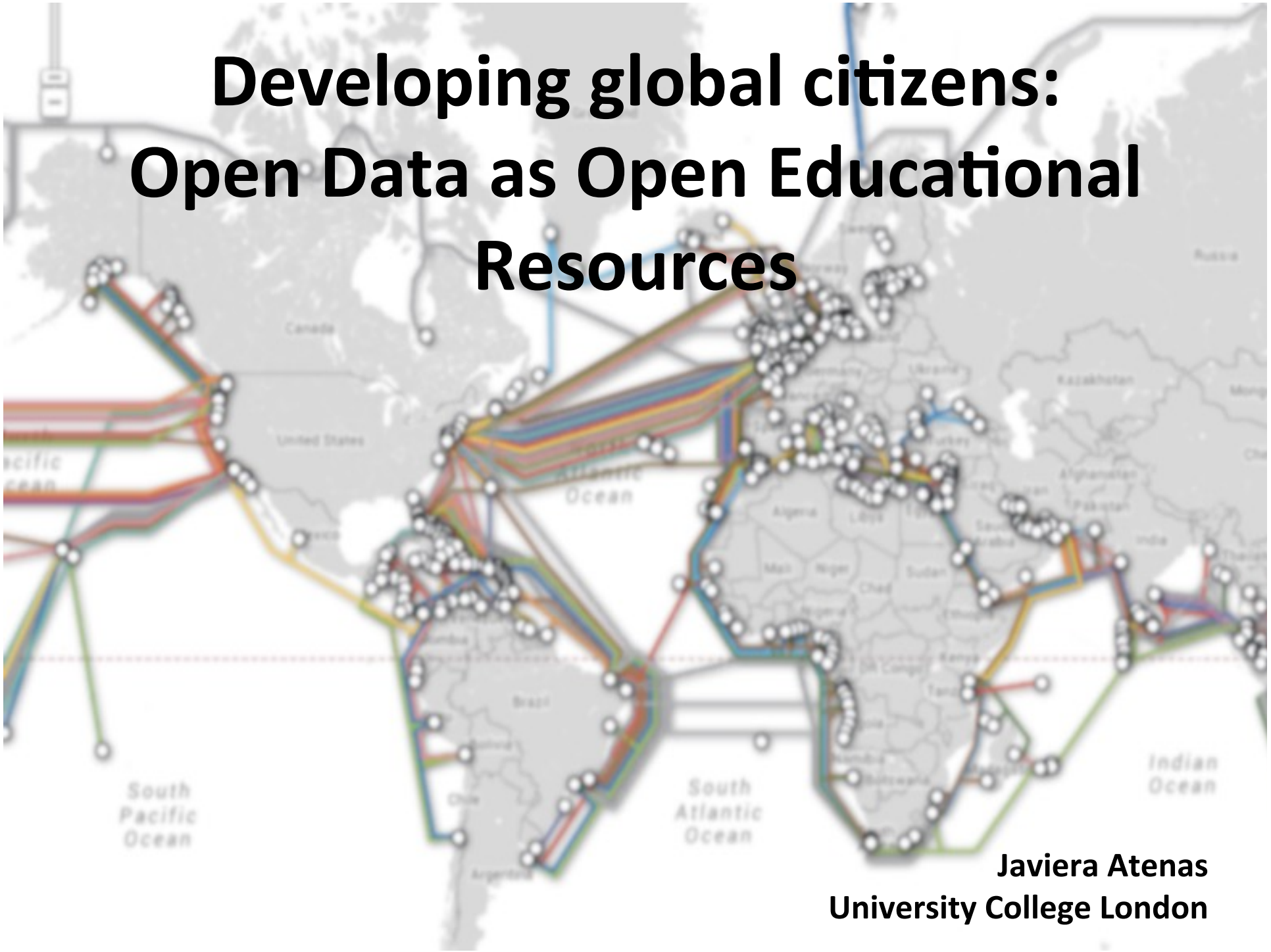
Developing global citizens: Open Data as Open Educational Resources



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All citizens should have equal opportunities and multiple channels to access information, be consulted and participate. Every reasonable effort should be made to engage with as wide a variety of people as possible
(OECD, 2009, p.17).

Open data is data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike.

http://opendatahandbook.org/guide/en/what-is-open-data/

Open Data Open Definition

- Availability and Access: the data must be available as a whole and at no more than a reasonable reproduction cost
- Re-use and Redistribution: the data must be provided under terms that permit re-use and redistribution including the intermixing with other datasets.
- Universal Participation: everyone must be able to use, re-use and redistribute - there should be no discrimination against fields of endeavour or against persons or groups.

Opening up Education

In education and elsewhere information has become increasingly digital and therefore potentially, more accessible.

