Open Content & Open Educational Resources

Lecture 4

TU Wien, 193.067 Free and Open Technologies (WS 2019/2020)
Christoph Derndorfer and Lukas F. Lang

Organization

- First project meeting: Friday, November 8
  - max. 45 min., discussion of your project idea
- Location: Projektraum (Argentinierstr. 8/2. Stock/Mitte)
- Time slots entry: termino.gv.at
  - Deadline: **Friday, November 1**
  - Only one entry per group and a clearly identifying group name
  - Email notification (TISS) about group time slot per e-mail until Sunday, November 3

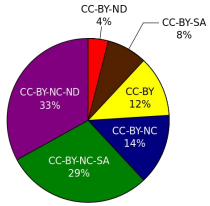
Lecture outline

1. ~~October 8, 2019: FLOSS (Free/Libre and Open Source Software)~~
2. ~~October 15, 2019: Open Hardware~~
3. ~~October 22, 2019: Open Data~~
4. **October 29, 2019: Open Content/Open Educational Resources**
5. November 5, 2019: Open Science/Research
6. November 12, 2019: Open Access
7. November 19, 2019: Open Spaces/Open Practices at Metalab Vienna
   - Location: Metalab, **Rathausstraße 6, 1010 Vienna**
8. November 26, 2019: Guest Lecture: Stefanie Wuschitz (Mz* Baltazar's Lab)

Potential and motivating examples

- Austrian “Schulbuchaktion” (since 1972)
  - More than 8 million school books per year
  - Approx. 100 million Euros spent annually [1]
  - Could be invested in open educational resources
- Flickr
  - 2018: 415 million pictures under Creative Commons licenses [2]
- MIT OpenCourseWare
  - MIT publishes all educational materials from courses freely and openly (CC BY-NC)
  - 2018: 2400 courses available (100 courses include full video lectures)
- iTunes U
  - 2011: 300 million downloads/year, 350,000 lectures, more than 1,000 universities [3]

	2008/2009	2009/2010	2010/2011	2011/2012
	Anzahl in Mio.			
Schüler	1,17	1,18	1,16	1,15
bestellte Schulbücher	7,97	8,52	8,63	8,75
	in Mio. EUR			
Kosten der Schulbuchaktion	99,08	102,89	105,84	108,38
Einnahmen aus Selbstbehalten[1]	9,61	10,91	11,12	0,00



CC licenses on Flickr

Philosophy for Beginners
Oxford University

[1] Bericht des Rechnungshofs (2013/10), “Schulbuchaktion: Follow-up-Überprüfung”, accessed 2019/10/24
[2] Wikipedia, “List of major Creative Commons licensed works”, accessed 2019/10/24
[3] BBC News (2011/10/03, “Open University's record iTunes U downloads”, accessed 2019/10/24

What is open content?

Open content

From Wikipedia, the free encyclopedia

"Open licence" redirects here. For the French licence, see Open licence (French).

Open content is a neologism coined by David Wiley in 1998[1] which describes a creative work that others can copy or modify freely, without asking for permission. The term evokes the related concept of open-source software.[2] Such content is said to be under an **open licence**.

[1] Wikipedia, "Open content", access 2019/10/24

Definition by Open Content: 5Rs

Any copyrightable work that allows users to:

- **Retain** - the right to make, own, and control copies of the content
  - E.g. download, duplicate, store, and manage
- **Reuse** - the right to use the content in a wide range of ways
  - E.g. in a class, in a study group, on a website, in a video
- **Revise** - the right to adapt, adjust, modify, or alter the content itself
  - E.g. translate the content into another language
- **Remix** - the right to combine the original/revised content with other material to create sth. new
  - E.g. incorporate the content into a mashup
- **Redistribute** - the right to share copies of the original content, your revisions, or remixes with others
  - E.g. give a copy of the content to a friend

[1] David Wiley, "Defining the "Open" in Open Content and Open Educational Resources", CC BY, accessed 2019/10/24

What hinders people from exercising the 5Rs?

