To teach or not to teach
- philosophy of education -

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Prof. Gye-Chun Cho
Korea Advanced Institute of Science and Technology (KAIST)
Undergraduate: What to learn?

Well discussed in


Contents are very good.

In particular, consolidation interpretation, (total or effective) stress analysis, soil description, limitations of the theories, incorrect concepts and biases, and careful understanding of fundamentals (particulate nature of soils).

In addition,

GE graduates should know what is important for a given project. They may not solve a problem but should know what is the problem. So, they can consult with experts (PE, Ph.D., etc).
Educator: What to teach?

Well discussed in


Wesley, L. (2012). “(What) To teach or not to teach – from theory to practice”, ICE.

Santamarina, J.C. (2012). “(What) To teach or not to teach – that is the question”, ICE.

Wesley, L. (2017). Recent communication through email.

In addition, Professors should teach

Be a human being (personality); strengthen humanistic education.

Have dreams. (parents-made boys?)

Push to the ultimate (extreme) capacity.

Thinking is better than calculation. (nature, uncertainty; true answer?)

See whole pictures (e.g., geotechnical engineering design course).

Emerging trends: Climate change, Urbanization, Industry 4.0

Highlight the importance of geotechnical engineering.
Recent **natural disasters** are often attributed to climate change.

Active efforts and responses to climate change are required to maintain the status quo.

**Role of Geotechnical Engineer for sustainable development?**
Urbanization

Worldwide Megacities (2017):

- 15 cities for more than 5 Million people
- 52 cities for more than 2 Million people

The proportion of the urban world population is expected to rise from 54% in 2017 to 66% by 2050.

Asia has 53% of the entire urban population growth! Seoul Metropolitan Area is third largest in the world!

Urban area expansion (276% by year 2030) will happen much quicker than the global population growth in cities (66% by 2030) (from Bobylev 2009).

Additionally two billion people move into cities over the next twenty-five years!

By the way, urbanization is energy-effective.
Industry 4.0 is a name for the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the internet of things, cloud computing and cognitive computing. The main purpose is improving public services and quality of life.

Ex) Smart City, ICT Infra-structure, Big data analysis for slope stability

Global market for smart urban services will be $400 billion per annum by 2020 (Arup, 2013).

Key ingredients for pioneers: Collaboration, Creativity, Convergence (3C)
Closing Remarks

Keywords:
- Soil mechanics, Rock mechanics
- Geotechnical engineering
- Foundation engineering

How many?
- More than 3000 textbooks worldwide

It would be effective if the TC306 could send a guideline to the authors of those textbooks.

Professor must have his/her education philosophy. Students expect it!!
Learn first, then teach others.