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Handbook of successful open teaching practices

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Abstract	The document presents 24 open teaching practices, with the aim to inspire teachers to adopt open approaches, as well as an original competences framework for Open Education.				
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Table of Contents

List of Abbreviations

HE - Higher education
MOOC – Massive Open Online Course
OEP - Open Educational Practice
OER - Open Educational Resource

EXECUTIVE SUMMARY

This handbook, produced by OpenGame project with the support of the Erasmus+ programme, aims to contribute to the adoption of open teaching practices among educators in the Higher Education area.

In order to do so, the document presents 24 real-life open teaching practices that respond to eight main challenges that educators face today and that can be tackled through open approaches. These challenges are: Broaden access to learning for enrolled students, Broaden access to learning for non-enrolled learners, Improve quality of teaching resources, Improve course design, Increase students motivation, Increase students engagement, Assess students in a useful way for their future career, Use the learning potential of students' online life. For each of these challenges, we present three open teaching practices, detailing their potential for transferability and the competences needed to put them in place, ultimately aiming at inspiring educators to try out these methods to make their teaching more inclusive and innovative.

Also, the document presents an original Open Education Competences Framework, structured around one transversal attitude, two competences areas (open resources and open pedagogies) and a number of detailed skills.

By connecting challenges, practices and needed competences, we aim to show that open teaching approaches are both relevant to daily problems of educators and easily implementable, and we hope that readers will be encouraged to try out these open strategies in their everyday work.

1. INTRODUCTION

This handbook is the first output of the European Project OPENGAME (Promoting Open Education through Gamification – Erasmus+ ref. 2019-1-ES01-KA203-065815), an action aiming to contribute to the open knowledge movement [1, 2] by exploring the area of open teaching, which is understood by the project team as a combination of practices aiming at increasing access and quality of learning, where theories about learning, technology, and social justice enter into a conversation with each other and inform the development of educational practices [3].

The handbook gathers 24 real-life cases of open teaching practices. The practices come from the higher education sector, but might be useful and transferred to other educational levels.

Open teaching is not something new. It dates back to the 60s and 70s [4-8], when Claude Paquette [9] proposed an open pedagogy focused on the individual's choices and responsibility, moving from uniformity and conformity to three sets of foundational values [7]:

1. **Autonomy** that should be understood through a social life of **interdependences**, because each person lives in constant interaction with others.
2. Freedom of students to choose amongst activities and projects, knowing that such choices also brings **responsibility**.
3. **Democracy** and **participation** that have to do with freedom of expression in the class as well as cooperation amongst students through things like disagreements or difficulties.

Open teaching is a key concept within the Open Education movement, much connected to Open Educational Resources (OERs) [10, 11] as well as to other parts of the *openness ecosystem* [12], such as open knowledge [13, 14], open access [15], open science [16], open data [17], open source [18], open government [19] and open innovation [20]. In line with the latest developments within the open education community, the OpenGame project recognizes the importance of OERs for implementing open teaching practices [21] based on the 5R permissions (retain, reuse, revise, remix, and redistribute) [22]. At the same time, we have been searching for practices into other open education main areas [23], such as open learning design [24], open content in general [25], open pedagogies [3, 26, 27] and open assessment [28]. Also, we have selected both advanced and basic technological practices, to pass the message that open teaching practices do not necessarily need advanced technology to be developed.

By collecting these practices, we have reflected on what competences are necessary to put them in place. The result of this reflection is also presented in the handbook in the form of an Open Education competencies framework [29], compatible with the Digital Competence Framework for Educators (DigCompEdu) [30], containing the knowledge, skills, and attitudes that European university educators need to master to work with open educational practices.

2. METHODOLOGY

In Figure 1 we show the iterative methodology that has brought to the definition of the 24 open teaching practices presented later as well as of the Open Education Competences Framework. The practices and the competences are strictly connected, meaning that the open competences are needed to implement the practices and at the same time adopting the practices enables the acquisition of the corresponding competences.
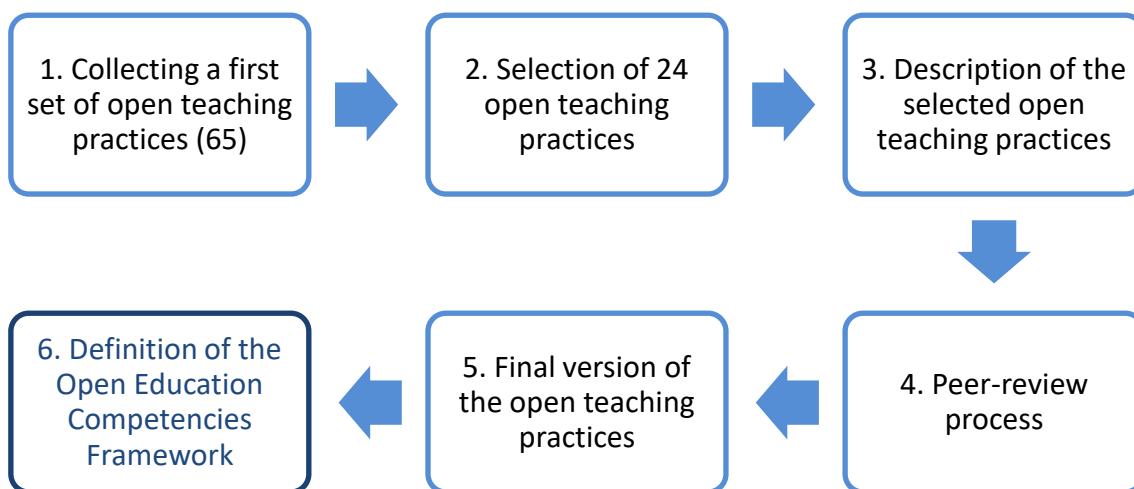
Figure 1. Definition of the open educational practices

