Education is too Important as to Still Teach like in the Middle Ages

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Teatro Egaleo, Leganés
Twin Cities since 1980

CD Leganés

Egaleo FC

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Part I: Looking Back
Teaching in the Middle Ages

Teaching Yesterday
Teaching Today

Death by Powerpoint

- La ventaja de Powerpoint es que se pueden presentar un gran número de transparencias en un tiempo muy reducido.
- Así se avanza mucho texto de una sola vez.
- Da igual que el estudiante lo pueda seguir o no.
- Lo más importante es que sirve de guía al profesor que se puede limitar a leer el texto con voz monótona.
- No queda claro si es redundante el profesor o las transparencias.
- Lo mejor es que no se utilicen imágenes y un texto sin estímulos.
- No imagina al hombre del tiempo utilizando Powerpoint con este tipo de transparencias absurdas.
- Siempre se puede meter una línea más si es necesario, el texto disminuye su tamaño para hacer sitio.
Is broadcasting the most effective teaching method?

What has Happened in the last Decade?
2006

Time Limit for Standard Accounts
In YouTube's blog and Google's 2011 upload instructions, their 2 gigabyte file size limitation is accompanied by a 15-minute maximum duration restriction. Before 2010 all YouTube videos had to be under 10 minutes in length but on July 20, 2010, YouTube announced they had increased their allowed video length to 15 minutes. According to YouTube this was the most requested change by their users and it's a logical move that takes full advantage of YouTube’s new 2 gigabyte size limitation.

2008

MOOC

George Siemens  Stephen Downes  Dave Cormier
2012

From MOOCs to SPOCs

By Armando Fox
Communications of the ACM, Vol. 56 No. 12, Pages 38-46 Dec 2013
Educational Formats

<table>
<thead>
<tr>
<th>KA</th>
<th>cMOOCs</th>
<th>xMOOCs</th>
<th>SPOCs</th>
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<tbody>
<tr>
<td>Khan</td>
<td>cMOOC</td>
<td>xMOOC</td>
<td>SPOC</td>
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<td>2006</td>
<td>2008</td>
<td>2012</td>
<td>2014</td>
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Summary

<table>
<thead>
<tr>
<th>Collection</th>
<th>Community</th>
<th>Course</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA</td>
<td>cMOOC</td>
<td>xMOOC</td>
<td>SPOC</td>
</tr>
<tr>
<td>Content</td>
<td>Videos and quizzes with hints</td>
<td>Online resources</td>
<td>Videos and quizzes</td>
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<tr>
<td>Curriculum</td>
<td>Knowledge graph</td>
<td>Community aggregation</td>
<td>Syllabus</td>
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<tr>
<td>Community</td>
<td>Not necessarily</td>
<td>RSS</td>
<td>Forum</td>
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<tr>
<td>Catalyst</td>
<td>Gamification</td>
<td>Internal motivation</td>
<td>Timing, good content</td>
</tr>
<tr>
<td>Control</td>
<td>Learning Analytics</td>
<td>Not a focus</td>
<td>Proctored exam</td>
</tr>
</tbody>
</table>
Educational Formats

KA  cMOOCs  xMOOCs  SPOCs

Collection  Community  Course  Class

Cloud computing  Video  Web interaction  Social networks

C. Delgado Kloos, Univ. Carlos III de Madrid
Enabling Technologies

Video production and distribution

Cloud computing

Interactive web technologies

Social networks

Educational Formats

Online

Onsite

Khan Academy

MOOC

uc3m

C. Delgado Kloos, Univ. Carlos III de Madrid
Innovation

These educational formats show that technology is available that can improve educational processes and had not been properly exploited.

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Part II: Right Now
Digital Education is...

... but not only!
Digital Education

- Digital education is not distance education
- The fact that distance teaching institutions must use digital technologies, conceptually hinders the idea to use them in face to face settings

Distance & Near Transportation
Distance & Near Communication

Distance & Near Digital Education
Efficiency vs. Effectiveness

- The lecture (broadcasting) is the most **efficient** way for the teacher, but possibly the least **effective** way for the learner

- Are there not better ways?
- How can technology help us?
Attention Span

**Goldfish**: 9 seconds

**Millenial**: 8 seconds

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Learning

*I see and I forget.*
*I hear and I remember.*
*I do and I understand.*

Confucius
Learning

- Passive
  - Hearing
  - Seeing (a picture)
  - Watching a Movie
  - Looking at Exhibits
  - Watching a demonstration

- Active
  - Participating in a Discussion
  - Giving a Talk
  - Doing a Dramatic Presentation
  - Simulating a Real Experience
  - Doing the real thing