Examples:

- School worksheets created using tutory.de app
- University course slides created using Prezi
- Educational content created using Adobe Flash

Potential problems:

- Cost
- Platform lock-in (content maybe can’t be exported)
- Proprietary format
- Might be discontinued (most Flash content will ultimately be lost)

[1] Prezi logo, by Prezi Inc., CC BY-SA 3.0
[2] Jöran Muuß-Merholz, “Stellt Euch vor....”, accessed 2019/10/27

The ALMS Framework

Helpful guide for technical choices:

- **A**ccess to editing tools
  - E.g. uses open content format?
  - Freely available for all major platforms (e.g. OpenOffice)?
  - FLOSS tools available or only expensive commercial/proprietary/discontinued tools?
- **L**evels of expertise required
  - E.g. technical background required to edit
- **M**eaningfully editable
  - E.g. scanned image of handwritten document vs. simple text file
- **S**elf-sourced
  - E.g. is the format provided also useful for editing/remixing?
  - E.g. PDF or Adobe Flash are not

[1] David Wiley, “Defining the "Open" in Open Content and Open Educational Resources”, CC BY, accessed 2019/10/24

Key figures

Michael Stutz

- Freelance writer (Rolling Stone, Wired) and musician who became a technical writer (FSF) and author (“The Linux Cookbook”)
- Wrote an article about “Applying Copyleft To Non-Software Information” [1] (1994)

David A. Wiley

- Coined the term “open content” as a graduate student in instructional psychology and technology (1998)

[1] Stutz, Michael (1994), “Applying Copyleft To Non-Software Information”, accessed 2019/10/24,
[2] By Mark A. Philbrick - https://www.flickr.com/photos/davidwiley/7754795758/, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=39263347

Key figures

Lawrence Lessig

- Law professor at UC, Stanford, Harvard
- Co-founded Creative Commons while at Stanford Law School (2001) and worked on first CC licenses released (2002)

Jimmy Wales

- Famous for appearing and asking for donations while you are surfing Wikipedia
- Also: Co-founded Wikipedia as a more open platform compared to his company's prior Nupedia (2001)

[1] By Joi Ito - https://www.flickr.com/photos/joi/33668559574/, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=59092992
[2] By VGrigas (WMF) - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=42237527

History

- 1990s: Learning from FLOSS, 10 years onwards
  - 1994: “Applying Copyleft to Non-Software Information” by Michael Stutz
  - 1998: Open Content Project founded by David A. Wiley
    - Term “open content” invented
    - Open Content License / Open Content Project (stopped in 2003)
- 2000s: Open content and OER scales
  - 2001: Creative Commons founded / MIT OpenCourseWare announced
  - 2002: First Creative Commons licenses released / Term “open educational resources” coined
  - 2004: Open Knowledge Foundation (OKF) founded by Rufus Pollock
    - 2007: Open Knowledge Definition
  - 2006: Definition of Free Cultural Works (used by Wikimedia Foundation) by Stallmann, Lessig and others.
  - 2012: Paris declaration on Open Educational Resources

Timeline comparing FLOSS / OH / OD / OC / OER

	FLOSS	Hardware	Data	Content	OER
Concept	1984 (GNU)	1997 (OSHWA)	...	1994 (Stutz)	2002 (OECD)
First significant license	1989 (GPL)	2002 (Creative Commons)	2002 (Creative Commons)	2002 (Creative Commons)	2002 (Creative Commons)
Acceleration	1998 (Netscape)	2003 (Arduino, SparkFun)	2009 (data.gov)	2001 (Wikipedia)	2002 (MIT OCW)

Licenses

Creative Commons

- Co-founded 2001 by Lawrence Lessig (professor of Law at Harvard Law School)
- Goal: create works in public domain to build upon and promote their use
- Introduced a set of licenses
  - gives creators a simple, standardized way to grant copyright permissions to their creative work
  - aimed to be internationally valid
- Basic types (+ combinations) [1]
  - CC0: “No Rights Reserved”
  - CC BY: attribution (distribute, remix, tweak, build upon, even commercially)
  - CC BY-SA: share-a-like (new creations under identical terms) → “copyleft”
  - CC BY-ND: no derivatives
  - CC BY-NC: non-commercial use only
- Three-layer design: legal, human readable, machine readable

