Open Research Online

Skills Not Silos: Open Data as OER

Conference or Workshop Item

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Skills *not* Silos!
Open Data as OER

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Opening up in Education

In education 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)
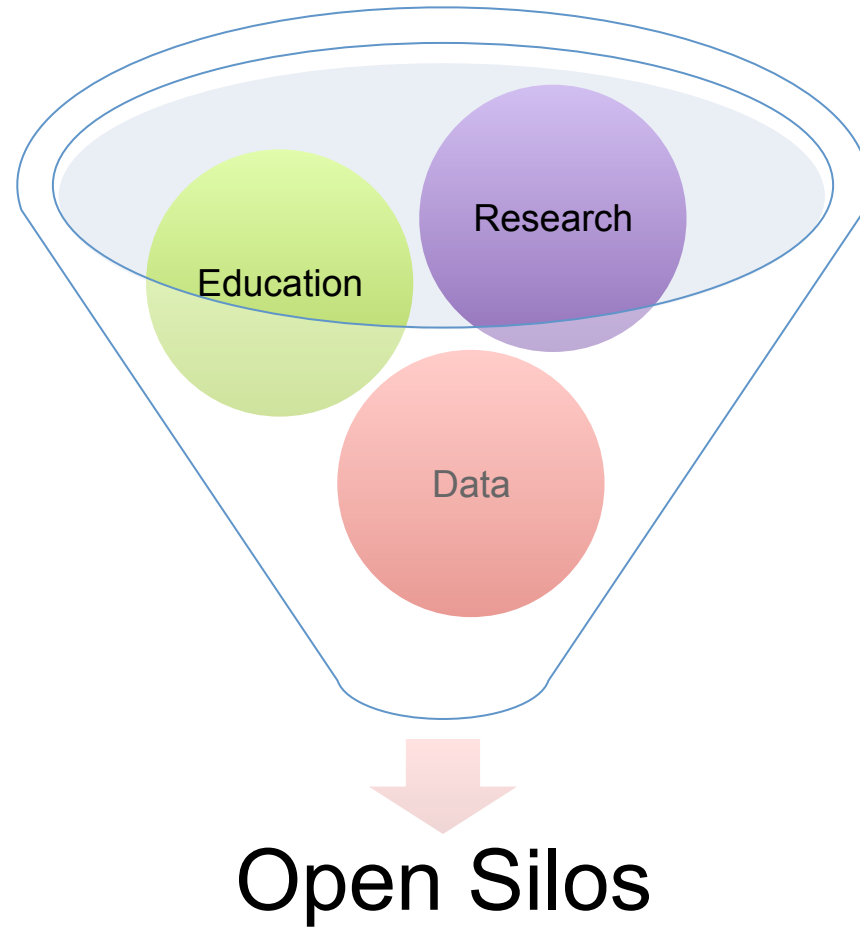
Which has brought us to a brave new world....

