Scholarship and OER in the 21st Century

Open Educational Resources in Teaching, Learning and Research

December 11, 2008

Joseph Hardin
University of Michigan
What are OER?

What is Learning 2.0?

OCW combined with a recognition of the importance of peer-to-peer learning can contribute to valuable improvements in our scholarly ecosystem.
“Open”

- Open Source - Sakai Project/Ctools; Moodle; etc
- Open Access - Open Archives Initiative, DOJ
- Open Content - MIT OCW, Merlot
- Open Publishing - DigitalCultureBooks
- Open Research - Open Journals; pre-print servers
- Open Data - Proteomecommons.org
- Open Textbooks - ChemE - Control Theory
- Open Lectures - UCalBerkeley - opencast
- Open Teaching - Wiley, Severance

- All these are types/constituents of
- Open Educational Resources (OER)
Unlocking Knowledge, Empowering Minds.

Free lecture notes, exams, and videos from MIT. No registration required.

"It puts a previously untouchable subject within reach for anyone who is interested.

Wendy Arndt
Self Learner
United States

Learn more

FEATURED COURSE

9.05 Neural Basis of Movement

Ann Graybiel has been named Institute Professor, the highest honor MIT can bestow on a member of the faculty. Graybiel's research has revolutionized scientists' understanding of the functional anatomy of the brain. You can learn more in Neural Basis of Movement, an introductory course on motor control and learning.

SUPPORT OCW

Your contribution helps us share MIT's course materials with the world. Learn what inspired others to give.

DONATE NOW

OCW is grateful for the support of:

Ab Initio

Become a corporate sponsor

NEWSLETTER

- Sign up for monthly updates on courses and news

User options:
- Logout
- View OCW

Additional links:
- MIT OpenCourseWare
- RSS Feeds
- Privacy and Terms of Use
- Site Map
- Creative Commons License
- Other terms of use
Architecture

The Department of Architecture, established in 1865, is the oldest architecture department in the United States and is consistently ranked as one of the top programs in the U.S.

It is a place where the individual creativity of a student can be cultivated and nurtured in a framework that is humanistically, socially, and environmentally responsible.

The Department offers degree programs in the areas of Architectural Design, Building Technology, Design Technology, History, Theory and Criticism and the Visual Arts. Other opportunities for study within the department are also available through the Aga Khan Program for Islamic Architecture.

Notable strengths of the department that cut across the discipline groups are our devoted teaching, the grounding of architecture in both social and material issues, interdisciplinarity, and the remarkable internationalism of faculty, students, teaching and research.

**Department of Architecture links**

Visit the MIT Department of Architecture home page at:

- [http://architecture.mit.edu/](http://architecture.mit.edu/)
Available Courses

Undergraduate Courses

<table>
<thead>
<tr>
<th>MIT Course #</th>
<th>Course Title</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.001J</td>
<td>CityScope: New Orleans</td>
<td>Spring 2007</td>
</tr>
<tr>
<td>4.101</td>
<td>Experiencing Architecture Studio</td>
<td>Spring 2003</td>
</tr>
<tr>
<td>4.104</td>
<td>Architectural Design: Intentions</td>
<td>Spring 2004</td>
</tr>
<tr>
<td>4.104</td>
<td>Architecture Studio: Intentions</td>
<td>Spring 2005</td>
</tr>
<tr>
<td>4.125</td>
<td>Architecture Studio: Building in Landscapes</td>
<td>Fall 2002</td>
</tr>
<tr>
<td>4.125A</td>
<td>Architecture Studio: Building in Landscapes</td>
<td>Fall 2005</td>
</tr>
<tr>
<td>4.125B</td>
<td>Architecture Studio: Building in Landscapes</td>
<td>Fall 2005</td>
</tr>
<tr>
<td>4.170</td>
<td>Ecuador Workshop</td>
<td>Fall 2006</td>
</tr>
<tr>
<td>4.171</td>
<td>Ecuador Workshop</td>
<td>Fall 2006</td>
</tr>
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<td>4.183</td>
<td>Sustainable Design and Technology Research Workshop</td>
<td>Spring 2004</td>
</tr>
<tr>
<td>4.191</td>
<td>Introduction to Integrated Design</td>
<td>Fall 2006</td>
</tr>
<tr>
<td>4.206</td>
<td>Introduction to Design Computing</td>
<td>Spring 2004</td>
</tr>
<tr>
<td>4.211J</td>
<td>The Once and Future City</td>
<td>Spring 2006</td>
</tr>
<tr>
<td>4.243J</td>
<td>Media Technology and City Design and Development</td>
<td>Spring 2002</td>
</tr>
</tbody>
</table>
4.125 Architecture Studio: Building in Landscapes
Fall 2002