[1] Creative Commons licenses, “About The Licenses”, accessed 2019/10/08
[2] Wikipedia, “Comparison of free and open-source software licenses”, accessed 2019/10/03

Licenses

Disagreement about which restrictions can be included in an “open license”

“Definition of Free Cultural Works”:

- Synonymous to Open Definition by OKF (see Lecture #3: Open Data)
- **use, study, copy/distribute, modify**
- Limits open content to free/libre content

Approved licenses (selection):

- Creative Commons License (**only** CC BY, CC BY-SA, CC0)
- Open Publication License (successor of Open Content License)
- Against DRM license
- GNU Free Documentation License (GFDL)
- See [1] for more.

Non-approved licenses: e.g. Open Content License (no for-profit copying)

[1] Liang, L. (2015), Guide to Open Content Licenses, accessed 2019/10/28

Open content can be applied to all types of media

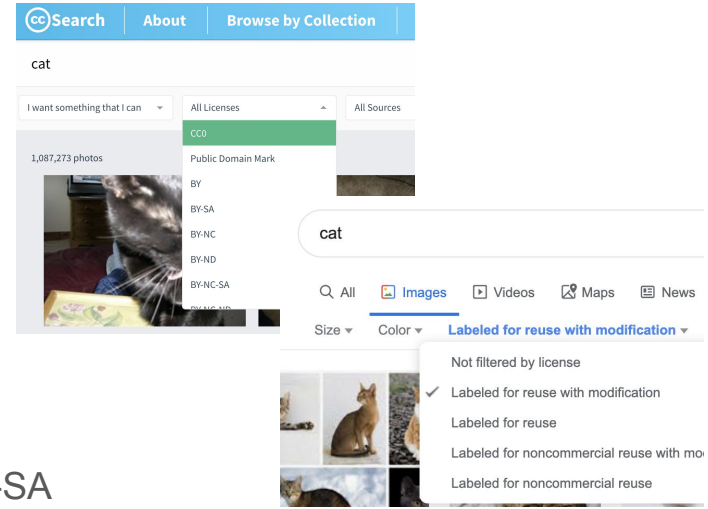
- Texts and books:
  - From Wikipedia and Project Gutenberg (60,000 books - focused on public domain works) to niche providers such as FLOSS Manuals (for documentation of FLOSS software)
  - Science fiction author Cory Doctorow released many of his books (e.g. Little Brother, Homeland) under Creative Commons license (BY-NC-ND or BY-NC-SA) and explains why [1]
- Images and photos:
  - Search engines: Creative Commons (300 million images), Flickr, Google Image Search, etc.
- Sounds, music, and videos:
  - Freesound, Open Music Archive
  - Search engines: Vimeo, YouTube, etc
- Multimedia repositories:
  - Digital Public Library of America (35 million files under CC-BY), Europeana Collections and Library of Congress (not only open content), Wikimedia Commons (57 million multimedia files)

[1] Doctorow, C., "Why do you give away your books", last accessed 2019/10/28

Licenses

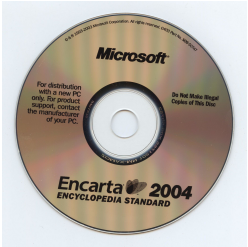
Examples of usages (see [1] for a list)

- 2018: 1.4 billion works under CC licenses
  - 415 million pictures on Flickr under CC license
- PLOS (Public Library of Science)
  - publishes ~50.000 articles/year under CC BY
- Wikipedia and Wikimedia Commons widely uses CC BY-SA
- Arduino hard/software under CC BY-SA
- Wired.com photography releases photos under CC BY-NC
- OmegaTau podcast publishes episodes under CC BY-NC
- MIT OpenCourseWare materials released under CC BY-NC-SA
- TED Talks videos licensed under CC BY-NC-ND



[1] Wikipedia, "List of major Creative Commons licensed works", accessed 2019/10/07