of the 'Open Silos'
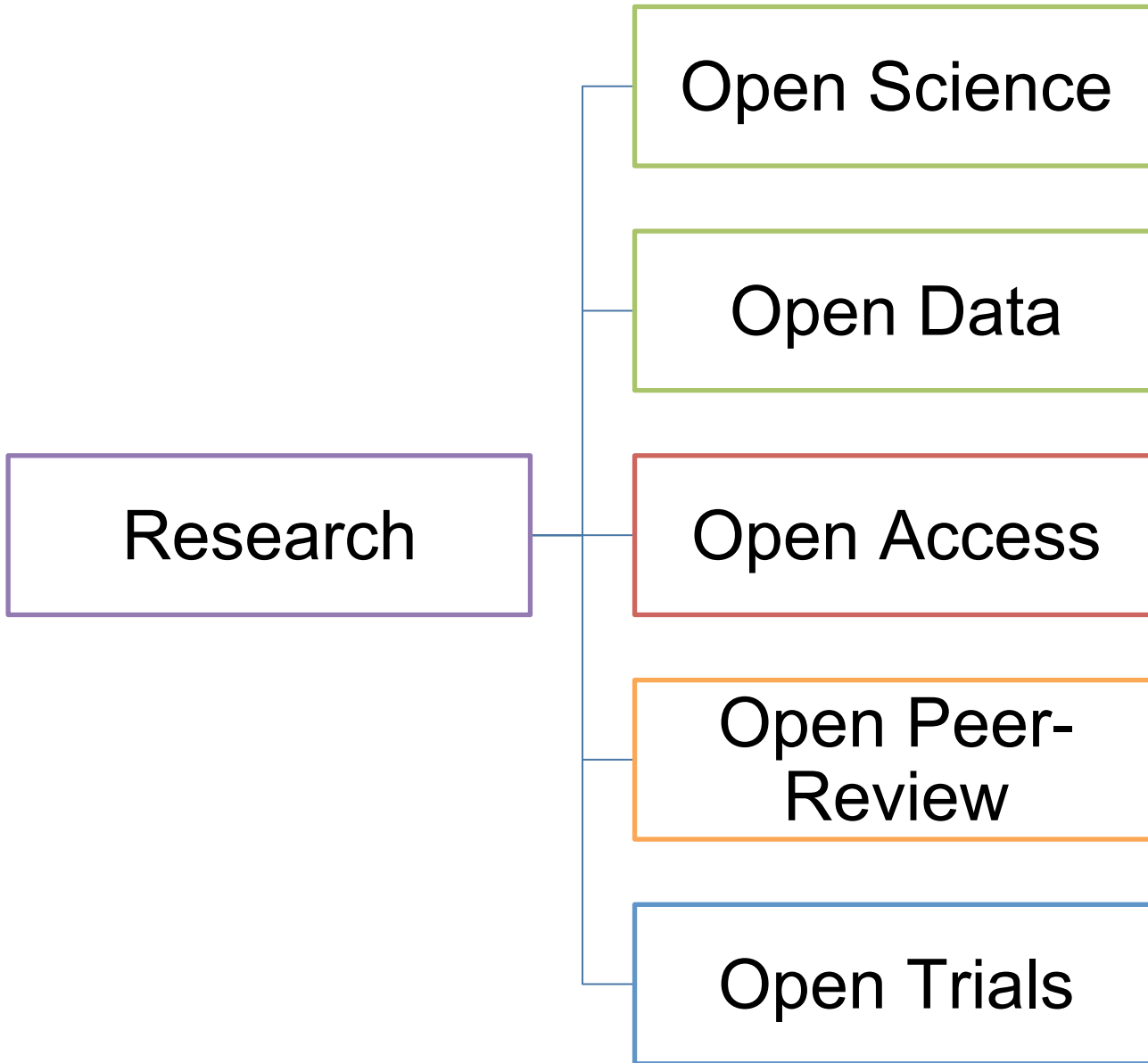