



Ateneo de Manila University

Domain 4- Cultural Context of Scientific Activities: The Philippine Experience

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Short Course for Science Administrators of Indonesia, Malaysia, Thailand, the Philippines,
Vietnam and Switzerland

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Cultural Context of Scientific Activities

Guide Questions:

- The role of Science in the development of the society and the individual: what is the impact of the scientific activities?
- Cultural values in science: Is there “Good” and “Bad” science?
- Education and research, welfare and poverty reduction: synergies and antagonisms.
- The value of autonomy: How autonomous should the universities be?
- Handling of IP: are there cultural differences across different regions?



Cultural Context of Scientific Activities

Science and Culture affect each other:

- **Culture** affects Science in both content and process.
- **Science** affects culture, either gradually or through a conscious effort, to shape cultural worldviews or belief systems.



What is “Science”?

*“**Science** as a total system of social activities is not merely research science, it includes all the uses of scientific practices in the workplace, in the home, in the environment. It is science as science is done and used by those who are trained to use it according to the norms of society.”*

(J.L. Lemke, City University of New York)



What is “Culture”?

*“**Culture** refers to a system of knowledge shared by a relatively large group of people in the course of generations through individual and group sharing:*

- Experiences
- Beliefs
- Values
- Attitudes
- Meanings
- Roles
- Hierarchies
- Religion
- Notions of time
- Spatial relations
- Concepts of the universe
- Material objects and possessions



The Philippine Context...

- Spanish rule (ca.300 years)
- The Japanese occupation (ca. 3 years)
- American influences (ca. 50 years)



(Source: www.thepinoywarrior.com)



The Philippine Context..

Geographical and Cultural Plurality:



(Source: www.matyroseahneazucena.wordpress.com)



(Source: www.webapps.irri.org/rcma/res/philspngno.png)



Key Elements of the Filipino Value System

Faith and Religiosity:

- Roman Catholics – 92.5%
- Muslim – 5.6%
- Other religions – 1.9%





Key Elements of the Filipino Value System

Family Orientation:

- The Basic unit;
- “Nuclear” and “Bilateral” family
- The primary social welfare system





Key Elements of the Filipino Value System

Values:

“Pakikisama/Kapwa” -

- Core value;
- To get along with others; not doing things alone (harmony/togetherness)
- Shared sense of identity





Key Elements of the Filipino Value System

Values:

“Bayanihan”-

- The creation of association with neighbors;
- A “helping” attitude





Key Elements of the Filipino Value System

Values:

“Hiya” -

- “Shame/Propriety/Dignity”; a sense of social decency and compliance to public norms of behavior.





Key Elements of the Filipino Value System

Values:

- **“Utang na Loob”** - Debt/Gratitude/Solidarity
- **“Amor Propio”** - Concern for self-image
- **“Delicadeza”** - Sense of Honor
- **“Palabra de Honor”** - Word of Honor



Folk Tradition, Beliefs, and Practices

Animism:

- “**Bathala**” : Supreme God
- “**Spirits**” :
 - “**Diwata**” (fairies)
 - “**Ik-ik**” (witches)
 - “**Santelmo**” (fireball)
 - “**Engkanto**” (minor spirits)
 - “**Dwende**” (dwarves & elves)
 - “**Aswang**” (ghoul; malevolent spirit)
 - “**Kapre**” (a giant smoking a tobacco)
 - “**Tikbalang**” (man with the head of a horse)
 - “**Tiyanak**” (vampire feed on children’s blood)





Folk Tradition, Beliefs, and Practices

Beliefs:

- “Usog” (A child greeted by a stranger will get sick)
- “Lihi” (Cravings during pregnancy)

Voodoo Practices:

- “Pangkukulam” – witchcraft





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The Practice of Science in the Philippines

Then and Now: Hygiene & Medicine



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The Practice of Science in the Philippines

Then and Now: Transport



“Calesa” (Horse-drawn carriage)

“The Philippine Jeepney”





The Practice of Science in the Philippines

Then and Now: Telecommunications



www.tbbase.com



www.countrycode.org

Internet Usage in the Philippines:

- 105,720,644 total population (2014)
- 37.6 million active internet users
- 34 million active Facebook users
- 3.5 out of 10 Filipinos are online
- 106 million active mobile subscribers





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The Practice of Science in the Philippines

