



جامعة الملك عبد الله  
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# Will teaching and research continue to be intertwined in engineering education?

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Question:

Will teaching and research continue to be intertwined in engineering education? Should they? If so, do you see changes ahead?

Answer:

Yes, Yes, and Yes



## Bayt Al Hikma (House of Wisdom)

Community of scholars; forerunner of university

Direct transmission from Scholar/Researcher to student without formal institution structure

- discovery
- application

7th – 13<sup>th</sup> centuries



## TEACHING / APPLICATIONS

### TEACHING

“If its objective were scientific and philosophical discovery, I do not see why a university should have students”

*The Idea of a University*,  
Newman, 1854

If I wished a boy to know something about the arts and sciences, for instance, I would not pursue the common course, which is merely to send him into the neighborhood of some professor, where anything is professed and practised but the art of life; — to survey the world through a telescope or a microscope, and never with his natural eye; to study chemistry, and not learn how his bread is made, or mechanics, and not learn how it is earned”

Thoreau, *Walden*, 1854

Al Jumaily and Stonyer, *Global J. Engng. Educ.*, 4 (1) 89-97, 2000



HUMBOLDT RESAERCH UNIVERSITY  
Hopkins and rest of US and Europe

## RESEARCH / DISCOVERY

“The primary aim of the university must be to search for knowledge – research as we call it today – not merely actual discovery, not merely the attempt to discover, but the creation and cultivation of the spirit of discovery”

Truscott, 1954 (in Grant B, *U. Auckland thesis* 93-283)



## TEACHING AND RESEARCH

Teaching and research must be intimately intertwined and must be assigned equal importance. Teaching and research are inseparable and it is their synergy that defines the essence of a research university.

Vest, “The Role of the Research University in the 21<sup>st</sup> Century: History and Social Aspects,” *KAUST Symposium, 2007*



## **Will teaching and research continue to be intertwined in engineering education?**

Research is to teaching like sin is to confession;  
without participating in the former, you don't have  
much to say in the latter.



Research Universities: “oriented toward the future...  
create opportunities” in transmission and advancement of  
knowledge, its discovery and application

- Graduate Education in Engineering
- Undergraduate Education in Engineering
  - Passive to active learners
  - Capstone
  - Undergraduate research
  - Flipped classroom





## Changes Ahead?

Engaging students in:

- Innovative solutions to challenging problems  
e.g. Olin
- Multiyear research exploration on a topic  
., Quest
- High School Research  
e.g., TKS, (S)RSI

And, more that is.....



... something to be excited about!

