



TRENDS, CHALLENGES, AND DILEMMAS OF SCIENCE EDUCATION IN DEVELOPING COUNTRIES: A CASE IN INDONESIA

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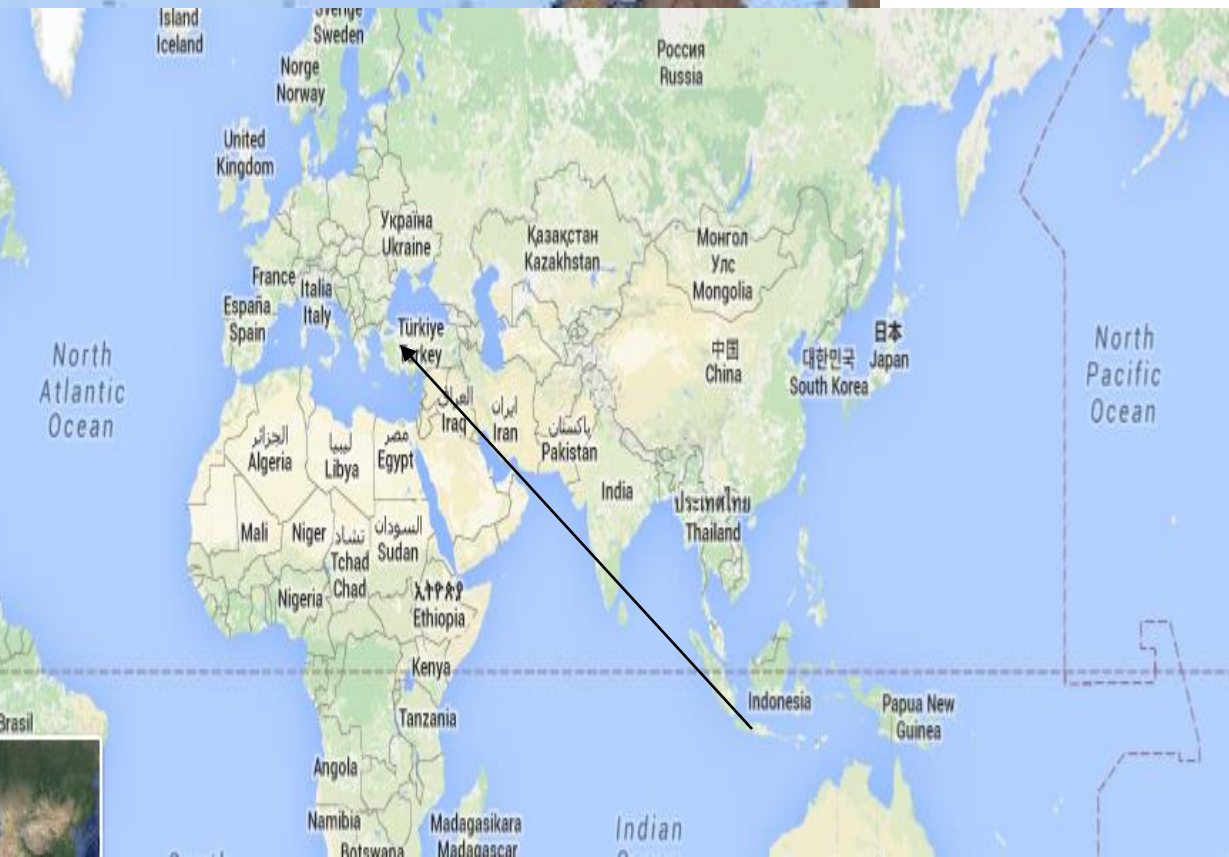
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The big archipelago country in Southeast Asian

Area: 2 million sq km

Divided into 35 provinces

More than 17000 islands

The other facts of Indonesia

- ❑ Population: 256 millions
- ❑ More than 300 tribes and local language (**Javanese**, sundanese, Batak, Bali, Minang, papua)
- ❑ more than 400 volcanoes and 130 of them including active volcanoes
- ❑ Many natural disasters