Then and Now: Education



Business.inquirer.net



www.technasia.com



www.innovationeduca.blogspot.com



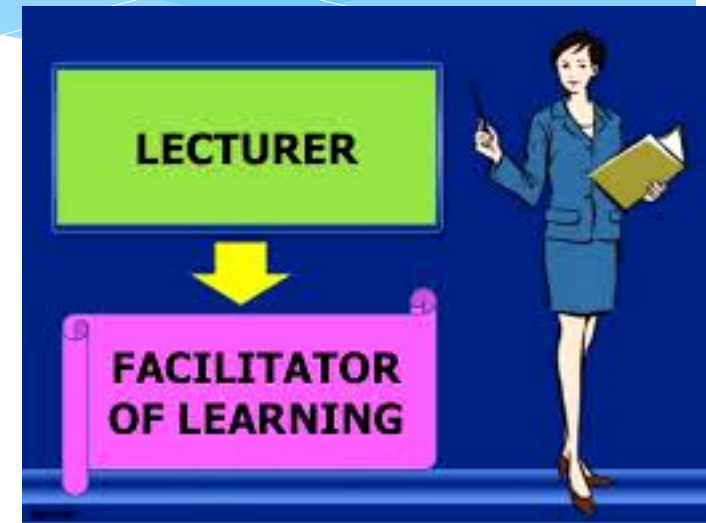


The Practice of Science in the Philippines

Then and Now: Education

Traditional:

- Teacher-centered
- Students seen as recipients of information
- Dependence on textbooks as sole sources of information
- Information obtained by students is highly theoretical



Modern:

- Teacher as facilitator/guide/mentor
- Student-centered learning through active/cooperative learning, discovery, critical/reflective thinking
- Use of multi-media as sources of information e.g. films, internet, audio-visuals, etc.
- Information obtained engages students to find applications of theories to the real-world (“experiential learning”)



The Practice of Science in the Philippines

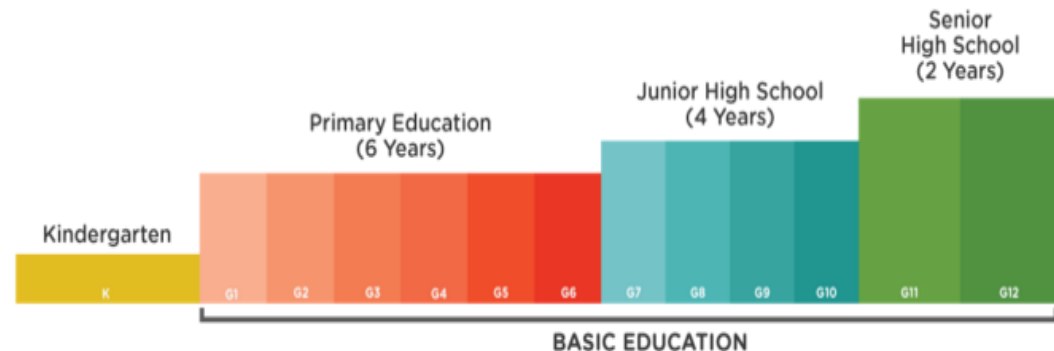
Then and Now: Education

Traditional:

- 6 years of Elementary Education
- 4 years of High School
- 4-5 years of College

