Demystifying Geodesign via 5-weeks of Global Interaction called a MOOC

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What is a MOOC?

- Massive Open Online Courses
- Began in 2008, started getting traction in 2011
- Esri’s 1st MOOC: Going Places with Spatial Analysis
At the end.... Final Assignment
What is a MOOC?

11,016 total learners joined
158 different countries
4,093 (37%) from emerging economies
0 on Signature Track

Enrollment
Cumulative enrollment over time

17,361 total learners joined
166 different countries
6,616 (38%) from emerging economies
0 on Signature Track

Intent
Learn more about how intent is measured »

- Committed to Audit: 3,734
- Uncommitted: 5,979

Values extrapolated based on responses from 8,482 learners. Learn more
MOOC behind the scenes

- Ranges from intermediate level to teaser-intro
MOOC behind the scenes

- **Ranges from intermediate level to teaser-intro**
- **Length from 12 - 4 weeks**
MOOC behind the scenes

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- Attracts “lifelong learner” student
MOOC behind the scenes

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- **Length from 12 - 4 weeks**
- **Attracts “lifelong learner” student**

Quote from Saudi Arabian student:

“This course was not at all in my field, but was very enlightening. The concept of geodesign...has certain principles that could be 'repurposed' for many other fields of research.”
MOOC behind the scenes

• Ranges from intermediate level to teaser-intro
• Length from 12 - 4 weeks
• Attracts “lifelong learner” student
• MOOCs not covered by “fair use” education
MOOC behind the scenes

- Ranges from intermediate level to teaser-intro
- Length from 12 - 4 weeks
- Attracts “lifelong learner” student
- MOOCs not covered by “fair use” education
- Not the same as typical online course
MOOC behind the scenes

• Preparation involved many:

... Core Team <Instructoral designer, PSU Geodesign Project Manager; me (author) >
MOOC behind the scenes

- Preparation involved many:
  - Core Team <Instructional designer, PSU Geodesign Project Manager; me (author)>
  - Production staff for videos and server
MOOC behind the scenes

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  ... Production staff for videos and server
  ... PSU Geodesign Graduate programs Advisory Board
MOOC behind the scenes

• Preparation involved many:
  ... Core Team <Instructor, PSU Geodesign Project Manager, me (author) >
  ... Production staff for videos and server
  ... PSU Geodesign Graduate programs Advisory Board
  ... Landscape Architecture and Geography colleagues
MOOC behind the scenes

• Preparation involved many:
  ... Core Team <Instructional designer, PSU Geodesign Project Manager; me (author) >
  ... Production staff for videos and server
  ... PSU Geodesign Graduate programs Advisory Board
  ... Landscape Architecture and Geography colleagues
  ... In-kind support from Esri’s Education team
What is Geodesign?

- Geodesign is a process that fills gap between design and science.
- Geodesign is aimed at creative change for a place.

MOOC Structure/ Components

Weekly Lessons

Week 1: Shared Languages - Begins August 13th
Week 2: The 3 D's of Geodesign - Begins August 20th
Week 3: The 3 C's of Geodesign - Begins August 27th
Week 4: The Influence of Context - Begins September 3rd
Week 5: Process and Framework - Begins September 10th
MOOC Structure/Components

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Week 5: Process and Framework - Begins September 10th

Elaborate upon key concepts each week through:

• Main Lecture
• Guest Lectures
• Change Agent “cards”
• Case Study examples
• Activities
MOOC Structure/ Components

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Change Agent for Week 1: Flooding

ecosystem services

water environmental

what ecosystem benefits are you cashing in on?

In 1997 New York City opted to save an estimated US$6-8bn by restoring the natural capital it had in the Catskill’s watershed as opposed to installing an artificial filtration plant. The cost of this approach to ensuring fresh water for the city was US$660M.

Source: www.asa.org/ecoservices/
MOOC Structure/ Components

**Change Agent** topic illustrated with real world + **Case Study** examples (3 each week/ total of 15)

- Change Agent for Week 1: Flooding
- Change Agent for Week 2: Infrastructure
- Change Agent for Week 3: Conservation
- Change Agent for Week 4: Sustainable development
- Change Agent for Week 5: Urbanization
Case Studies illustrate Wk 1 Change Agent Topic

Geodesign in your World
Take a field trip to enjoy geodesign case study examples.

- Urbanization
- Sustainable Development
- Conservation
- Infrastructure
- Flooding

Flooding: Developing Resiliency Along Coastlines
New National Recreation Area on the Gulf of Mexico
Case Studies illustrate Wk 2 Change Agent Topic
Spain Example:
3D Geodesign to plan for new electric infrastructure in Spain
Case Studies illustrate **Wk 2 Change Agent Topic**

**GeoRED**: geographic polygon information representing different types of impacts
Case Studies illustrate Wk 2 Change Agent Topic

Spain Example:
3D Geodesign to plan for new electric infrastructure in Spain
Case Studies illustrate Wk 3 Change Agent Topic

Geodesign in your World

Take a field trip to enjoy geodesign case study examples.