Active Learning?
Active Teaching

Still Active Teaching
Active Learning

From active teaching to active learning
Computing

From centralized to cloud computing

From centralized to cloud computing

From passive to active learning
Education

From passive to active learning

Apps for In-class Communication

- Backchannel
  - TodaysMeet
  - Backstage
  - other chat tools

- Collaboration
  - padlet

- Formative assessment, quizzes, polls
  - Kioo!
  - Quiz
  - edcite

- Casting
Backchannel: TodaysMeet

TodaysMeet
Enhance classrooms. Enable discussions. Empower students.
TodaysMeet gives everyone a voice

Closed down on 16 June 2018

Backchannel: Backstage

backstage.pms.ifi.lmu.de

Imagine yourself sitting in a lecture hall...

...a very large lecture hall...

And suddenly you have a question.
Collaboration: Nearpod

nearpod.com Create engaging lessons with informative and interactive assessment activities

- Sway
- Collaborate!
- 3D Objects
- Poll
- Audio
- Web
- Field Trip
- Open Ended Question
- Quiz
- Draw It
- Video
- Reports

Collaboration: Padlet

padlet.com
Quizzes: Quizziz

quizziz.com

Quizzes: Quizalize

www.quizalize.com
Quizzes: Quizlet

quizlet.com

Quizzes: Mentimeter

mentimeter.com
Quizzes: Socrative

socrative.com

Edcite

edcite.com
Hotseats

www.itap.purdue.edu/studio
www.openhotseat.org

Quizzes: Kahoot!

kahoot.it
Casting: Pear Deck

www.peardeck.com
Casting: Google Cast for Edu

https://edu.google.com/k-12-solutions/chromebooks/#cast

Share screens, share ideas

Students become teachers with Cast for Education, a Chrome extension that lets students share screens wirelessly to the front of the class. Just install the free extension in your Chrome Browser, give your device a name, and invite your students to cast.

Get started with Cast

Google Classroom

• Assignment, Grading, Announcements, Screen casting
• Uses Google Drive, Google Docs, Sheets and Slides, Google Forms (for quizzes), Google Calendar, Gmail, Google School Directory Sync
• Integrates Pear Deck, Quizizz, Edcite, Kami, Code.org (soon) and more
Apple Classroom

developer.apple.com/education

- ClassKit
- Schoolwork

Microsoft Classroom

Discontinued
Is broadcasting the most effective teaching method?

From active teaching to active learning
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Part III: Looking Forward
Exponential Growth

What's Next?
1. Teaching Interaction
Augmented Reality

Virtual Reality
Augmented Reality in a Box

Solving Hand-written Equations
Code Generation with Computer Vision

2. Learning Interaction
Multimodal Interaction

- Voice
- Sensors, IoT
2,300 Echo Dots at SLU Dormitories

- SLU: St Louis University
- For questions specific to the University and campus experience

1,600 Echo Dots at ASU

- ASU: Arizona State University
- For engineering students
Sensors

- Sensors everywhere
- Bring back the interaction to the physical world (but linked with the digital one)
- Tangible interfaces
- Smart objects
- Smart *

3. Social Interaction
Jill Watson at GeorgiaTech

Who is Speaking?

https://youtu.be/cQ54GDm1eL0
Digital Copy of a Voice

Copy the voice of anyone
Record a minute from someone’s voice and Lyrebird can compress her voice’s DNA into a unique key. Use this key to generate anything with its corresponding voice.

Design your own voice
Choose among thousands of predefined voices or design your own unique voice for your app.

Real-time generation
Our GPU clusters generate 1000 sentences in less than half a second.

Control the emotion
Anger. Sympathy. Stress. Lyrebird allows to control the emotion of the generated voice.

Transfer of Facial Expressions

people.mpi-inf.mpg.de/~mzollhoef/Papers/CVPR2016_FF/page.html
4. Data-Driven
Khan Academy Progress Report

edX Learning Analytics
FlipApp Statistics

Machine Learning in a Box
From Programmed to Mixed & Adapting
Physical

Mixed

Digital

Industry 4.0

1st
Mechanization, water power, steam power

2nd
Mass production, assembly line, electricity

3rd
Computer and automation

4th
Cyber Physical Systems
Education 4.0

1st
Board & book (physical)

2nd
Slides & projector (electricity)

3rd
Cloud computing (internet)

4th
Learning analytics (mach. learning)

Computing vs. Machine Learning

Data
Rules
Computing
Answers

Data
Rules
Machine Learning
Answers
Entering the Second Half of the Chessboard: Act Soon!

Thank you! ευχαριστώ!