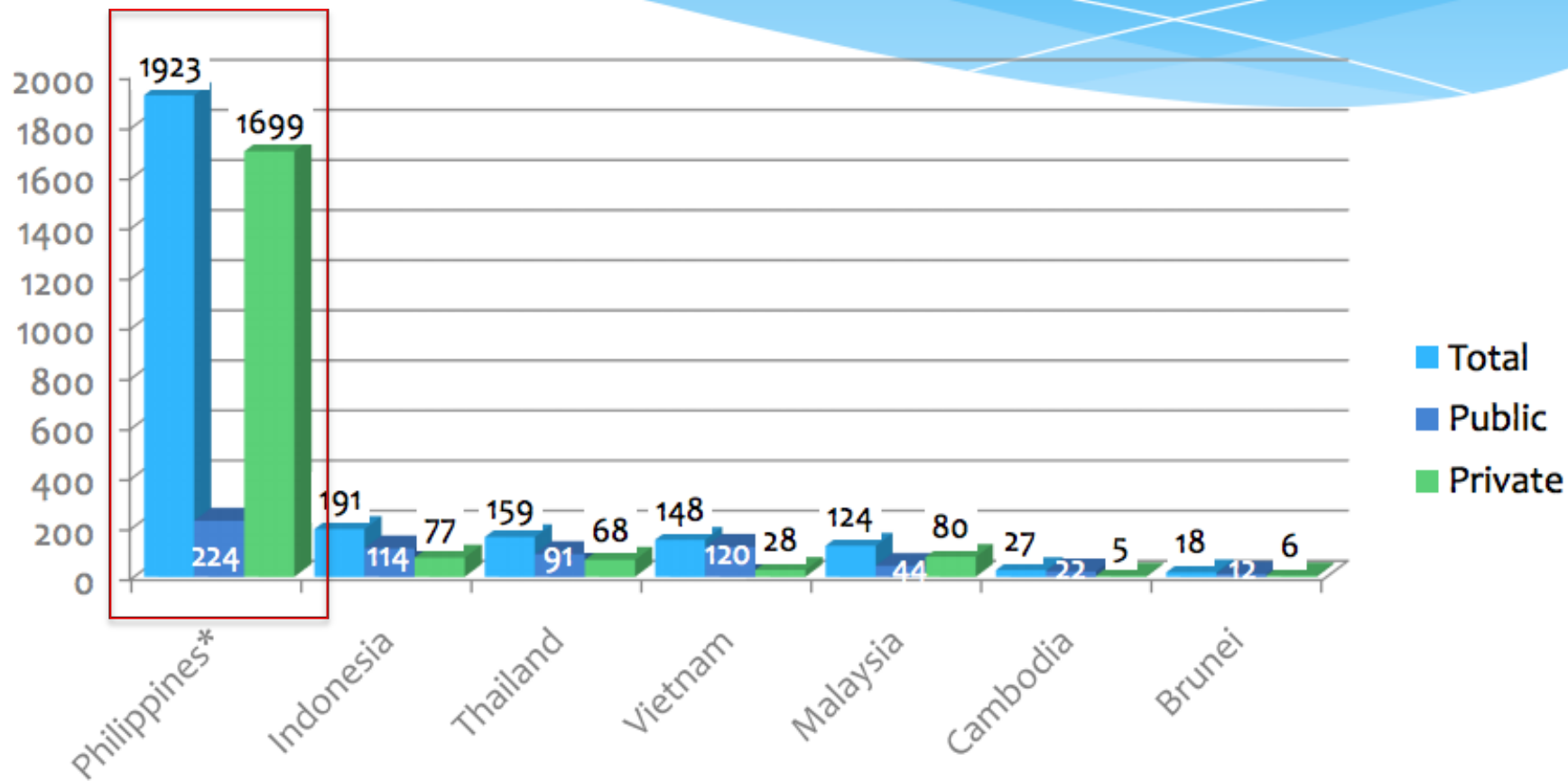
Modern: The K+12 Program

- Kindergarten
- 6 years of Primary Education
- 4 years of Junior High School
- 2 years of Senior High School with specific tracks
 - Technical-Vocational-Livelihood
 - Sports and Arts
 - Academic track with 3 strands
 - Science, Technology, Engineering Mathematics (STEM)
 - Business, Accountancy, Management (BAM)
 - Humanities, Education, Social Sciences (HESS)