Wikipedia: History



- Started in 2001 as a complementary project to Nupedia
  - Nupedia started in 2000 as a free but non-open encyclopedia written by experts
  - Originally stated goal for Wikipedia: “As to Nupedia's use of a wiki, this is the ULTIMATE "open" and simple format for developing content. We have occasionally bandied about ideas for simpler, more open projects to either replace or supplement Nupedia.” [1]
- At the time Microsoft Encarta was the leading digital encyclopedia (in terms of retail sales)
  - Encarta was available between 1993 and 2009, originally on CD-ROM and from 2000 also online
- By January 2009 Wikipedia’s share of online encyclopedia visits was 97%, Encarta’s was 1.27% [3]

[1] Sanger, L. (2001/01/10), "Let's make a wiki", last accessed 2019/10/27
[2] By Jason Scott - https://www.flickr.com/photos/textfiles/38351460171, CC BY 2.0
[3] Cohen, N. (2009/03/30), "Microsoft Encarta Dies After Long Battle With Wikipedia", last accessed 2019/10/27

Wikipedia: Facts and figures

- Total number of articles: >40 million in >290 languages [1]
- Top languages in terms of articles [2]:
  - English: 5.96 million
  - Cebuano: 5.39 million
  - Swedish: 3.75 million
  - German: 2.36 million
  - French: 2.15 million
    - But, most articles in Cebuano and Swedish were created by a bot!
- 9th most visited website overall (#5 in Austria) [3]
- Run by Wikimedia Foundation
  - $104 million revenue vs. $81 million expenses (2018) [4]
  - ~300 employees

[1] WikiMedia, "Wikipedia Statistics All languages", last accessed 2019/10/27
[2] Wikipedia, "List of Wikipedias", last accessed 2019/10/27
[3] Alexa, "The top 500 sites on the web", last accessed 2019/10/27
[4] Wikimedia Foundation, "Financial Statements", last accessed 2019/10/27

Wikipedia: Criticism

- Gender bias
  - In 2018 only less than 18% of biographies in the English Wikipedia were about women [1]
    - 2018 Nobel Prize for Physics winner Donna Strickland did not have a page until after she won the Nobel Prize
    - Notability threshold for women is higher than for men [2]
  - Women account for between 5.2 and 13.6% of editors [3]
    - Percentage varies significantly between languages [4]
      - Highest: Slovenian (39%), Estonian (38%), Lithuanian (36%)
      - Lowest: Hindi (4%), Bengali (4%), Malayalam (5%)

[1] Maher, K. (2018/10/18), “Op-Ed: Wikipedia mirrors the world’s gender biases, it doesn’t cause them”, last accessed 2019/10/27
[2] Wagner, C. et al (2016/03/01), "Women through the glass ceiling: gender asymmetries in Wikipedia", last accessed 2019/10/27
[3] Galvez, E. (2018/09/13), "What we learned from surveying 4,000 members of the Wikipedia and Wikimedia communities", last accessed 2019/10/27
[4] Massa P., Zelenkauskaite A. (2014), “Gender Gap In Wikipedia Editing: A Cross-Language Comparison”, last accessed 2019/10/27

Wikipedia: Criticism

- Language bias:
  - German: spoken by ~100 million people has 2.36 million Wikipedia entries
  - Hindi: spoken by ~600 million people has 133,000 Wikipedia entries
- Other biases
  - ““You’d think that, ‘Oh, Wikipedia has articles on everything,’ but for anything having to do with a marginalized community, there’s a lot of gaps…” [1]

→ biases in Wikipedia are increasingly problematic as its content is surfaced with little additional context in Google search, on Amazon Echo devices, etc.

