

**Global Engineering Deans Council Conference 2013**

**- Panel -**

**Impact of Globalization and Information Technology  
on Engineering Education**

**IT for  
Interactive Teaching and Learning  
and Global Classroom Networking**

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# IT for Education

Class Management/  
Evaluation

Coursera, edX, MITx, ...

**MOOC**  
(Massive Open  
Online Courseware)

MIT OCW,  
KOCW, ...

**OCW**  
(Open Courseware)

Contents Sharing

**e-Learning**

**Cyber  
Universities**

**Distance  
Education**

# IT

- Internet, Computer, PowerPoint,  
Video, Projector, Video, Display,  
Tablet PC, Smart Phone, e-  
Learning, ...

Overcome Space & Time Limits  
Increase 'Efficiency'

# Lecturing

# New Uses of IT/e-Learning ?

# Effectiveness & Quality

# INTERACTION

Learning

Creative

Synthesizing

Communication, Teamwork, Leadership

Neuroscience, Brain Research, Cognitive Psychology

Concentration

Long-Term  
Memory

Structuring  
Knowledge

Character

Active

Friendship

**INTERACTION**  
**within Classroom**

**INTERACTION**  
**outside/across**  
**Classrooms**

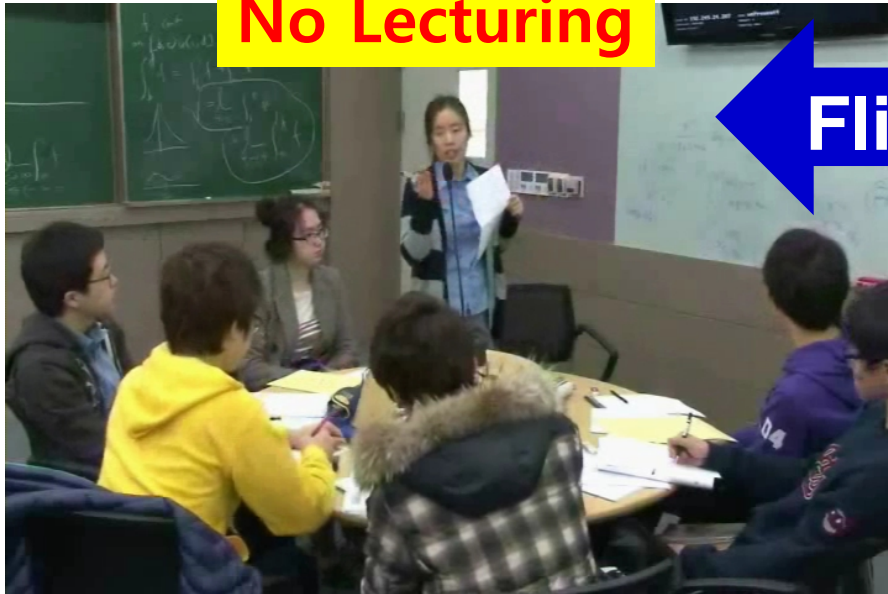
# Education 3.0 **Interactive** Class

## Interactive Class

## Online Self-Learning

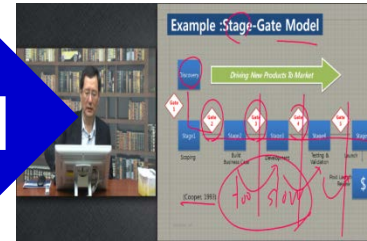
**No Lecturing**

**Flipped**

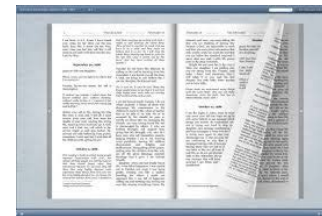


**Problem-Based, Collaborative, Active**

**Lecture Video**



**Textbook**

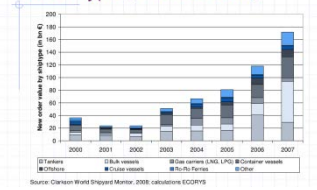


**Virtual Lab**



**Lecture Slides**

New order investment value by vessel type (in Billion Euro)



**Quiz & HW**



**Q&A, Information Sharing, Social Network Services**



### Interaction in Class

Q&A	Discussion	Team Learning/Task	Interactive Exercise	Evaluation	Presentation	Labs
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### Online Interaction

Query Search	Interactive Watching	Q&A	Inform. Sharing	Discussion	Authentication	Evaluation
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**Team Learning + TA Support**



# Globalization Needs of Engineering Education



- **Multicultural Knowledge**
  - Global Markets/Customers, Different Needs
- **Global Issues**
  - Global Warming, Pollution & Environment, Energy, Food, Disasters, Pandemic Diseases, ...
- **Student Exchanges & Joint Programs**
- **Complementary Teaching Capabilities**
- **Need More Students, Need More Faculty**

## **Balance of Teaching Resources & Learning Demands btwn**

- Developing countries → Most good students go abroad
- Developed countries → Need more graduate students from abroad

MOOC/OCW/University's e-Learning

# e-Learning for Global Education

Not Enough!