The Rockport Quarry. (Image by Jan Wampler.)
Syllabus

The work for the semester is the designing of places for community and privacy. These are always the two main issues that we have as architects: How to make spaces that can respond to the needs of the community for joyful livable places of interaction, and how to respond to the dreams of individuals to provide for a joyful livable place of their own. The second concern is building on the land, or earthtexture. Earthtexture includes land, sky, air, wind, sun, context - all of that influences what we design. Architecture happens in the space between the sky and land and the designs for the studio will always take this into account. We will also explore materials and structures that can relate to earthtexture and give architectural meaning to the forms. It is with an understanding of materials/structures that we can give form to our ideas of architecture. Finally, and most important, we will be understanding and reflecting the ideas and dreams of the people we are designing for. Architecture is an echo of our society and culture and at the same time it can influence the way that people relate to their surroundings.

There is one project for the semester but in three parts. The first part is designing an "observation community place" in an abandoned quarry in Rockport near Boston. The concern is how to design a cover for the sky - sky form - and a platform for the land - land form - that can give people shelter from the wind, sun, rain, snow.

The second part is to design places for a "community of individuals in the sky" on the rooftops and walls of buildings in the North End. This is another translation of land and we will treat the area as quarry, the buildings being sides of this quarry. Sites will be on roof tops, on sides of the quarry/buildings, or both. There will be as many sites as designers in the studio and each will be asked to pick a site - space - and design a place for themselves to live and work while projecting their lives ten years from now. Again the architecture must not only relate to the sky and land but also the attached walls or roof.

The last part is to design a "community meeting place" for members of a defined community on a site in the same area. The project is the making of a small building of not more than 5,000 square feet that might contain meeting places, work rooms, living places. The program for the building is to be designed by each studio member. Adjacent to this building will be a small "earthplace" a place related to nature that might be enjoyed by not only your community but others in the North End neighborhood.
Lecture Notes

The following Video Lectures were filmed during field trips and class review sessions. They are in chronological order from the Fall 2002 semester. Requires RealOne Basic Player. RealOne Player software is required to run the .rm files in this section.

These files are also available for download from iTunes® and YouTube™.

1. Quarry Pinups (56k) (80k) (220k)
2. Quarry Reviews (56k) (80k) (220k)
3. Site Lecture (56k) (80k) (220k)
4. Pinups (56k) (80k) (220k)
5. Reviews from the North End in Boston (56k) (80k) (220k)
6. Community Space Intro Lecture (56k) (80k) (220k)
7. Space Between (56k) (80k) (220k)
8. Deskside Critiques A (56k) (80k) (220k)
9. Deskside Critiques B-C (56k) (80k) (220k)
10. Pinups (56k) (80k) (220k)
11. Final Review A (56k) (80k) (220k)
12. Final Review B (56k) (80k) (220k)
Study Materials

The following are links to image collections from field trips and class.

**North End Images**

- Site 1 (PDF)
- Site 2 (PDF)
- Site 3 (PDF)
- Site 4 (PDF)
- Site 5 (PDF)
- Site 6 (PDF)
- Site 7 (PDF)
- Site 8 (PDF)
- Site 9 (PDF)
- Site 10 (PDF)
- Site 11 (PDF)
- Site 12 (PDF)
- Site 13 (PDF)
- Site 14 (PDF)

**Rockport Quarry Images**

- Image 1 (PDF)
- Image 2 (PDF)
- Image 3 (PDF)
- Image 4 (PDF)
- Image 5 (PDF)
Assignments

The designing mediums include sketch modeling, sketching, making of full size pieces of the building, and the drawing methods used in previous semesters. In addition, there will be work done in digital programs, such as Photoshop and PowerPoint, programs that can be useful in explaining designs. (Examples of completed assignments can be seen in the projects section.)

Course Assignments Overview

Examples of student work are included in the assignments. The student work is courtesy of Joyce Wang, Sarah Shin, Stephanie Hsu, Eulalia Massague, and Phillip Kelleher. Used with permission.