[1] Smith, J. (2015/02/19), “Howard University Fills in Wikipedia’s Gaps in Black History”, last accessed 2019/10/27

OER: Open Educational Resources

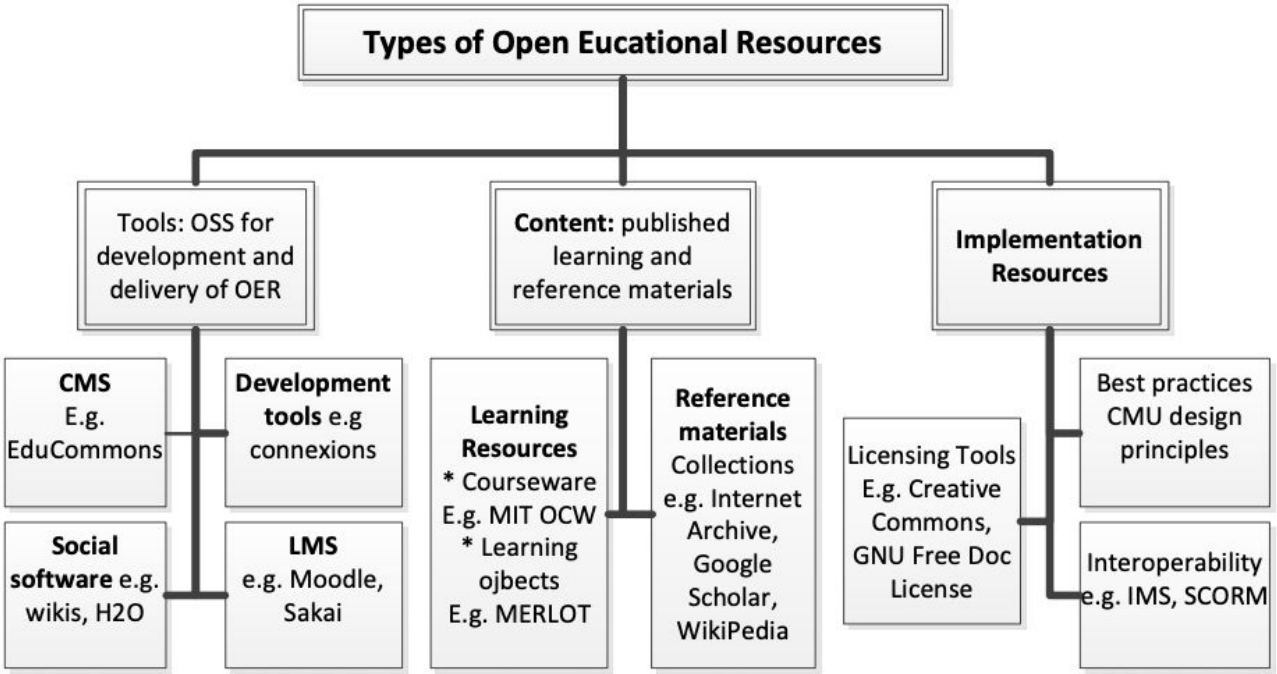
“Open Educational Resources (OER) are teaching, learning or research materials that are in the public domain or released with intellectual property licenses that **facilitate the free use, adaptation and distribution of resources**.” (emphasis added)

“OER provides a strategic opportunity to **improve the quality of education** as well as improve policy dialogue, knowledge-sharing and capacity-building.” (emphasis added)

→ OER seen as a way to achieve Human Rights (article 26: “right to education”) and SDG (goal 4: “quality education”)

[1] UNESCO, “Open Educational Resources”, last accessed 2019/10/24

Types of OER



[1] Margulies, A. (2005), “MIT Opencourseware – A New Model for Open Sharing”, presentation at the OpenEd Conference at Utah State University

Special context

- Use
  - Not voluntary but mandated by teachers, school system, etc.
  - Used by teachers and pupils (and parents)
- Economics
  - Paid for by parents and/or school system
  - Copyright exceptions such as fair use (US) / fair dealing (UK)
    - Not for full works but only for excerpts
    - In Austria educational resources such as school books may not be copied! [1]
- Adaptation
  - Often required and/or desired by teachers

[1] Wiener Schulen Online, "FAQ zum Urheberrecht", last accessed 2019/10/28

CK-12 Foundation

- CK-12.org is a non-profit organizations founded in 2007
- It publishes school books aligned with US STEM curriculums under CC BY-NC
- Additionally it provides tools to facilitate the customization of these school books (FlexBooks)
- This allows teachers (and parents) to easily create customized school books from different sources and with their own materials