Number of Higher Education Institutions (HEIs), AY 2013-2014

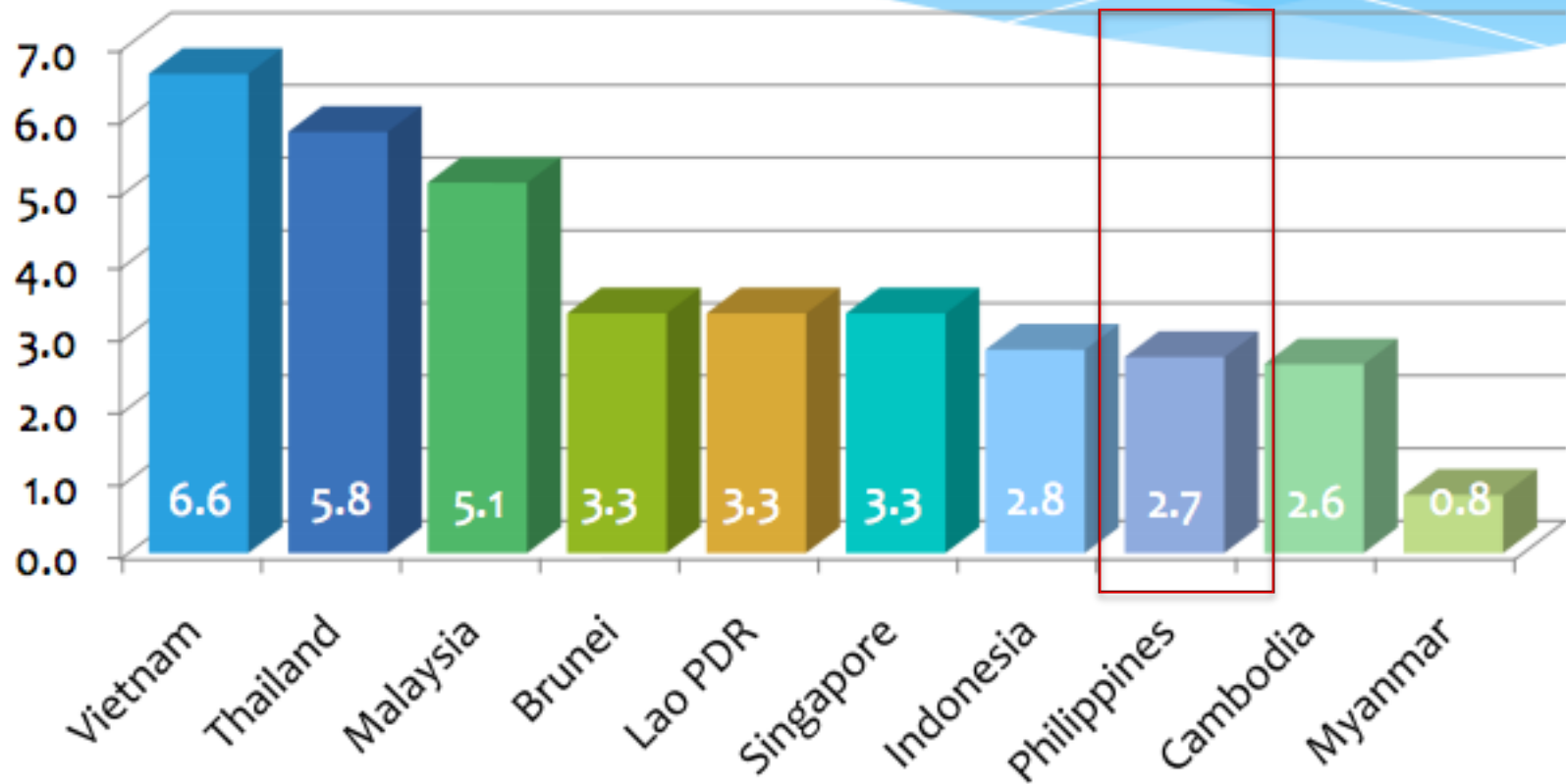


Source: http://en.wikipedia.org/wiki/List_of_universities_in_Asia#Asia

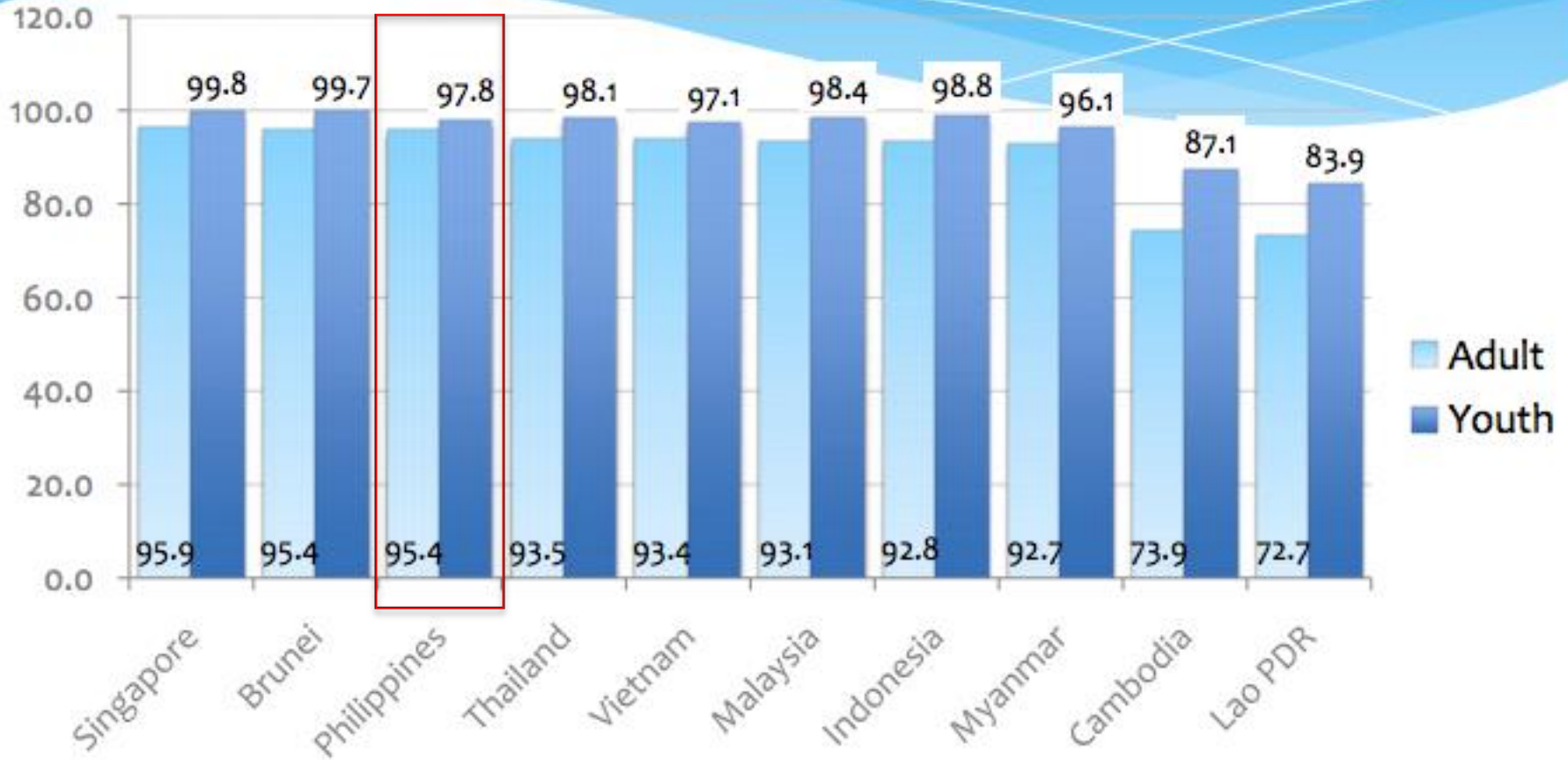
* Office of Planning, Research and Knowledge Management, Commission on Higher Education, 2014



