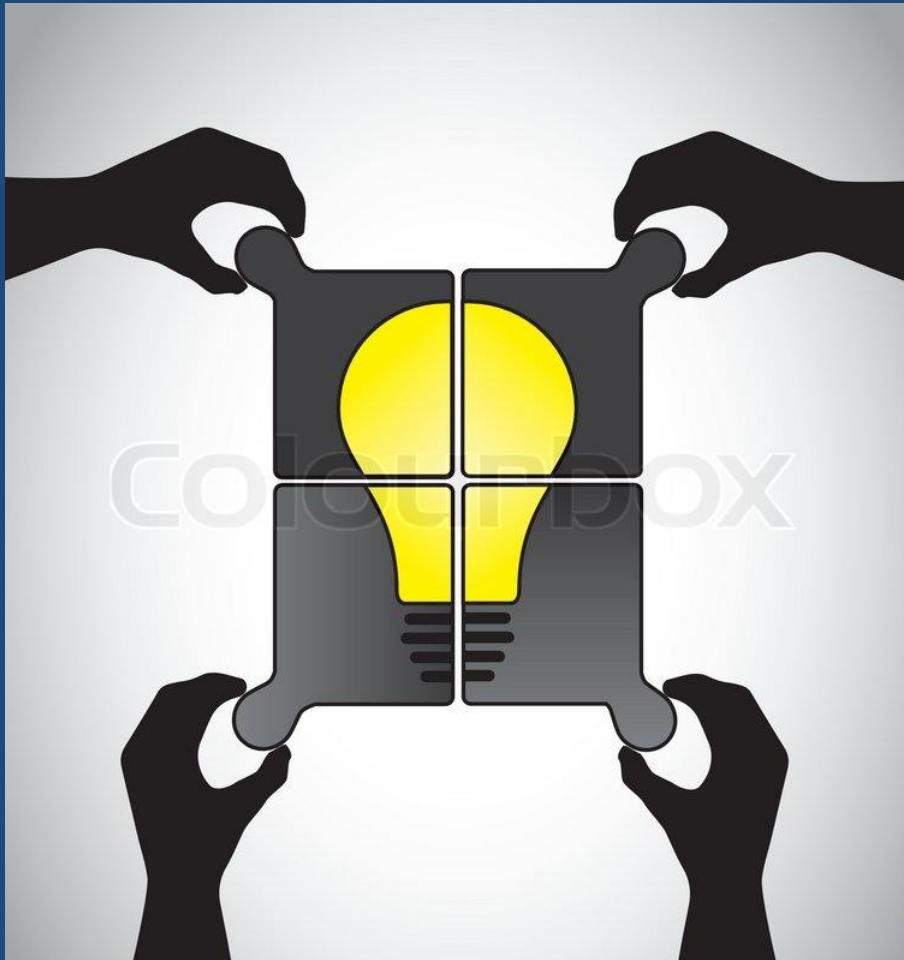


an imagination and creativity ...



...would manifest in beauty and sophistication

Teamwork Quality determines achievement



EDUCATION

Perpetually challenging long term project

- No educational substance and method is absolutely right and suitable in all spacetime
- Perpetual construction, evaluation, and revision to produce the best one for each condition and period

Key: **Teachers** with high and robust **competence**

and premium **personal quality** :

Resilient to changes in formal education system and setting

- Perceptive to students needs
- Focused in delivery
- Calm in all situation
- A good role model

BE MINDFULL

Genuine and **expressive**

Engage more efficiently



STEP

Why Junior High School Teachers

Characteristics of Junior High School (JHS) Students



Up till teenage:

high curiosity

less burdened by cognitive bias



BUT: JHS learning substance offers little direct usefulness :

- demotivate
- need more challenging substance that also offers immediate acknowledgement of the gained knowledge/skill