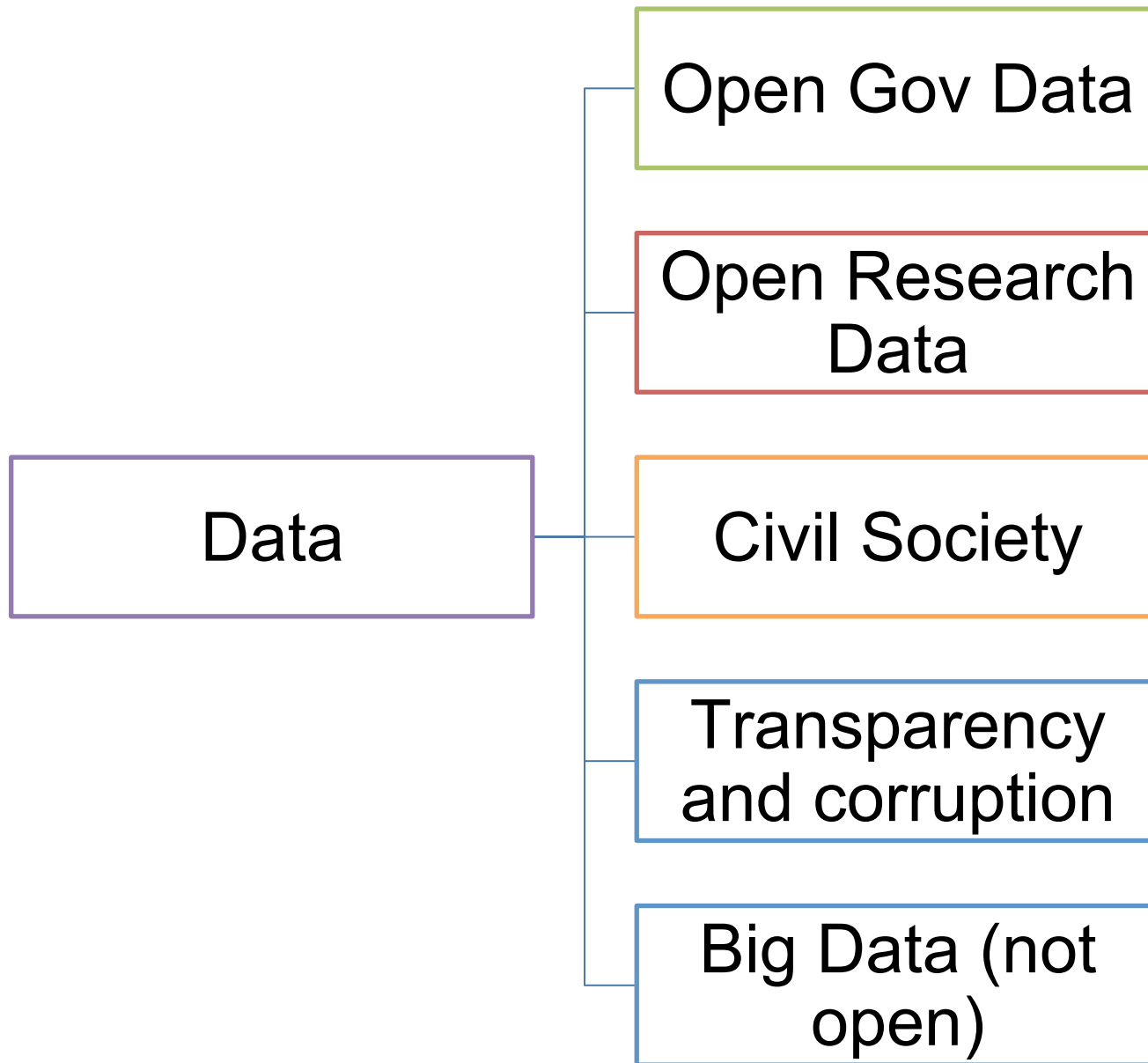
No Interaction!