We have seen the rise of *parallel* open or 'opening' movements around:

- **learning and teaching**: open educational resources and open delivery models (from OCW to OER, Open Textbooks, and lately, MOOCs)
- **research**: open access (OA) to research publications (shaking up traditional publishing models and also driving emergence of open peer review models)
- **data**: open access to government and research data (OD)

The Value of Open Data

- Open data is an invaluable resource for scientific communities
- Supports and encourages more transparent research practices
- Supports scientific development and reproducibility
- Can be used to model good practices in academia for research and teaching

Where does OD come from?

- International agencies and organisations
  - Word Bank ; United Nations ; EU
- National Governments and their agencies
  - UKOD; GermanyOD; USA
- Local governments
  - Sardinia ; London; Barcelona
- Non-governmental organisations
  - ODI; Monithon
- Academic institutions and research centres

How can OD be used in HE?

- Collaborating with researchers in real research projects
- Collaborating with students from other disciplines
- Creating scenario-based learning activities
- Collaborating with their local communities working on real problems

Open Data for Skills Development

- Development of critical skills
- Development of analytical skills
- Development of research skills
- Development of data literacy skills
- Development of teamwork skills
- Development of citizenship skills

Open Data for Skills Development

Skills / Level	Basic	Intermediate	Proficient	Advanced
Critical thinking	Students understand basic concepts of critical thinking	Students can use data to verify information from the media	Students can analyse phenomena from their region using data and write reports critically analysing solutions	Students are able to develop and present complex evidence-based arguments in key academic formats
Data analysis skills	Students can analyse data using quantitative and qualitative methods	Students gain experience in using popular software for data analysis such as SPSS or NVivo	Students use proficiently software for data analysis which are relevant for their own disciplines	Students can present complex reports based upon data analysis in the form of research papers or posters
Data curation skills	Students can organise datasets in simple folders	Students can identify different sources of datasets and organise them in databases	Students can use electronic tools for data curation and share it with others	Students can develop databases and automate the process to organise and merge datasets, and embed metadata into the files to facilitate access to the resources
Data information management skills	Students can identify datasets from different sources	Students can select datasets from different portals in different formats	Students can extract, filter and compare data from different data sources creating a single dataset	Students can filter and format data in different formats analyse it creating complex datasets

Open Data for Skills Development

Skills / Level	Basic	Intermediate	Proficient	Advanced
Data Mining skills	Students can locate CSV files on the internet	Students can extract datasets from PDFs	Students can extract datasets from different sources	Students can use complex methods for developing datasets
Data visualisation skills	Students can create graphics and charts	Students can use online software to develop simple infographics	Students can use graphic design software to develop infographics	Students can use data visualisation techniques to present their findings using complex statistical modelling
Research skills	Students understand the scientific method and are familiar with the concepts of quantitative and qualitative methods	Students can structure their research and apply different techniques to obtain results	Students can replicate experiments and studies following research methods explained in the literature	Students can compare data and information from different data sources and research papers and replicate experiments and studies to produce new research findings
Statistical skills	Students can perform basic statistical operation including averages, media and median	Students can perform statistical operations using clusters, standard deviations, signifiance, chi square, correlation or regression analysis	Students can use data modelling techniques for different statistical methods such as forecasting to predict future events	Students can write queries in order to perform complex statistical analysis functions and create models and complex graphs and visualisations

Open Data for Civic Engagement

Activity / Level	Initial	Intermediate	Advanced
All levels	Invite subject and data experts to discuss face to face or online with your students about local and global issues	Engage students with political and legal deliberations and discussions at local and global level asking to them analyse the data related to it	Establish a model for students to understand the process and engage them in policy making by reviewing and analysing data and official reports
Undergraduate	Engage students in evaluating facts and contrasting information by analysing data presented in news media	Encourage students to use digital tools to engage and monitor political activities and to assess reports and news by analysing their data	Support students in assessing data from their government to identify problems and compare local with global information
Postgraduate	Support students in identifying organisations that are campaigning in citizenship issues and enable instances for students to engage in civic monitoring activities and evaluate data driven arguments	Promote student collaboration with civil society organisations, in order to gain experience working with their data, supporting their activities, and enhancing their openness through data and publications	Support students in writing dissertations based on analysis of open data which engages with a real local or global problem; encourage them to publish findings in an open format

How to embed OD in T&L activities

- Identify and describe the learning outcomes for the intended activities;
- Identify the portals which will source the data;
- Clearly identify and describe the challenges students might face;
- Provide training materials for the software students will need to analyse the data;
- Support students in communicating their findings to local or wider communities.

To learn more about OD and Open Education

- Open Definition http://opendefinition.org
- Open Data Handbook http://opendatahandbook.org
- Open Education Handbook http://education.okfn.org/handbook/
- Figshare http://figshare.com
- Open Data Europe https://open-data.europa.eu/en/data/
- UK Open Data Portal http://data.gov.uk
- UK HE Data Portal http://www.data.ac.uk/
- Directory of Data Repositories http://oad.simmons.edu/oadwiki/Data_repositories