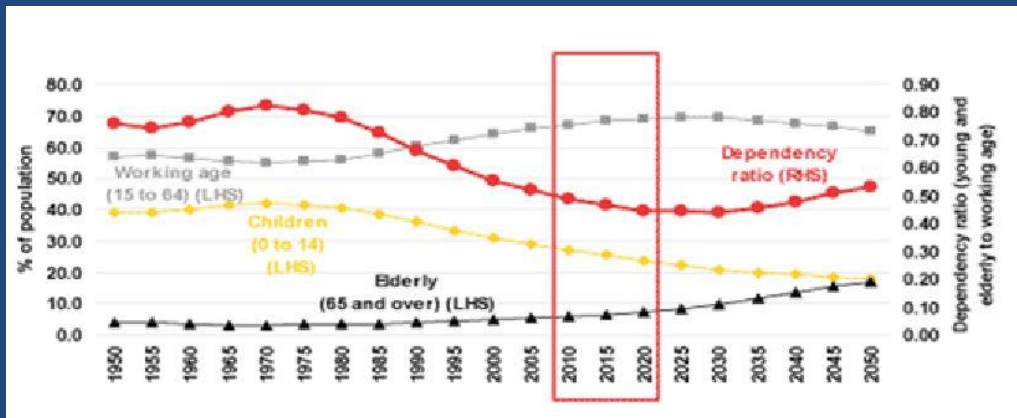


→ **Problem-based learning**

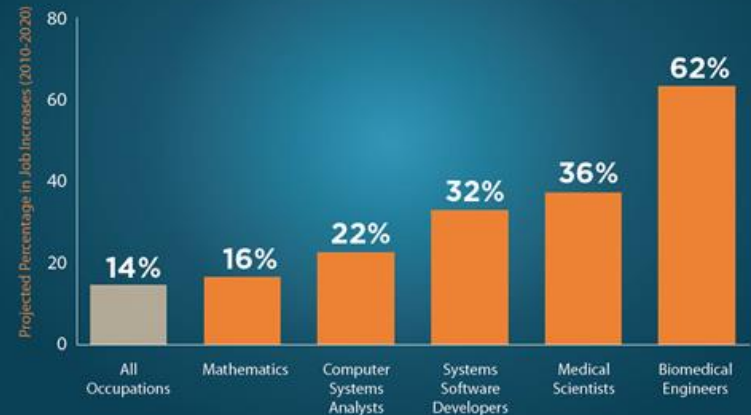
STEP

Why Junior High School Teachers

Certainty in optimally benefitting
demographic dividend 2045



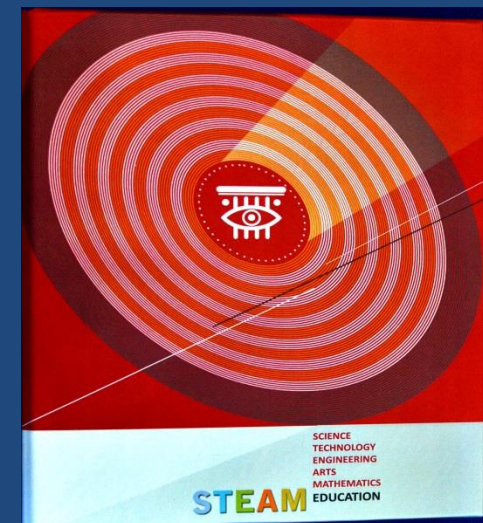
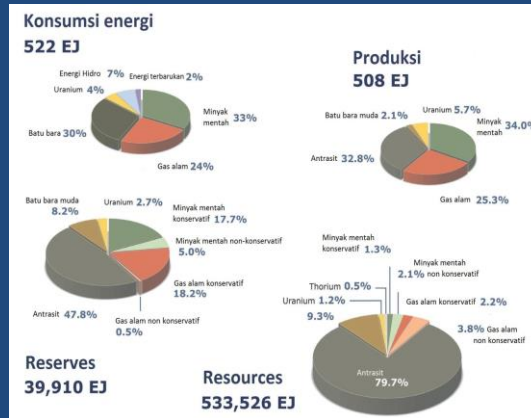
PROJECTED PERCENTAGE INCREASES IN STEM JOBS: 2010-2020



Fulfilling the demand in job market and real work needed

The works

- **Workshop:** exposure: global and local;
STEAM enrichment and training
- **Post workshop:** internet-based communication , local facilitator
- Environment coverage: Poor to middle class
- School types: public, private, madrasah
- **STEP book:** main ideas and guidelines;
projects: water, food, energy



Is this effort worthwhile?