Parallel Open Movements

Education

Research

Data

Open Silos

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Education ──┬── OER

            ├── ROERs

            ├── Open Textbooks

            ├── MOOCs

            └── OCW
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                                        │    Open Gov Data     │
                                        └──────────────────────┘

                                        ┌──────────────────────┐
                                        │    Open Research     │
                                        │        Data          │
                                        └──────────────────────┘

┌──────────────────┐                    ┌──────────────────────┐
│      Data        │────────────────────│    Civil Society     │
└──────────────────┘                    └──────────────────────┘

                                        ┌──────────────────────┐
                                        │    Transparency      │
                                        │   and corruption     │
                                        └──────────────────────┘

                                        ┌──────────────────────┐
                                        │   Big Data (not      │
                                        │       open)          │
                                        └──────────────────────┘
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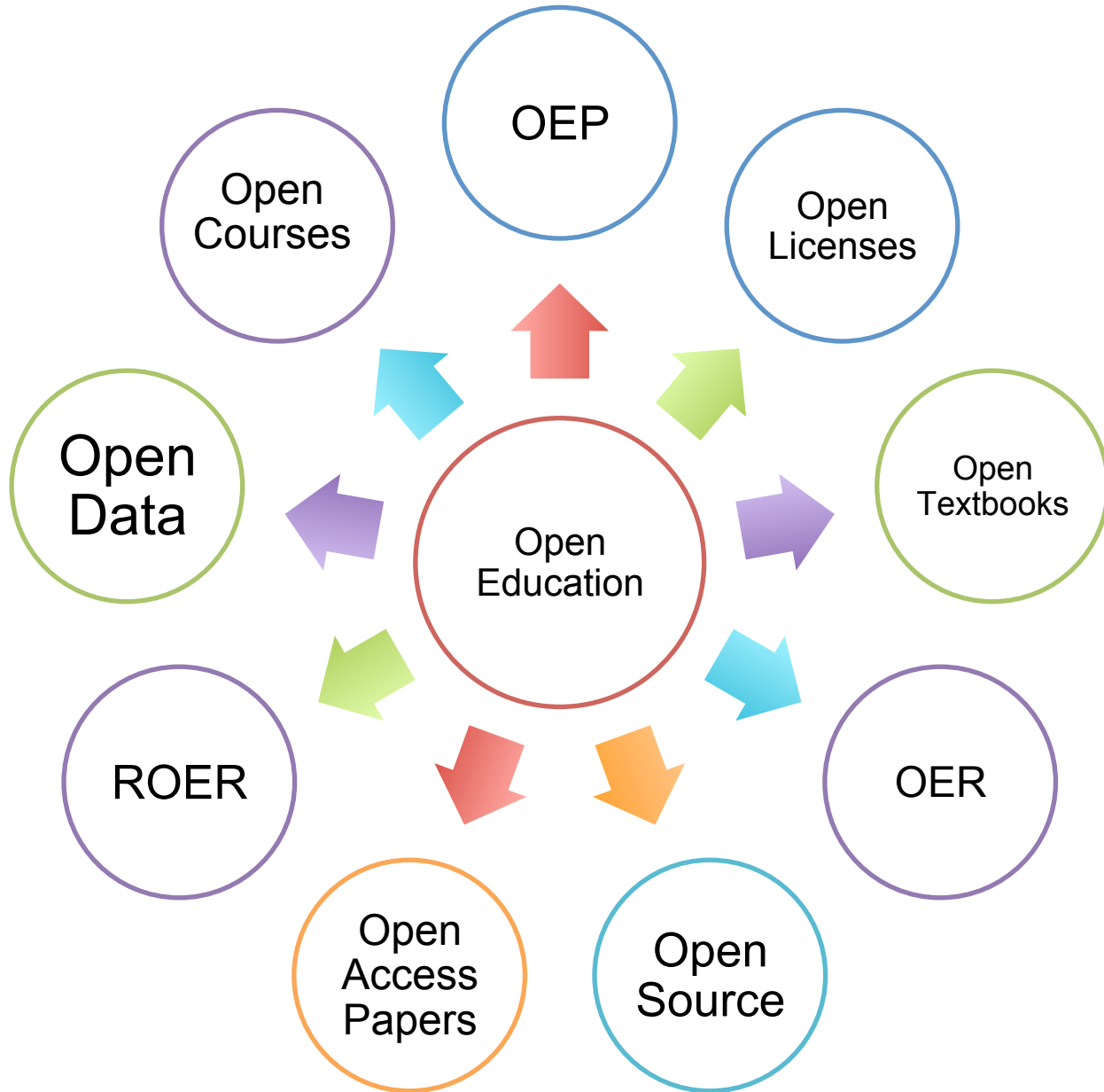
Thinking about Open Data - through an Open Education Lens

The illusion of access promoted by computers provokes a confusion between the presentation of information and the capacity to use, sort and interpret it. (Brabazon, 2001)

Thinking about Open Data - through an Open Education Lens

...as with the earlier discussion concerning the "digital divide" there would, in this context, appear to be some confusion between movements to enhance citizen "access" to data and the related issues concerning enhancing citizen "use" of this data as part, for example, of interventions concerning public policies and programs. (Gurstein, 2011)

Open Data: the 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.

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

Open Data for developing 'transversal skills'

- Students construct knowledge by critically analysing information from various sources and formats, including data.

- Being capable of analysing and interpreting raw data can be key to the development of transversal skills, which are defined by UNESCO as "critical and innovative thinking, inter-personal skills; intra-personal skills, and global citizenship".

Skills and social participation

- If one of our goals as educators is to develop transversal skills in students, towards enabling them to function as citizens and to actively participate in the discourse and debates of society, then we propose that Open Data can play a key role.