- Assignment 1: Clues and References (PDF)
- Assignment 2: Making a Design (PDF)
- Assignment 3: North End Quarry Community in the Sky (PDF)
- Assignment 4: North End Quarry Community in the Sky (PDF)
- Assignment 5: North End Quarry Community in the Sky (PDF)
- Assignment 6: Making a Community Place - Clues, Attitude and Program (PDF)
- Assignment 6a: Making a Community Place (PDF)
- Assignment 7: First pass at Design (PDF)
- Assignment 8: A Building Design (PDF)
- Assignment 9: Developing the Design (PDF)
- Assignment 10: Detailing a Chunk (PDF)
- Assignment 11: Putting it All Together (PDF)
Making Course Content Open

At 71, Physics Professor Is a Web Star

DELCVERING ON THE PROMISE
37 million total visitors to OCW content

1.6 Million visitors
1.800 courses

DELIVERING ON THE PROMISE
37 million total visitors to OCW content

1.6 Million visitors
1.800 courses

DELCVERING ON THE PROMISE
37 million total visitors to OCW content

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DELCVERING ON THE PROMISE
37 million total visitors to OCW content

1.6 Million visitors
1.800 courses
Growing International Effort
Bienvenido

La Universidad de Monterrey reconoce que su función como institución educativa se cumple en la formación de hombres con actitud de autónomo servicio a la comunidad y está comprometida a entregar lo mejor y compartir sus conocimientos para la construcción de una mejor sociedad.

A través del proyecto OCW Consortium, la UDEM pone a disposición de profesores y estudiantes de cualquier parte del mundo una colección de cursos por internet de libre acceso, con contenidos que forman parte de los programas de estudios superiores que ofrece la universidad. De esta manera, la UDEM espera contribuir con la responsabilidad global de educar y servir a la comunidad.
why do this?

example benefits to various groups:

• Students - preview, review
• Faculty - exposure, publication
• Alumni - access, lifelong learning
• Self learners - access, entry
• Universities - web presence, recruiting, improving pedagogy, supporting faculty/students, leadership…
• others throughout the world

can benefit all these people/groups simultaneously (think of this and the University of Auckland)
Prospective students access OCW and their choice of school is influenced by the site

- Half of 2005 freshmen were aware of OCW prior to choosing to attend MIT
- 32% of those aware say OCW influenced their choice
- A third of faculty expressing an opinion say OCW has helped their department recruit students

“When I was deciding whether or not to go to MIT, I went to OCW [to] see what a typical physics course at MIT might cover. Obviously, I thought it was pretty helpful to be able to see that, because I go here now.” — MIT undergraduate
• OCW enhances the reputation of MIT’s faculty and departments

• 34% of faculty who published on OCW agree the site has increased their professional standing
• 58% of faculty expressing an opinion say OCW has enhanced their department’s reputation
• 95% believe OCW reflects positively on MIT

• “Many students and faculty around the world have commented to me about the help they have received from OCW. It is a wonderful representative of MIT to the world.” – MIT faculty
Creates a lifelong connection between MIT and our students and alumni.

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Nearly all MIT students use OCW and find it enhances their student experience

- 93% of undergrads and 82% of grads use OCW

OCW Impact on Student Experience

<table>
<thead>
<tr>
<th></th>
<th>UG</th>
<th>Grad</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely positive impact</td>
<td>65%</td>
<td>53%</td>
<td>58%</td>
</tr>
<tr>
<td>Positive impact</td>
<td>33%</td>
<td>42%</td>
<td>38%</td>
</tr>
<tr>
<td>Moderately positive impact</td>
<td>2%</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>Somewhat positive impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No positive impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Many MIT alum use OCW and view it as enhancing the Institute’s reputation

- 61% of MIT alum use the OCW site
- Half of those using the site rate it as “very valuable”
- Alumni have donated more than $1.2 M to OCW

Alum View of OCW Impact on MIT Reputation

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatly enhances/Enhances</td>
<td>84%</td>
</tr>
<tr>
<td>Neither enhances nor detracts</td>
<td>14%</td>
</tr>
<tr>
<td>Detracts/Greatly detracts</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

“It speaks to the open nature of MIT: that knowledge is there for the taking and is not hoarded. I am proud that MIT is willing to stick its neck out and lead on issues that are important to science and society.” — MIT Alumnus

Catalyzes improvements in teaching and learning at the Institute.