- **STEAM** learning with enquiry method needs more time and human resource
- Strategy:
 - (1) apply this to lower level education to build a **STEAM** – based outlook and thinking
 - (2) at higher education level this method should be combined with the ongoing curriculum, to ensure the graduates will be on the same platform for further studies and competition

Adjusting the assessment system

- (1) Describe and create
- (2) Qualitatively and technically describe, create, argue the reason

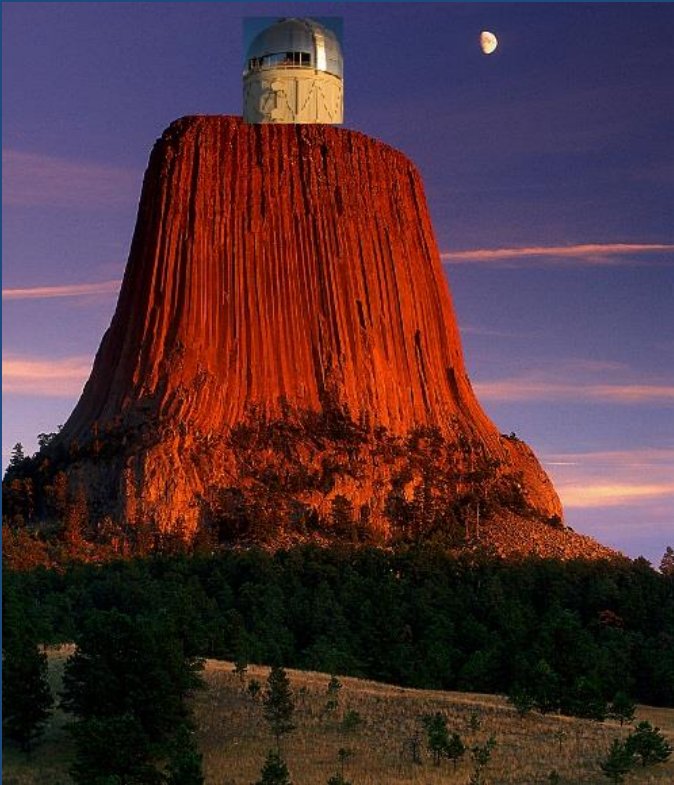
Astronomy for Development

Astronomy for **STEAM**: long and winding road but can be effective for particular cases

- Universal beauty: bridge between conflicting parties (e.g. cases: Atambua (border region between Timor Leste and Timor Indonesia; Poso (northeast Sulawesi: “religion-based” tension in society)
- Public education service: astronomy and science in general
- Community development

- ❖ Departement of Astronomy and Bosscha Observatory, Institut Teknologi Bandung
- ❖ UNAWE
- ❖ International Astronomical Union

Astronomical Observatory



Remote



Difficult
access



Space Age
Meets
Stone Age

TW1137 "Space Age Meets Stone Age"
Edition Size: 300, Cel Size: 12F

Taman Ilmiah Nusa Tenggara Timur

Pusat Pendidikan IPTEK untuk masyarakat

Program, Fasilitas, Aktivitas untuk:

Membangkitkan rasa ingin tahu yang sehat dan membangun daya nalar dan kreativitas

Menghaluskan kepekaan terhadap lingkungan

Mendampingi guru dalam pemberdayaan diri dan persiapan pembelajaran

Meningkatkan partisipasi orangtua dalam proses pendidikan anak

Menghidupkan kembali kebersamaan dalam belajar dan bekerja



Partisipasi dalam Pembangunan Daerah

Kabupaten Kupang

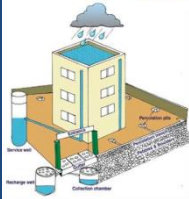


Apresiasi kekayaan lokal (budaya dan nilai-nilai dalam masyarakat, dan keindahan alam) yang perlu dilestarikan sebagai modal pembangunan daerah yang berkesinambungan