Education expenditure (as % of GDP), 2014

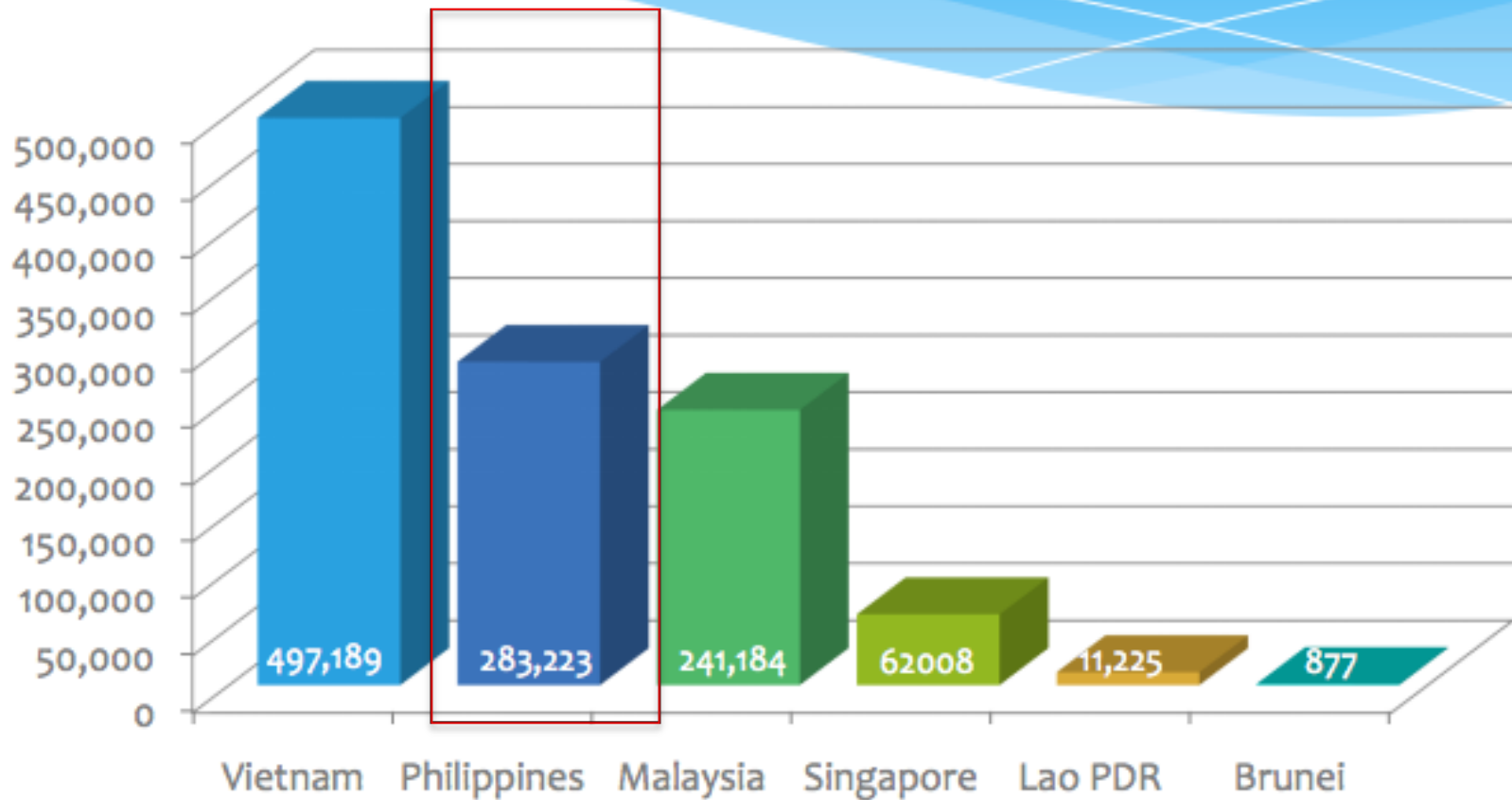


Literacy rates, 2014



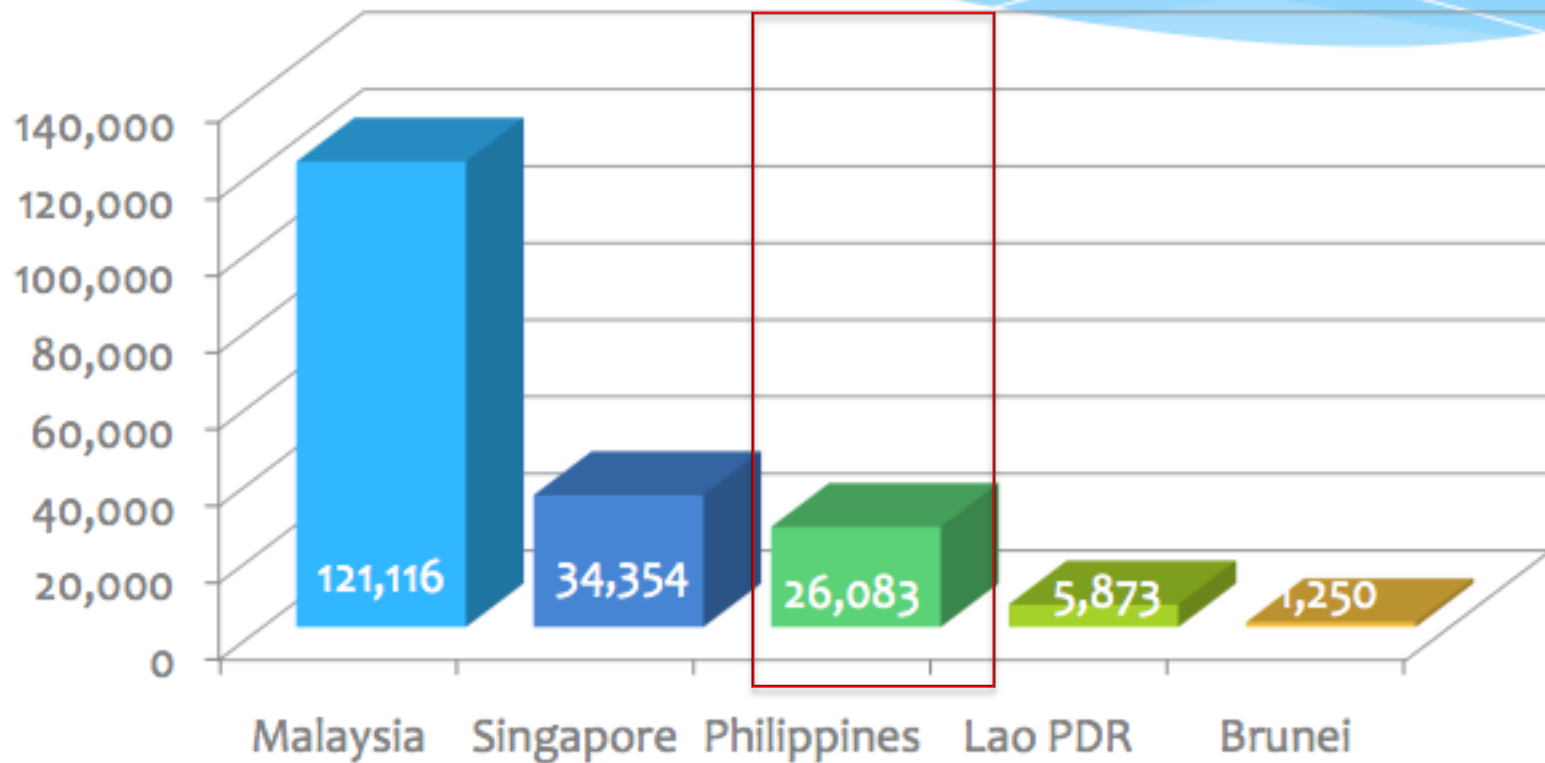


Average number of enrolment in engineering, manufacturing and construction, AY 2010





Number of enrolment in science





Vision of the Philippine Development Plan 2011-2016



“It is the government’s promise that no individual will be left behind on the straight and righteous path.”

President Benigno Aquino III

Inclusive Growth:

- Higher economic growth for 2011-2016
- Growth that generates mass employment
- Growth that reduces poverty, including achievement of Millenium Development Goals



Inclusive Growth through a Smarter Philippines!