Through funding and staff resources, OCW directly improves course materials

- OCW has generated $33 M in external funding, largely used for course materials development
- 87% of participating faculty say the OCW staff is a helpful resource for educational tech questions

The OCW publication process helps MIT faculty improve their teaching methods and materials

- 90% of MIT faculty have published on OCW

Benefits of OCW Publication

<table>
<thead>
<tr>
<th></th>
<th>% agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased quality of course materials</td>
<td>30%</td>
</tr>
<tr>
<td>Increased level of comfort with use of the web in teaching</td>
<td>29%</td>
</tr>
<tr>
<td>Allowed me to rethink my teaching approach</td>
<td>26%</td>
</tr>
</tbody>
</table>

Source: 07 Faculty Survey

MIT faculty have ready access to their colleagues’ materials on OCW to support a range of activities

- 84% of MIT faculty use OCW
- Faculty use OCW for revising existing courses (38%); enhancing personal knowledge (30%); finding materials for classroom use (23%); and developing curriculum (18%)

Students use OCW to make more informed decisions about programs and courses, and faculty have more resources for advising

- 46% of students use OCW to select courses; 29% of faculty use OCW as an aid for advising
- 53% of faculty expressing an opinion agree OCW has improved available advising material

“Many students and faculty around the world have commented to me about the help they have received from OCW. It is a wonderful representative of MIT to the world.” — MIT faculty

MIT undergraduates and graduates use OCW to perform better in their classes and to extend their learning beyond their formal curriculum

MIT Student Use of OCW

<table>
<thead>
<tr>
<th></th>
<th>UG</th>
<th>Grad</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complement a current course</td>
<td>88%</td>
<td>58%</td>
<td>76%</td>
</tr>
<tr>
<td>Plan course of study</td>
<td>52%</td>
<td>42%</td>
<td>46%</td>
</tr>
<tr>
<td>Enhance personal knowledge</td>
<td>30%</td>
<td>45%</td>
<td>39%</td>
</tr>
<tr>
<td>Review previous courses</td>
<td>36%</td>
<td>30%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Source: 06 Grad Survey, 07 UG Survey

Showcases MIT’s curriculum, strengthens the Institute’s reputation, and promotes international engagement.

OCW furthers the Institute’s mission

- 93% of faculty agree OCW furthers MIT’s public service mission
- T h r o u g h OCW, MIT has provided educational materials to an estimated 35 M individuals worldwide

“OCW is tremendously important for emphasizing that education, ideally, should be free to all comers.” — MIT faculty

OCW enhances the reputation of MIT’s faculty and departments

- 34% of faculty who published on OCW agree the site has increased their professional standing
- 58% of faculty expressing an opinion say OCW has enhanced their department’s reputation
- 95% believe OCW reflects positively on MIT
- T h r o u g h OCW, MIT has developed and maintains its leadership position in open educational resources

“Many students and faculty around the world have commented to me about the help they have received from OCW. It is a wonderful representative of MIT to the world.” — MIT faculty

OCW promotes international engagement

- 82% of faculty say OCW is an important element of MIT’s international engagement
- OCW has sparked collaborations with external faculty and groups including the Italian Space Agency
- OCW supports activities of student groups working internationally, including MISTI and AITI
- A p p r o x i m a t e l y 600 OCW courses have been translated by other organizations; these translations have been accessed by an estimated 14 M individuals

OCW provides a platform for developing and disseminating information about new initiatives

- T h e OCW team has developed a portal to support High School AP faculty and students
- OCW has been used by numerous faculty as a mode of dissemination in grant applications
- OCW showcases significant portions of the curriculum for the MIT Energy Initiative, the Computational and Systems Biology Initiative and other cutting-edge interdisciplinary programs

Q: What is your familiarity with OCW websites at other institutions?

Instructors:
- I have never heard of OCW: 29.0%
- I have heard of OCW but never gone to an OCW site: 16.7%
- I have looked at an OCW site: 49.4%
- I have looked at and used material from an OCW site in my teaching/studies: 4.9%

Students:
- I have never heard of OCW: 68.5%
- I have heard of OCW but never gone to an OCW site: 7.3%
- I have looked at an OCW site: 15.8%
- I have looked at and used material from an OCW site in my teaching/studies: 8.4%
### OCW - Value of Potential Uses: Students

**Q:** Using a OCW website would be valuable for...

<table>
<thead>
<tr>
<th>Activity</th>
<th>29.0%</th>
<th>49.3%</th>
<th>19.0%</th>
<th>1.3%</th>
<th>1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using materials from past courses for review</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previewing prospective courses in depth before I register</td>
<td>28.7%</td>
<td>51.2%</td>
<td>17.5%</td>
<td>1.6%</td>
<td></td>
</tr>
<tr>
<td>Viewing examples from past courses of work done by students</td>
<td>21.7%</td>
<td>51.0%</td>
<td>22.9%</td>
<td>3.1%</td>
<td>3%</td>
</tr>
<tr>
<td>Enhancing my own personal knowledge</td>
<td>19.6%</td>
<td>47.1%</td>
<td>28.8%</td>
<td>3.3%</td>
<td>2%</td>
</tr>
<tr>
<td>Planning my long-term course of study</td>
<td>16.8%</td>
<td>41.2%</td>
<td>34.3%</td>
<td>6.3%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>
OCW - Value of Potential Uses: Instructors

Q: Using a OCW website would be valuable for...