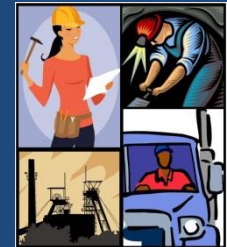
Amfoang



Dukungan IPTEK dalam pemenuhan kebutuhan primer masyarakat (air, energi, pangan, kesehatan)

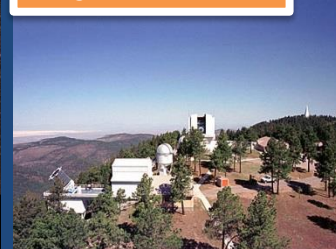


Pemberdayaan Sumber Daya Manusia melalui pendampingan dalam pendidikan, pelatihan ketrampilan kerja, dan perluasan wawasan

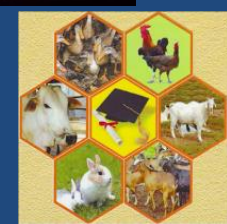


This spectacular shot of our Milky Way was taken at vicinity of the Amfoang district on Timor Island. A remote place away from the noise of hustle and bustle but hold the night sky as deep as a dark sheet but filled with stars that stretch from the northern sky to the south part hanging over us all. Such ideal condition to clearly see this bright band of light is hardly accessible because of many places in the world are mildly to highly light polluted.

Astronomi di Timor



Sarjana pulang membangun desa



For A Quality Life

(not just) An ALS issue

- Raising awareness of health issue
- Accepting and understanding the facts: challenges for difficult disease:
 - denial
 - seclusion
 - unscientific alternatives
- Staying positive requires knowledge and preparation
 - the power of rational knowledge
 - letting go, not giving up
- Together holding up above the water:
 - building community support
 - encourage participatory attitude



Kami mengundang Anda untuk menghadiri Seminar ALS untuk umum

**"Mengenal Penyakit Amyotrophic Lateral Sclerosis (ALS)
dan
Bagaimana Menjaga Kualitas Hidup Pasien ALS"**

Sabtu, 6 Juni 2015: 08:30-12:30

Auditorium Ang Boen Ing, Lantai 10
Mayapada Hospital Jakarta Selatan
Jln. Lebak Bulus I Kav. 29, Cilandak, Jakarta Selatan

GRATIS

Terimakasih untuk dukungan Anda yang amat berarti bagi kami.

Pendaftaran ke: Rima Indraputra (0815 9953259) rima.indraputra@mayapadahospital.com ;
Nana Premadi: n.premadi@yahoo.com
Keterangan lebih lanjut di: <https://alsnstars.wordpress.com/>

Presentation



1:30 - 3:30 pm
Saturday, August 8, 2015
@america, Pacific Place Mall, Level 3

**ALS Awareness:
The Brain
and Complexity**

Amyotrophic Lateral Sclerosis (ALS) affects the body, but not the mind of many, including renowned physicist Stephen Hawking. Gather with professionals to look at ALS in a broader context by exploring the brain and its complexity.

Watch *The Theory of Everything* on August 9th at 3:00 pm.

Dr. Beny Wiryomartani, Neurosurgeon
Premana W. Premadi, Cosmologist



You're Invited! Free Entrance! No Registration!

www.atamerica.or.id [atamerica](https://www.facebook.com/atamerica) [atamerica](https://www.instagram.com/atamerica)

KOMPAS.com
Senin, 10 Agustus 2015

HOME NEWS EKONOMI BOLA TEKNO ENTERTAINMENT OTOMOTIF HEALTH FEMALE PROPERTI TRAVEL

SAMSUNG mi ASUS Microsoft

Sains

ALS dan Cerita tentang Jiwa yang Terpenjara dalam Tubuh Kaku

Rabu, 3 Juni 2015 | 20:51 WIB



Make sure they **can** grow ..



and always **want** to continue to flourish and shine