MOOC AS A TESTBED FOR NEXT-GENERATION DIGITAL LIFELONG LEARNING INFRASTRUCTURE

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The Open University of Japan (OUJ)
MOOC

- Massive: 5k-150k-more (BUT managed by small course team, machine-assisted)
- Open: BUT various business models
- Online: BUT blended approach acceptable
- Course: not content sharing but education [the issue of badge, certificate; in future, credit, degree]

Not only scalable LMSs

but a total solution to realize Openness and Quality Assurance at once in sustainable way using IT and Big Data Science
## MOOCs Growth Stages (2013)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Impact on Higher/Tertiary Education</th>
<th>Indicator (for example, Dropout Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A new type of quality OER Still Limited</td>
<td>80-90% and higher</td>
</tr>
<tr>
<td>2</td>
<td>A new sustainable model of open education Sufficient threat to open universities</td>
<td>the same as the rate of correspondence courses and lower</td>
</tr>
<tr>
<td>3</td>
<td>A new model of higher education Real Innovation:</td>
<td>the same as the rate of traditional universities Face-to-Face/blended courses and lower plus course accreditation system by trusted third parties</td>
</tr>
</tbody>
</table>
More complicated
The hype for “MOOC” is over?
Have MOOCs Peaked?

Gartner’s Hype Cycle for Ed

Source: Gartner, 2014

EXPECTATIONS

<table>
<thead>
<tr>
<th>Innovation Trigger</th>
<th>Peak of Inflated Expectations</th>
<th>Trough of Disillusionment</th>
<th>Slope of Enlightenment</th>
<th>Plateau of Productivity</th>
</tr>
</thead>
</table>

TIME

Obsolete Before Plateau (2014)
MOOCs showed new styles of learning / education
Flipped Classroom

Traditional Classroom

- Lecture/Teaching
- Preparation, HW

Flipped Classroom

- Knowledge Transfer
- Knowledge Integration

- Online Courses
- Q/A, Program/Group Learning
New MOOC features

Adapting and evolving in each context, Developed countries (like USA),
- micro credential-oriented
- combination of open and proprietary education (blended w/MOOC, SPOC and F2F)
- NGDLE (Next Generation Digital Learning Environment, EDUCAUSE)

Developing countries
- OER-oriented MOOC
The Next Generation Digital Learning Environment
A Report on Research

Malcolm Brown, EDUCAUSE Learning Initiative
Joanne Dehoney, EDUCAUSE
Nancy Millichap, Next Generation Learning Challenges

ELI Paper
April 2015

NEXT of LMS
Our view 1: the nature

“MOOC” is an aspect / a phenotype of the next-generation ICT-enhanced learning / education system for humans toward singularity. Depending on ICT environments and learners’ readiness, the system(s) reorganizes the elements, architecture (structure) and functions in adaptive and scalable ways ("Paradigm EX", tentatively, and maybe same as NGDLE).
MOOC is not replaced with conventional HE/TE/LLL but “big trend” is transforming the whole education system in broader but silent way
MOOC PHENOMENA IN JAPAN
2013 was the first year of MOOC in Japan
(Japan Massive Open Online Course consortium)
was launched in November 2013
http://www.jmooc.jp/
“MOOC” is a catalyst of the next-generation ICT-enhanced learning/education system(s), which is applicable to developing areas and late-majority (thoughtful!) institutions. “MOOC” is the common test-beds for late-majority/adopters.

We regard “MOOC” is still in the midst of the evolution and not sufficient to provide the complete service models.
Multiple Platforms

- NTT Docomo Platform “Gacco” (97 courses)
  - Open edX-based/Video Lecture
  - From April 2014
- OUJ-TIES Platform (4 courses)
  - Multimedia e-textbook (iBOOK/epub3)+LMS
  - Video Lecture/CAI/SNS
  - From April 2014
- Net-Learning Platform “Open Learning” (22 courses)
  - Domestic Integrated Learning Support Platform
  - From October 2014
- Fujitsu Platform “Fisdom” (1 course)
  - Web-based
  - From March 2016
<table>
<thead>
<tr>
<th></th>
<th>OUJ-MOOC</th>
<th>gacco</th>
<th>Open Learning, Japan</th>
<th>Fisdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course running</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Registration Open</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>In preparation</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Over</td>
<td>2</td>
<td>82</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>97</td>
<td>22</td>
<td>1</td>
</tr>
</tbody>
</table>