Contribute to problem for science education



Indonesia Natural Resources

rainforest



marine

resources



plantation



mining products



agriculture

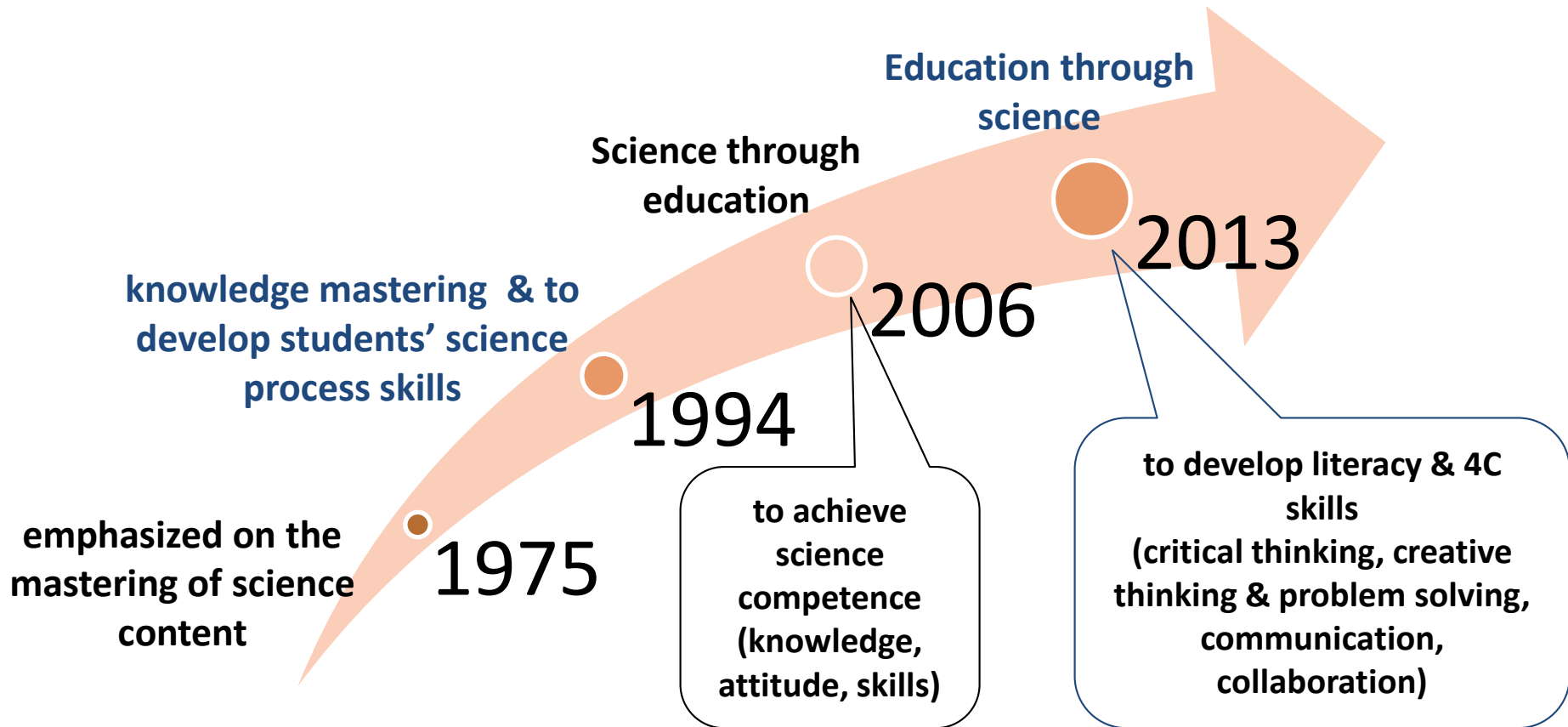


History

- Indonesia is free from the colonialism at August 17, 1945 (after 350 years colonized by Dutch and 3 years by Japan)
- First of national curriculum is launched in 1947, but only focus to develop nationalism as an independent nation
- Based on political issue, Indonesia had new curriculum at 1968, emphasized on moral development and practical skills for life, less attention for science education
- Since 1975, science education began to be noticed in 1994



Focus of Science Education in Indonesia





General problems and dilemmas

Science education equity

- 9-year compulsory education just keep in west Indonesia and some parts of central and little in east Indonesia
- Education participation is still less in several areas (culture & geography)
- Not balanced in the spread of educators staff

Science education cost

- Most of cost is used for educators salaries
- Less of science laboratory and its facilities (only at High school in big cities/center of province)

Science education quality

- still low if compared to other countries (mostly good in memorize of concept and calculation, but lack in the concept understanding and literacy)
- The lack of learning process
- teaching staff are not in accordance with their fields



Specific Problems and Dilemmas in Science Education

- Science content that must be taught are too much if compare with the time allocation
- The science content not relevance with students' expertise in vocational high school
- The lack in implementation of science integrated learning in elementary and junior high school
- The low of students interest, scientific habit od mind, and achievement in science



- The lack of science learning process (mostly by lecturer method)**
- The low of science teachers competences (i.e; content knowledge, pedagogical, personality, and social competence)**
- The lack of science education research and its follow up practically**
- The low of publication of science educators (inhibit the professional development)**



The challenges of science education

- To reduce the influence of political issue in education system**
- Give more autonomy for the region in taking care primary and secondary school**
 - Develop program of “Indonesian teaching” for underdeveloped region**
- Improve the science teachers competencies (e.g TPACK, CPD)**



- Integrating local wisdom in science learning**

- Strengthening science learning process by scientific approach (observe, ask, collect information, elaborate, communicate)**

- Science for anticipate the natural disaster (STEM)**

- Appropriateness curriculum for vocational high school**

- Making collaboration to improve the quality of science research and publication**



THANK YOU