K-MOOC based Flipped Learning

Dr. Jin-Hyouk IM
Professor for Education Innovation
Pohang U. of Science & Technology (POSTECH)

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What is MOOC?

- Open competition
- Proven top quality

Source: Wikipedia.com
MOOC for Various Purposes

- **MOOCs Providers**
  1. MOOCs
  2. Nano-/Microdegree
  3. College credit
  4. College degree

- **Courses**
  5. SPOCs
  6. MOOC-based Flipped Learning

- **Open Education**

- **Private Education**
  7. MOOC + FL

Residential MOOC
MOOC Schools

- Top 5:
  - Share: 20.0%
  - Per School: 4.0%

- Top 20:
  - Share: 56.0%
  - Per School: 2.4%

- Top 50:
  - Share: 87.6%
  - Per School: 1.7%

Source: https://goo.gl/2LgCfC
Most Innovative Schools  National Universities

In spring 2016, U.S. News asked top college officials to identify institutions in their Best Colleges ranking category that are making the most innovative improvements in terms of curriculum, faculty, students, campus life, technology or facilities. The schools that received the most nominations for making promising changes on campus are listed here.

To unlock full rankings, SAT/ACT scores and more, sign up for the U.S. News College Compass!

Arizona State University--Tempe

Stanford University

Massachusetts Institute of Technology

Cambridge, MA

#3 in Most Innovative Schools
#7 in National Universities

MIT is located in Cambridge, Massachusetts, across the Charles River from downtown Boston. Only freshmen students are required to ...

more

$48,452  Tuition and Fees  4,527  Undergraduate Enrollment  SAT, GPA and more

A hub of education research
Positioning of Institutions

Source: Hollands and Tirthali (May 24, 2014). MOOCs: Expectations and Reality, Columbia University
MOOC-based Education

- Adaptive hinting
- Just-in-time learning
- Self-paced learning
- Mastery learning
- Flipped learning
- Global learning
Knowledge is Power?

A lecture at the University of Bologna in Italy in the mid-fourteenth century. The lecturer reads from a text on the lectern. From Wikipedia.
Dr. Mazur’s Peer Instructions

Pre-class
- S: Reading or preparatory work
- S: Assignment

In-class
- F: Review works
- F: Lead discussion
- F: Create/adjust next pre-class assignment
Bloom’s Taxonomy

- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creation

Higher order thinking
Flipped Learning?

Lectures at Home, Homework in Class.

- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating

Pre-Class

In-Class
MOOC-based Flipped Learning

Creating
Evaluating
Analyzing
Applying
Understanding
Remembering

MOOC

Flipped Learning
Improvement of Education Quality

No measurement, no improvement
-Peter Drucker

Standar dization

Measurability
Reduction of Education Cost

- Modulari ty
- Division of Labor

Invisible Hand
-Adam Smith
STARTING POINTS FOR MIT FACULTY

Residential MITx

Use digital tools to enhance the learning experience for students on campus. Utilizing the Residential MITx platform in your on-campus class is a great way to get your feet wet with digital learning. Create online problem sets for your students, shoot some videos to complement your in-class lectures, or even redesign your entire course as a flipped classroom. Whatever you produce can later be repurposed in a massive open online course (MOOC), or shared on MIT OpenCourseWare (OCW).

MIT OpenCourseWare (OCW)

Publish materials from an existing residential course on OCW under an open license. This is the least labor-intensive option and often reaches the broadest audience. OCW course materials are a solid foundation for exploring other digital learning projects. For instance, some faculty have reused video lectures from their OCW courses in later MITx efforts.

MITx

Create a massive open online course (MOOC) on the edX platform and offer it to learners everywhere, for free. MITx courses give you global reach and the ability to impact thousands of learners. The MOOC you develop can be used later for residential teaching, or you can conduct both a MOOC and a classroom course simultaneously.
Faculty at MIT are using the Residential MITx platform to:

1. Offer students **rapid feedback** on their understanding
2. Provide **adaptive hinting**, a lightweight version of student-teacher interaction
3. Assess learning with **online quizzes and exams**
4. Augment learning by providing **simulations and visualizations**
5. Foster students’ **active reading/discussing** scientific and technical material
6. Enable **active classroom learning** (flipped classroom)
7. Provide **flexibility** in course delivery

Residential MITx is strongly impacting on-campus teaching:

- **Between 30 to 50** on-campus courses use Residential MITx each semester.
- **More than 90** MIT faculty & instructors have experimented with the Residential MITx platform.
- **4060** undergraduates at MIT use MITx in their classes.
- **91%** of MIT undergraduate students have used Residential MITx for coursework.
MOOC-based Flipped Learning

- e-Learning
  (Pro: Low cost, Con: Passive)

- Problem-solving/Discussion
  (Pro: Creative, Con: High cost)

- MOOC + Flipped Learning

Impact of IT

Active learning
Current Status of POSTECH

- 2017: K-MOOC(3)
  - ST-MOOC(2)
  - Coursera(2)
  - POSTECHx(6)

- 2016: K-MOOC(5)
- 2015: K-MOOC(2)

- 2016: 49
- 2017: 50
- ... +50/yr
- 2020: 90%

- 2016: 4학점
- (Continued)

K-MOOC

Flipped Learning

Residential POSTECHx

LMS (2nd G)
Future Direction

Off-campus learners

MOOC

POSTECHx

On-campus students

Residential POSTECHx

Flipped Learning

MOOC Platform

LMS (5th G)
Q&A

Thank You!