Skills / Level students can	Basic	Intermediate	Proficient	Advanced
Critical thinking	Understand basic concepts of critical thinking	Use data to verify information from the media	Analyse phenomena from their region using data and write reports critically analysing solutions	Present data visualisations to present their findinds using complex statistical modelling
Data analysis skills	Analyse data using quantitative and qualitative methods	Use proficiently software for data analysis such as SPSS - NVivo	Use proficiently software for data analysis such which are relevant for their own discipline	Develop their own databases using systems such as ORACLE
Data curation skills	Organise datasets in simple folders	Identify different sources of datasets and organise it in databases	Use digital tools for data curation and share it with others	Develop databases and organise datasets, and embed metadata into the files to facilitate access to the resources
Data management skills	Identify datasets from different sources	Select datasets from different portals in different formats	Extract, filter and compare data from different data sources creating a single dataset	Filter and format data in different formats analyse it creating complex datasets

Skills / Level students can	Basic	Intermediate	Proficient	Advanced
Data Mining skills	Locate CSV files on the internet	Extract datasets from PDFs	Extract datasets from different sources	Use complex methods for developing datasets
Data visualisation skills	Create graphics and charts	Use online software to develop simple infographics	Use graphic design software to develop infographics	Use data modelling software to create complex data visualisations
Research skills	Understand the scientific method and are familiar with basic quantitative and qualitative methods	Structure their research and apply different techniques to obtain results	Replicate experiments and studies following research methods explained in the literature	Compare data and information from different data sources and research papers and replicate experiments and studies to produce new research articles
Statistical skills	Perform basic statistical operation including averages, media and median	Perform statistical operations using clusters, using standard deviations, signifiance, chi square, correlation or regression analysis	Use data modelling techniques for different statistical methods such as forecasting to predict future events	Programme databases to perform complex statistical analysis and create models and complex graphs and visualisations

Civic engagement / Level	UG	PG	All levels	All levels
Initial	Support students in assessing government to identify problems to solve	Enable instances for students to discuss how they can get involved in civil society organisations		
Intermediate	Encourage students to use digital tools to engage and monitor political activities	Support students to select, support and develop activities related with the civil society that have a personal interest to them	Engage students with political deliverations asking them to analyse the data related to it	Establish a model for students to engage in policy making by reviewing data
Advanced	Invite subject and data experts to discuss face to face or online with your students local and global issues	Consider the opportunities to embed civic engagement as a core component of the modules aims and objectives supporting data journalism activities		

Using Open Data as OER

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 deliverations 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
Undergrad	Engage students in evaluating facts and contrast information by analysis data sources news from newspapers	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
Postgrad	Support students in identifying organisations that are campaining in citizenship issues enable instances for students engage in civic monitoring activities and evaluation of data driven arguments	Promote collaboration between civil society for students to gain work experience supporting their activities throught data and publications, enabling instances for students to work in real scenarios with their data	Support and encourage students to write their final dissertations using open data aiming to find applicable solutions to local and global problems and support them to publish them in an open format to make accesible to the public

Embedding 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.

Open Data activities in T&L

- Focus: define the research problems and its relation to the environment students.

- Practicality: match technical applications and practices to expected solutions.

- Expectations: set realistic expectations for data analysis.

Open Data activities in T&L

- Direction: support in finding data portals which contain appropriate information.

- Training: provide training materials for the software students will need to analyse the data.

- Location: use global, local and scientific data which is as granular as possible.

Open Data activities in T&L

- Modelling: develop model solutions to guide students on the challenges and activities.

- Collaboration: support students to work collaboratively and at multidisciplinary level.

- Communication: support students in communicating their findings to local or wider communities

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).

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/
- A Scuola di OpenCoesione: http://www.ascuoladiopencoesione.it/
- School of Data: http://schoolofdata.org/
- Data Literacies Research: http://schoolofdata.org/2016/01/08/our-data-literacy-research-findings/

To learn more about OD and Open Education

- Open Data as OER post: http://education.okfn.org/the-21st-centurys-raw-material-using-open-data-as-open-educational-resources/
- OD as OER – case studies: http://education.okfn.org/open-data-as-open-educational-resources-case-studies-of-emerging-practice/
- Open Data as OER paper: http://www.openpraxis.org/index.php/OpenPraxis/article/view/233