<table>
<thead>
<tr>
<th>Activity</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viewing how other faculty in my area are approaching material</td>
<td></td>
<td>18.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>49.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28.8%</td>
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<tr>
<td></td>
<td></td>
<td>2.035%</td>
</tr>
<tr>
<td>Connecting with faculty at UM of other institutions in my area of teaching or research</td>
<td></td>
<td>11.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42.2%</td>
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<tr>
<td></td>
<td></td>
<td>39.6%</td>
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<tr>
<td></td>
<td></td>
<td>5.018%</td>
</tr>
<tr>
<td>Developing curriculum for my department</td>
<td></td>
<td>10.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.724%</td>
</tr>
<tr>
<td>Increasing the visibility of my courses</td>
<td></td>
<td>8.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>39.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44.1%</td>
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<tr>
<td></td>
<td></td>
<td>5.722%</td>
</tr>
<tr>
<td>Preparing materials for an upcoming class</td>
<td></td>
<td>7.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31.3%</td>
</tr>
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<td></td>
<td></td>
<td>47.0%</td>
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<td></td>
<td></td>
<td>10.7%</td>
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<td></td>
<td></td>
<td>3.6%</td>
</tr>
</tbody>
</table>
39.8% of our faculty are ready to go, and 25.4% of our students are ready to help - the early adopters are in place.
OER and Web 2.0

• Web 2.0 is about the “social web”
• Participation - people, users are not just consumers, but producers also
• Value comes from user contributions - youtube (video), twitter (lifestreaming), facebook (social networks), delicious (tagging), digg (ranking), diigo (annotating), wikis (wikipedia)
Web 2.0 and Learning

- Basic insight: Students do a lot (a real lot) of learning through peer-to-peer interaction - learning is in this sense “social”

- This peer learning is done both on the web and ftf - the two can complement each other

- Support for these social interactions and creation of content can create learning contexts

- Web 2.0 tools like wikis, blogs, tagging, rankings, annotating can be useful here
The Cartesian View of Learning

knowledge as substance
and pedagogy as knowledge transfer

The Social View of Learning
understanding is socially constructed

The Long Tail in Learning
Supporting the rise of an ecology of learning/doing niches

Ah, I am passionate about this niche topic, I want to learn/do more!

A Circle of Knowledge Building and Sharing

Create
Support for creating representations of pedagogical knowledge

Open Knowledge Exchange Zone
Provide venues for sharing experiences/evidence to improve practice.

Use
Encourage teachers to review, critique, and learn from peers' represented knowledge.

Re-mix
Enable teachers to integrate others' knowledge into their knowledge.

Promote these organically & sustainably

Minds on Fire: Open Education, the Long Tail and Learning 2.0

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EDUCAUSE Review, vol. 43, no. 1 (January/February 2008)
OCW as Institutional Commitment to Learning 2.0

- “An MIT education is not a bag of books.”
- We can make all this universally available - syllabi, lecture slides, notes, reading lists, readings, exams, questions (answers), study notes, recordings of lectures, student projects, … - and you will still need to come to MIT to get an MIT education.
- Because it is through the interaction with our faculty and among our students that you learn.
Scholarship 2.0

- I would suggest this is an exceptionally clear, strong, public re-commitment to the mentor/apprentice relationship and what we are coming to call social learning.

- It is our responsibility in the academy to see that this next generation of learning reflects our traditional commitments to the scholarly values of well-warranted, open argument in the search for truth, within an open community.

- Open Educational Resources can help us focus on this.
Emerging infrastructure for support of learning activities in student-chosen contexts, eg, facebook, myspace,…

Recognition of peer to peer learning - in physical spaces (media commons) as well as support for social software

Development of eScience and open data efforts

Willingness to experiment and innovate

Recognition that it is neither the platform, nor the content alone that is the critical value-add, it’s the community - “…it’s not the information, it is our ability to interpret it.”
So

- The foundations seem to be well in place here.
- Why exactly would the University of Auckland find this valuable?
- What would a University of Auckland OCW/OER effort look like?
- Thank you very much