Totally 124 courses
OUJ-MOOC
OUJ MOOC Platform: Concept

+ Big DATA Collection & Learning Metrics and Analytics
Architecture

OUJ MOOC Portal

Download CHiLO Books for free

http://dev.chilos.jp

MASHUP

eBook version

Web version

Learning Community

Quizzes & Exercises

Mozilla Open Badges

Internet

Internet

Internet
Standard Curriculum (CEFR Competency model)

Japanese Language Starter A1 Level
<table>
<thead>
<tr>
<th>Course Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10 Lessons</strong></td>
</tr>
<tr>
<td>1) Hello</td>
</tr>
<tr>
<td>Konnichiwa</td>
</tr>
<tr>
<td>2) Would you say that again?</td>
</tr>
<tr>
<td>Moo ichido onegaishimasu</td>
</tr>
<tr>
<td>3) Nice to meet you.</td>
</tr>
<tr>
<td>Doozo yoroshiku</td>
</tr>
<tr>
<td>4) There are three people in my family</td>
</tr>
<tr>
<td>Kazoku wa san-nin desu</td>
</tr>
<tr>
<td>5) What kind of food do you like?</td>
</tr>
<tr>
<td>Nani ga suki desu ka</td>
</tr>
<tr>
<td>6) Where are you going to have lunch today?</td>
</tr>
<tr>
<td>Doko de tabemasu ka</td>
</tr>
<tr>
<td>7) There are three rooms in my home.</td>
</tr>
<tr>
<td>Heya ga mittsu arimasu</td>
</tr>
<tr>
<td>8) It's a nice room.</td>
</tr>
<tr>
<td>Ii heya desu ne</td>
</tr>
<tr>
<td>9) What time do you get up?</td>
</tr>
<tr>
<td>Nan-ji ni okimasu ka</td>
</tr>
<tr>
<td>10) When is convenient for you?</td>
</tr>
<tr>
<td>Itsu ga ii desu ka</td>
</tr>
<tr>
<td>23) Say the time you do something</td>
</tr>
<tr>
<td>24) Talk about your daily routine</td>
</tr>
<tr>
<td>25) Talk about your schedule for this week</td>
</tr>
<tr>
<td>26) Talk about when to have a party</td>
</tr>
<tr>
<td>27) Write a birthday card</td>
</tr>
</tbody>
</table>
# Number of Registrants/Graduates

<table>
<thead>
<tr>
<th>CLS*</th>
<th>Period</th>
<th>Pace-making</th>
<th>No. of Registrants [Moodle/Facebook]</th>
<th>No. of Certificate holders (“Big Badge holders”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14&lt;sup&gt;th&lt;/sup&gt; Apr–18&lt;sup&gt;th&lt;/sup&gt; May 2014</td>
<td>2 lessons /wk</td>
<td>-/467</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Jun – 7&lt;sup&gt;th&lt;/sup&gt; Jul 2014</td>
<td>2 lessons /wk</td>
<td>-/882</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; Aug–15&lt;sup&gt;th&lt;/sup&gt; Oct 2014</td>
<td>Self-paced</td>
<td>-/1475</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Nov–23&lt;sup&gt;rd&lt;/sup&gt; Dec 2014</td>
<td>2 lessons /wk</td>
<td>353/249</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>12 Jan – 23 Mar 2015</td>
<td>1 lesson / wk</td>
<td>120/96</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>11 Jun –15 Jul 2015</td>
<td>2 lessons /wk</td>
<td>200/0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9 Nov 2015 – 20 Dec, 2015</td>
<td>2 lessons /wk</td>
<td>256/0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>20 Jun – 31 Jul 2016</td>
<td>2 lessons /wk</td>
<td>0/870*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>929/4039</td>
<td></td>
</tr>
</tbody>
</table>

* As of 18 July 2016
JMOOC IN HE REFORM
MOOC in Governmental Policies 1

- MEXT: Basic Plan of Promoting Education (June 2013, Approved by the Cabinet)

- Measures in the next five years
  - Basic measure 8: **Qualitative transformation** of college education to establish **self-directed/autonomous learning** by students
  - To facilitate active participation of universities to open the universities’ knowledge to the world and to improve the quality of education, **through MOOCs and OCW (OER)**
MOOCs in Governmental Policies 2

- “Education reproduction practice meeting” under Cabinet Secretariat

- Submitted to the prime minister, 14 May 2015, the 7th report “Competencies, the education and the teachers in the new era”

(2) Innovation of learning environments and cultivation of computer literacy by ICT implementation

- Promote ICT-enhanced learning, such as flipped classroom and collaborative learning

- Implementation of digital textbooks

- Promote strategic utilization of MOOCs (universities)