Need More Interaction

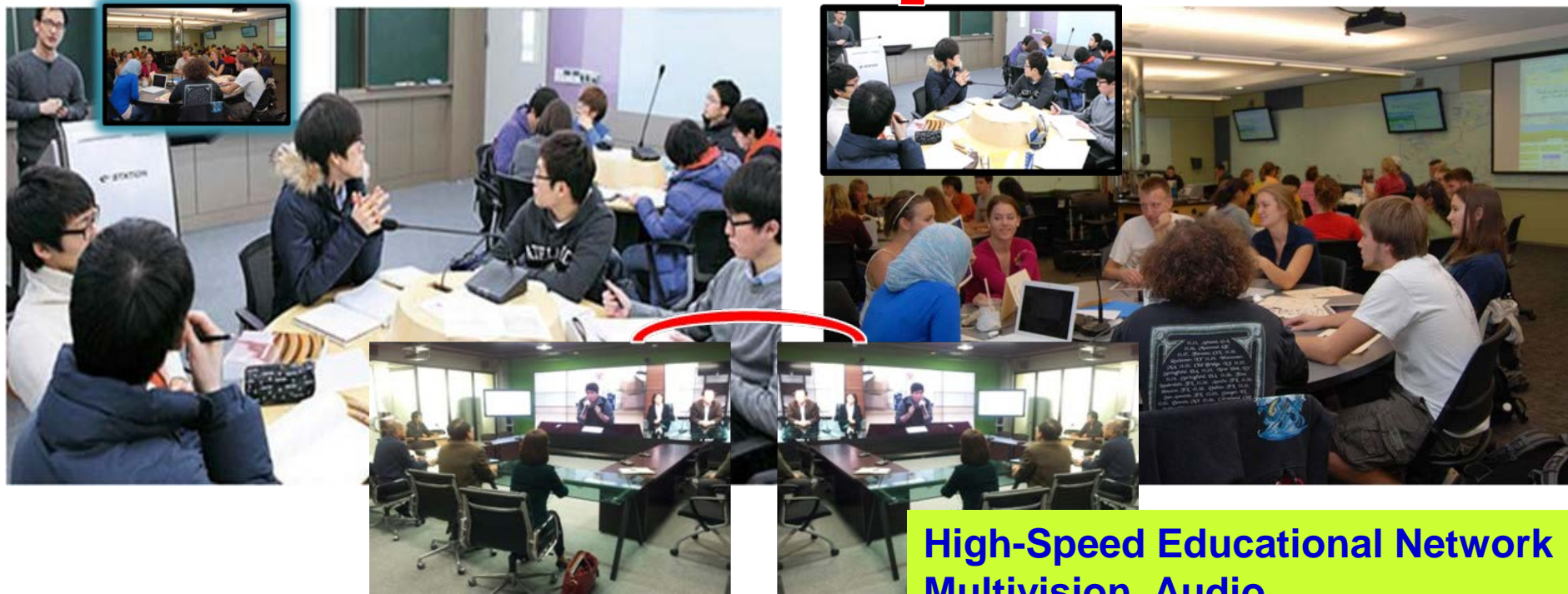


iPodia

# Real-Time Global Joint Classes

# Global Classroom Networking

**Interactive**

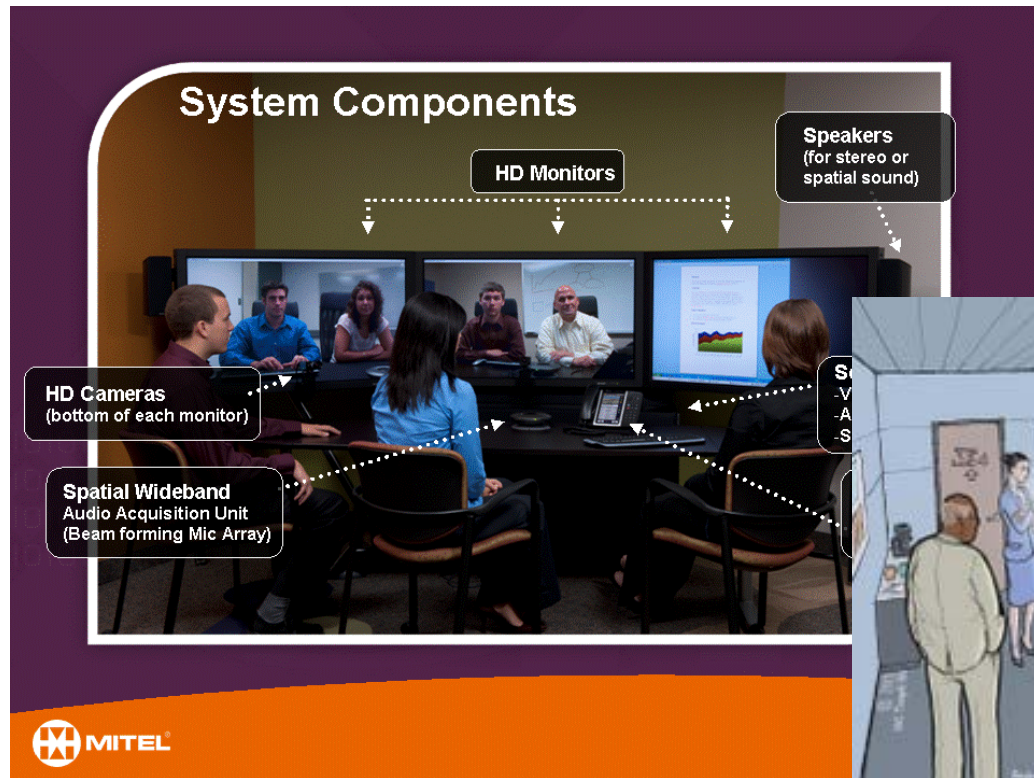


**High-Speed Educational Network  
Multivision, Audio, ...**

- **Joint interactive class with other universities**
- **Remote team learning/teamwork**

# Global Students Teamwork

**Interactive**



**MITEL**

<http://www.mitel.com/>

**BeingThere Center**

<http://www.cs.unc.edu/cms/research/h/research-groups/being-there/>

**Group Discussion & Problem Solving, Team Learning, Team Projects, even Labs**

# Proposal

## Global Educational Network (GEN)

Highway for Global Educational Interaction

### Standards

- Devices/Comm./
- Applications/Contents

**Thank you!**