Smarter Philippines is positioning the Philippines to maximize the benefits of the 2015 ASEAN Economic Integration and the 2015 APEC Meetings



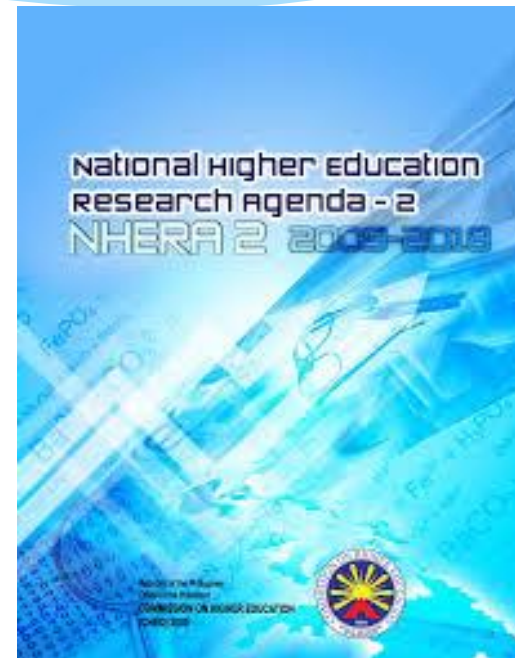
Smarter Philippines will give investors more options to invest in



The National Higher Education Research Agenda 2

Objectives:

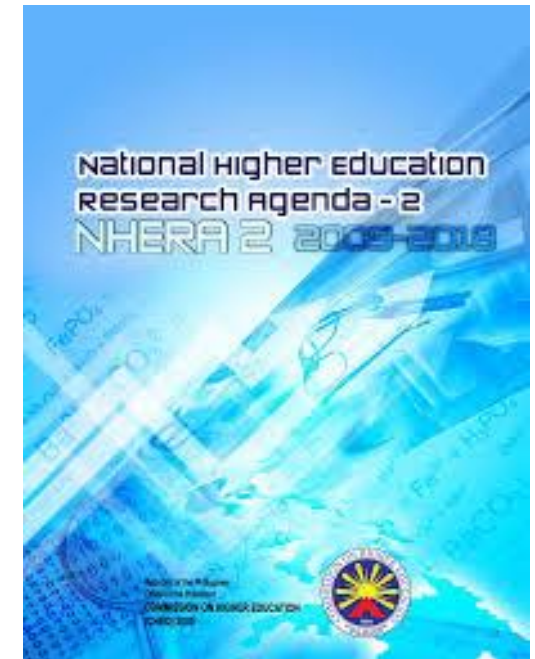
- Improve research capability of HEIs to generate knowledge towards international competitiveness.
- Enhance research productivity of HEIs in distinctive areas of competence.
- Generate knowledge/technologies needed for
 - International, national, and regional higher education development
 - Policy/Plan formulation, particularly for higher education developing innovative programs in cutting edge higher education fields (e.g. nanotechnology, biotechnology, ICT, and materials science)
 - Advancing the frontiers of knowledge in the disciplines
- Promote and facilitate dissemination and utilization of research outputs.





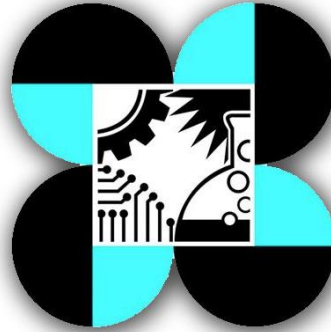
National Higher Education Research Agenda-2: Priority Themes for Multidisciplinary/Multisectoral Research

- Food safety and security
- Enhancing indigenous renewable energy source in the domestic energy mix
- Development of vaccines and diagnostic kits using indigenous materials
- Disaster risk management
- Pollution Control
- Climate change specifically on the issue of global warming
- Future ASEAN
- Peace process and conflict resolution





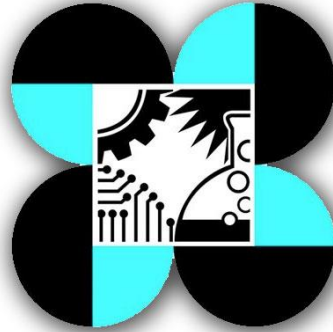
The Department of Science Technology (DOST)



- The premier science and technology body in the country
- Mandated to provide central direction, leadership and coordination of all scientific and technological activities, formulate policies, programs and projects to support national development.
- Annual Budget: Php17.6 billion (2015)



The Department of Science Technology (DOST)



Composed of the following **Councils**:

- National Research Council of the Philippines
- Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
- Philippine Council for Health Research and Development
- Philippine council or Industry, Energy and Emerging Technology Research and Development