- Prepare for some program on programming, information security and ethics (In all school levels)

- 1 to 1 computing environments
Problems

- High drop-out rates
  - 5-20 percent (strongly-motivated and well-prepared) can finish
  - show more autonomous, flexible and independent learners (non credit-oriented)

- Learner supports insufficient
  - Technologies for supporting personalized learning are not matured
  - Practices utilizing learner community are not accumulated
COMING NEXT
MOOC innovation

1. New Model of Open “Education”
2. Big Data + Learning Analytics
3. Optimization/Customization/Personalization of Learning Processes
4. Independent LLL supported by personal AI tutors
Joint MOOC

- Personalization
- Localization
- Contextualization
- Interoperability

- User-specific
- Context-specific
- Purpose/Goal Dependent

Cloud Computing + Big Data Analysis
## NEW sharable elements

<table>
<thead>
<tr>
<th>Multi-devices/ Multi-platform (LMS, mobile, e-book)</th>
<th>MOOC platform (Multimedia e-book &amp; LMS to cope with standalone use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customization /Personalization</td>
<td><strong>Content:Materials Repository</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Envrnmrnts: Tools and Dashboards</strong></td>
</tr>
<tr>
<td>Mash-up</td>
<td><strong>API (Application Programming Interface) Store</strong></td>
</tr>
<tr>
<td>Optimization</td>
<td><strong>Big data and Learning Metrics/Analytics</strong></td>
</tr>
<tr>
<td>New Standards</td>
<td><strong>EDUPUB, IMS/Caliper ADL/experience APIs</strong></td>
</tr>
</tbody>
</table>
LEARNING METRICS AND ANALYTICS
LA and other educational data

- LMS
- e-Portfolio
- SIS
- Digital Badge
- Extended Transcript
- OneRoster

Learning Analytics
- Sensor
- Learning Log Store
- Analyzer (AI)
OUJ MOOC: Learning Data and Analytics

- “Big Data” Database and the Federation
- Toward to a Compliant of some International Standards e.g. IMS Caliper (Version 1.1 will be released soon)

- Description of multi-layer learning processes
  - Population/Individual/Mental Function /Sensory-Motor/Brain Activity!!
IMS Caliper
Sensor API Metric Profiles Contextualize Events

IMS Metric Profiles
- Activity Metrics
- Activity Information Model / Context
- Engagement + Performance Metrics

Learning Activity Metrics
- Reading
- Assessment
- Act Context
- Media
- Lecture
- Assignable
- Discussion
- Social
- Gradeable
- Chat
- Blog
- Annotation
- Project
- Tutoring
- Gaming
- Research

Foundational Metrics
- Engagement
- Performance
- Learn Context

IMS GLOBAL Learning Consortium
IMS Global and IMS Japan Society

Independent organization

IMS-JS  IMS Global

IMS Global Contributing member

IMS-JS Full member

“IMS Japan Project” as a collaboration

Dissemination, IMS Japan Award, (Conformance test and more)
IMS/JS - JMOOC joint project

JMOOC Official platforms

Open Learning, Japan

OUJ MOOC

Fisdom

OUJ Learning Log Store @ NII Academic Cloud
“MATERIALS” REPOSITORY
Why smaller granular materials?

- **Learning process**
  - Adapt courseware for **Localization and Personalization**

- **Development process**
  - Limited financial and human resources (Shrinking budgets, Decrease of enrollment…)
  - Multiple media delivery (broadcasting, digital textbook, Internet, ….)
  - **Reuse and sharing** of quality materials (Broadcasting quality)
The Metadata Database System at NII JAIRO Cloud

“Materials” Repository System

WEKO

Search Windows for Specific Field Users

SQL-based LOM Repository

GLOBE Registry +Referatories

LOM-based OAI-PMH Harvester

Metadata Management Tools for Content Holders

Junii2-based OAI-PMH Harvester

“Learning Material” Extraction Filter

NII JAIRO Junii2 Repository
GLOBE: An international consortium for reuse and sharing (from 2004)

- Cross-Institutional search system of quality learning content and information beyond borders
- Exchange and Sharing of **METADATA**
- Federated search and Harvesting
- Movement of global coverage, all school level

International level

Nation-wide level

Institution level
University repository level
Issues

- The concept and philosophy for new autonomous LLLers
- Ecosystem for sustainability
- Collaboration among stakeholders
  - Virtual marketplace and community
  - Team for Big Science
- LA research: Educators, System developers, Instructional designers, Data Scientists
- Rights and Ethics
Thank you very much!!

Contact Information

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