  → such remixing is legally (copyright) and practically (cost of materials, no access to sources, no tools) not possible with traditional educational materials

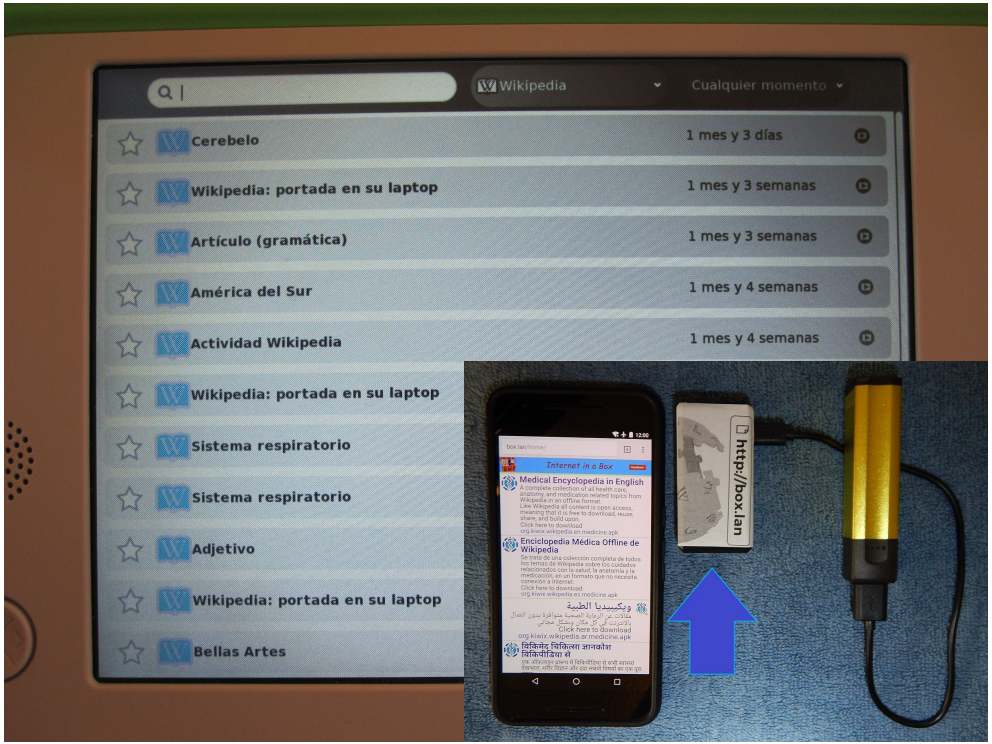
Upgrade, Update, and Customize with CK-12

[1] CK-12 Foundation, "Upgrade, Update, and Customize with CK-12", last accessed 2019/10/28

Open content and OER in international development

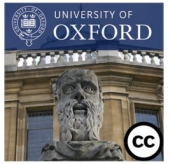
- Imagine a school
- In Peru
- In a remote part of the Andes
- Where there's no Internet access
- And barely any electricity
- How to provide an encyclopedia to students?

→ Offline Wikipedia (IIAB, Kiwix,...)



Examples for higher education

- MIT OpenCourseWare
  - MIT publishes all educational materials from courses freely and openly (CC BY-NC)
  - 2018: 2400 courses available (100 courses include full video lectures)
- iTunes U
  - 2011: 300 million downloads/year, 350,000 lectures, more than 1,000 universities [3]



Philosophy for Beginners
Oxford University

→ MOOCs such as Coursera, edX, MITx, Udacity, etc. offer free access, but are not open!