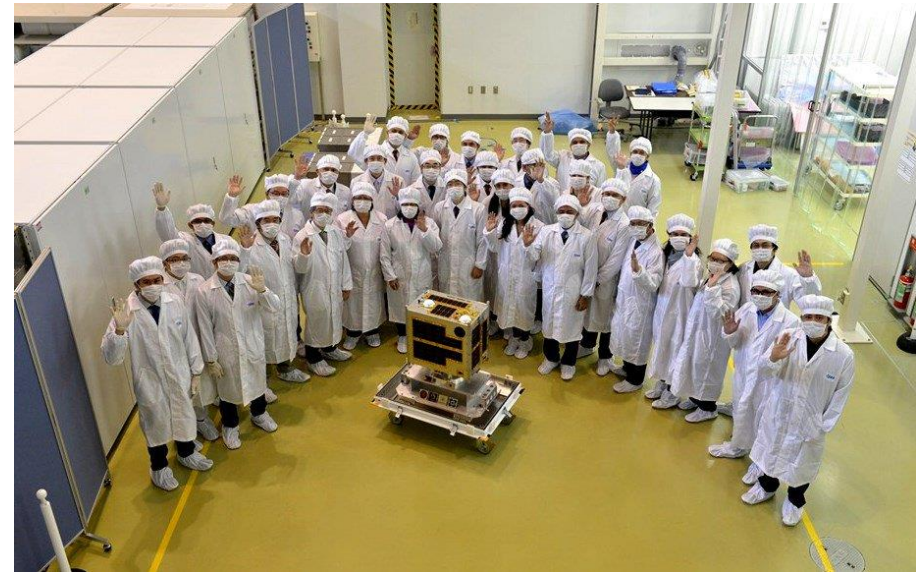


The Department of Science Technology (DOST)



Portfolio Programs and Projects:

- Agricultural productivity
- Competitiveness of micro, small and medium enterprises (MSME)
- Industry competitiveness
- IT industry development
- E-Governance
- Better healthcare
- S&T human resource
- Disaster Preparedness



Diwata 1, the first Philippine microsatellite.

(Source: Inquirer.net)

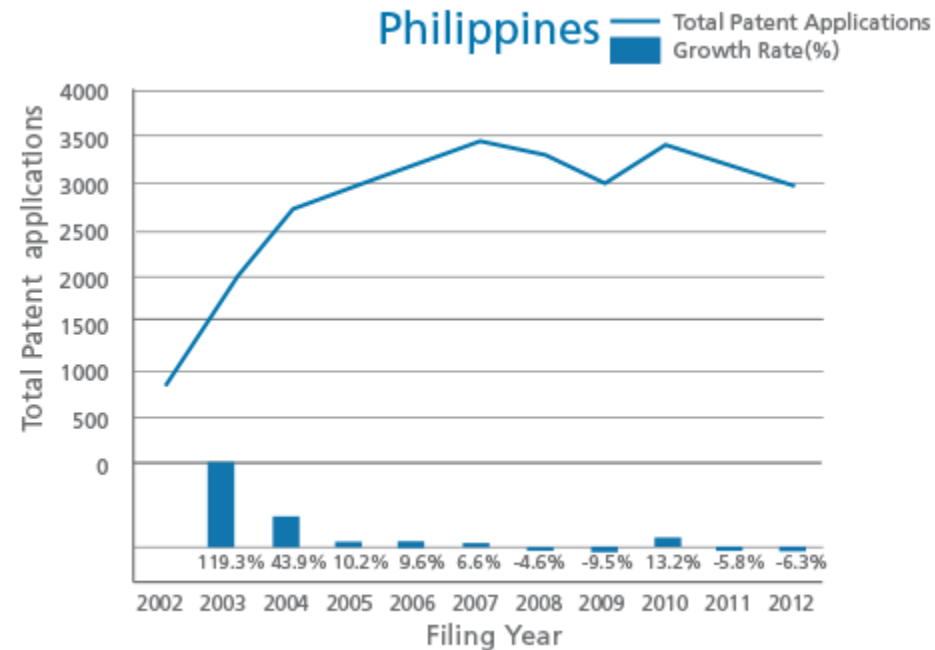


Points to consider ...

On Intellectual Property...

**Republic Act No. 8293:
“Intellectual Property
Code of the Philippines”
(Jan. 29, 1998)**

An Act Prescribing the Intellectual Property Code and Establishing the Intellectual Property Office, Providing for its Powers and Functions, and for other Purposes



Source: WIPO statistics database, June 2014



Points to consider ...

On Educational Autonomy...



CHED-RECOGNIZED PROGRAMS



Philippine Accrediting Association
of Schools, Colleges and Universities

On Technological Autonomy...

“Filipino scientists, for example, are strongly influenced by religious notions brought by Spanish colonization and the standards of scientific practice brought by the American colonizers. Not surprisingly, among Filipino scientists, the sacred and the secular interpenetrate, sometimes limiting inquiry and experimentation.”

(Pertierra, Transforming Technologies & Altered
Selves, 2006)



Points to consider ...

On Science Education...

“Many of our teachers and practitioners of Science come from communities with traditional practices and ways of understanding issues. Thus, there is still need for additional assistance and/or training that will enable them to understand the conceptual basis of these traditional practices.”



The way forward...

PAST: “Sick Man of Asia”



PRESENT: “Asia’s Rising Tiger”





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Wish us luck...

Thank you for your kind attention.