Conservation

Conservation: Halting River Delta Decline to Protect Livelihoods and Natural Resources

The Mississippi River Delta is rapidly disappearing into the Gulf of Mexico. To halt this future catastrophe comprehensive steps are needed to restore natural deltaic functions.
Case Studies illustrate Wk 4 Change Agent Topic
Case Studies illustrate Wk 4 Change Agent Topic

Working to reduce carbon emissions in small towns in British Columbia

‘land use massing’ of proposal

Courtesy of © elementsLab, School of Architecture and Landscape Architecture, University of British Columbia, Canada
Case Studies illustrate Wk 4 Change Agent Topic

Working to reduce carbon emissions in small towns in British Columbia

Courtesy of © elementsLab, School of Architecture and Landscape Architecture, University of British Columbia, Canada
Case Studies illustrate Wk 4 Change Agent Topic

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Courtesy of © elementsLab, School of Architecture and Landscape Architecture, University of British Columbia, Canada
Case Studies illustrate Wk 5 Change Agent Topic
MOOC Structure/ Components

Elaborate upon key concepts each week through:

• Main Lecture
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• Case Study examples
• Activities
MOOC: Final Activity - Geodesign Challenges

Change Agent. Go to Challenge location to drop your pin. Add brief summary.
Final Assignment (peer assessed):

- **Challenge Title**: Addressing flooding in Portcullis
- **Scale**: Watershed
- **Web Site Link**: http://coastalcare.org/2010/

**Urbanization**
- **Challenge Title**: A new future for Haizhu, China
- **Scale**: Region
- **Web Site Link**: http://www.investguangzhou.com
Final Assignment (peer assessed):

**Geodesign: Change your World**
Final Activity: Identify a geodesign challenge
Student: 

**Andria: Undergrounding of Urban railway line**
part of “Grande Progetto”
Adaptation of Bari north’s Metropolitan Rail Network.

**#1 Change Agent:**
Infrastructure

**#2 Description:**
The “Grande Progetto” challenge includes the doubling to 13 km of railways Corato - Barletta; undergrounding of the railways in the urban area of Andria of 2.9 km, of which an area of approximately 460 meters in the tunnel, with three new stations, the construction of parking intermodal exchange located in the proximity of 11 stations that offer approximately 2,000 parking spaces and the elimination of 13 level crossings.

**#3 Scale:**
The challenge is at city scale but is part of a whole region project called “Grande progetto” (big project)

**#4 Websites:**
presentation of “Grande Progetto”

**#5 Collaborators:**
- European Union
- Regione Puglia
- Comune di Andria
- 100,000 inhabitants of Andria
- thousands of passengers per day

**#6 Factors impacting the scenario:**
- the most important factor that will impact the city is the traffic: the undergrounding of the railway allows removal of four level crossings which, in addition to being a source of risk, slowing down the traffic.
- land use: 2.9 km of railways underground release circa 80,000 mq which can be allocated to green and biking trails, reducing air and noise pollution.
- Increase public transportation: The “Grande Progetto”, in Andria, also includes the doubling of lines, two other stations and parking areas adjacent. This greatly encourages the use of the train to go to the neighboring cities.
- A train station is also an economic attractor, triple stations certainly increases the local economy.

**#7 Data:**
- mobility data in the relevant area
- air pollution data
- noise pollution data
- travel times between destinations
- urban traffic data
Final Assignment (peer assessed):

Geodesign: Change your World
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A MOOC on Structure/ Components includes a final assignment (peer assessed) on Geodesign: Change your World. The activity involves identifying a geodesign challenge. The assignment centers on Andria: Undergrounding of Urban railway line, part of "Grande Progetto," adaptation of Bari north's Metropolitan Rail Network.

#1 Change Agent: Infrastructure

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Geodesign: Change your World
Final Activity: Identify a geodesign challenge
Student: [Student Name]

Andria: Undergrounding of Urban railway line
part of “Grande Progetto”
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Andria on google map

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Andria Nord railway

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Student Feedback

Szymon Czyk from Poland

Dear Professor Foster, I’d like to express my gratitude to you. As troubles finding the proper words to write this (despite learning English on my own), I took the course to learn more about a topic I’m passionate about.

Carlos de la Cruz from Guatemala

Hi, I am from Guatemala, I am an architect and work on the design of buildings. I needed to refresh some concepts, methodologies and techniques for design, and I found your course very helpful.

Pierdomenico Abelli from Italy

I am an Italian architect of a certain age (72), very interested in discovering, through your course, a new way to look at design.

Mathias Teso

Dear Madam, I am Philip Teso, MSc Student in Environmental Science, Democratic Republic of Congo. I was proud to learn many things in your course.

Dmitriy Skis from Germany

I had fun taking the course and I’m happy I finished it too. I liked your teaching approach and the exercises. I’m taking here on the website it did seem you have more courses.

Alfredo Venias from Venezuela

Thank you for the course, it was excellent. I enjoy it very much. Thank you a lot...

Mahrwan Alessed from United Arab Emirates

I am a survey engineer works as at Dubai Roads and Transport Department. I have interest in GIS, so I took this course to learn more about GIS, the course was very interesting and useful.
Thank you!

www.coursera.org/course/geodesign

Online Masters Degree in Geodesign at Penn State

worldcampus.psu.edu/geodesign

July 2015!