[1] BBC News (2011/10/03, "Open University's record iTunes U downloads", accessed 2019/10/24

Benefits of OER

For educators:

- Build on top
- Observe and learn from others
- No copyright issues
- Supports self-learners
- Increased recognition

For institutions/universities:

- Cut costs through re-use
- Public relations:
  - Increased visibility and reputation
- Attract new students

For students:

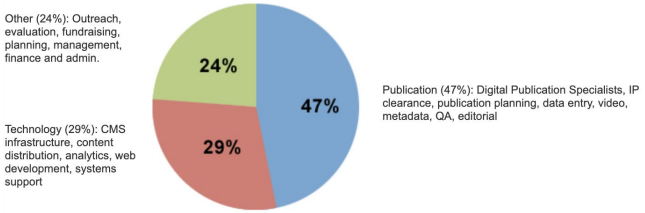
- No cost
- Access to otherwise inaccessible content (e.g. MIT lectures)
- Different explanations for the same subject matter

For governments:

- Lower costs (e.g. distribution)
- Best of breed vs. reinventing the wheel
- Focus on differentiation and customization
- No risk of content lock-in by publishers

[1] Percy T., Van Belle JP. (2012) Exploring the Barriers. Open Source Systems: Long-Term Sustainability.
[2] Hilton, J. (2016), "Open educational resources and college textbook choices: a review of research on efficacy and perceptions"

Barriers of OER



For producers [1]:

- Technology:
  - Lack of skills to create
  - Lack of tech to share/distribute
- Economic (cost & effort):
  - Annual cost of MIT OCW is $2.7 million [2]
  - 100 hours/course on average to produce
- Social:
  - lack of rewards, awareness, time
- Policy-oriented:
  - lack of institutional policies, incentives, strategies
- Legal:
  - use of copyrighted material of others

For students/educators/governments [3]:

- Technology:
  - lack of access to connectivity / bandwidth, devices, skills,
- Copyright:
  - incompatibilities of licenses
- Language
  - most content available today in English
- Communities:
  - lack of contribution culture
- Quality: perceived vs. actual inaccuracies
  - see 2005 Nature study of Wikipedia vs. Britannica [4]
- Discovery, context, and relevance

[1] OECD (2007), Giving Knowledge for Free, accessed 2019/10/28
[2] MIT OpenCourseWare, “FAQ: Donations”, accessed 2019/10/24
[3] Percy T., Van Belle JP. (2012) Exploring the Barriers. Open Source Systems: Long-Term Sustainability.
[4] Giles, J. (2005), “Internet encyclopaedias go head to head”, last accessed 2019/10/27

Business models

- Charging for physical copies (e.g. printing of textbooks)
  - L3T (available for free under CC license & hardcover is sold)
  - Flickr Marketplace sold wall-size prints of CC licensed photos (initially taking all profits)
  - Authors (e.g. Cory Doctorow) sell print copies of books via regular channels
- Nano-degrees / certificates
  - Coursera, Udacity, MITx, etc.
- Crowdfunding, donations & merchandize
  - Wikimedia Foundation: US$104 million revenue in 2018 / CK-12: US$ 10 million revenue in 2017
  - Schulbuch-O-Mat (€10,660 of crowd-funding), MIT OpenCourseWare, Patreon (commission+transaction fees)
  - Artists (e.g. Amanda Palmer), writers (e.g. Cory Doctorow), podcaster (e.g. Tim Pritlove)
- Platform subscriptions
  - Tutory.de offers different plans for creating worksheets
  - Flickr sells premium plans
- Freemium model
  - Content free but services such as training, support, customization, etc. can be charged

[1] Geser, G., Schön, S. & Ebner, M. (2019). Business models for Open Educational Resources: how to exploit OER after a funded project?, Proceedings of EdMedia + Innovate Learning.

Upcoming tasks

- Next lecture: Open Science/Research:
  - **Tuesday, November 5**: 17:00–19:00, Argentinierstraße 8, Seminarraum/Bibliothek 194-05
- First project meeting (45 min., discussion of your project idea):
  - **Friday, November 8, 13:00–18:00**, Argentinierstraße 8, **project room**
  - Select time slot via termino.gv.at until **Friday, November 1**
- Paper group forming and topic selection:
  - **Friday, November 29**, via email to **both** lecturers

Literature and resources

Liang, L. (2015), Guide to Open Content Licenses

Hilton, J. (2016), Open educational resources and college textbook choices: a review of research on efficacy and perceptions, J. Education Tech Research Dev (2016) 64: 573

Hylen, J. (2006), Open Educational Resources: Opportunities and Challenges, Proceedings of Open Education.

OECD (2007), Giving Knowledge for Free