The first phase was focused on defining a long list of open teaching practices in the areas of open content, open design, open pedagogies, and open assessment. Moreover, the practices were classified in two categories depending on the use of technology: advanced technology for open teaching and open teaching without technology. A total of 65 were collected through the online OpenGame Catalogue. The second phase consisted of a filtering process to select 24 representative practices that fulfilled the following criteria: broad applicability, technology neutrality, and easiness of transfer.

Once the 24 practices were selected, a template was provided in order to collect concrete information for each practice in a homogeneous way. Two approaches were followed to complete the templates: desk research, obtaining the information from previously published papers and public documents; and interviews, getting in contact with the practitioner/teacher who runs the practice and obtaining the information about the experience. The template has the following fields:

- Title of the practice.
- Context: institution name and location.
- Main goal: State how the practice intends to innovate/open up teaching practice.
- Implementation: information to take into account before implementing the practice.
- How to replicate the practice: provide the steps to implement the practice, with enough details to implement it.
- Results: describe the main results after applying the practice.
- Needed competences: provide information for people who might want to replicate the practice and the competences from the open education competences framework.
- Impact: evidence (if existing) on the practice impact, especially in terms of how it has opened up the teaching process.
- More information: Contact information, or links to papers or website with more information about the practice.

During the fourth phase a peer-review process was implemented to ensure the high quality of the description of the practices. Each practice was reviewed by two experts. The reviewer comments were considered by the editors of the practices and a second version was produced. The practices were then re-edited by a small group of experts in order to homogenize the descriptions and ensure the broad applicability, technology neutrality, and easiness of transfer.

Figure three shown the connections among the different component of this exercise: the challenges educators face the contribution of open teaching to overcome them, and the needed competences to implement the corresponding practices. We have eight categories of open teaching practices that can contribute to solve some educators challenges; for each of these eight areas three real-life practices were selected, that need a set of competences to be developed.

1. Educators challenges	2. Open Teaching Practice	Real-life examples			Needed Open Educational Competences
1. Broaden access to learning for enrolled students (in terms of resources cost but also of accessibility)	**Use OER in their teaching activities**	Use opentextbooks as teaching resources (Italy)	Use a MOOC in the classroom (The Netherlands)	Implement "Open Flipped Classroom" teaching (Germany)	1. Use open licenses, 3. Create, revise and remix OER
2. Broaden access to learning for non-enrolled learners	**Release their teaching resources as OER**	Integrate course content with an OER slides playlist (Portugal)	Transform your course into a MOOC (Spain)	Creating a OER-based module for teaching foreign languages (USA)	1. Use open licenses, 2. Search for OER, 3. Create, revise and remix OER, 4. Share OER
3. Improve quality of teaching resources	**Use OER produced by other educators and experts**	Switch from a commercial textbook to an open textbook (Ireland)	Transform your MOOC into an OER (Italy)	Use open video tutorials to foster explorative learning (Germany)	1. Use open licenses, 2. Search for OER, 3. Create, revise and remix OER
4. Improve course design	**Share lesson plans and content with other educators**	Co-produce OER through teachers' content clubs (Germany)	Share innovative teaching practices through an online repository (Spain)	Produce OER playlists with the help of Artificial Intelligence (EU)	2. Search for OER, 4. Share OER, 5. Design open educational experience
5. Increase students motivation	**Use OER to address learners' preferences and learning needs**	Co-design your syllabus with your students (USA)	Use OER to support socialisation of perspective students (Ireland)	Use OER for personalised and inclusive pedagogy (Germany)	1. Use open licenses, 5. Design open educational experiences, 6. Guide learners to work in the open, 7. Teach with OER
6. Increase students engagement	**Co-produce yor content with your students as OER**	Edit Wikipedia in the Classroom (US)	Make your course digital with the help of your students (Germany)	Use Open Data as teaching resources: a case from social sciences (Canada)	1. Use open licenses, 6. Guide learners to work in the open, 7. Teach with OER
7. Assess students in a useful way for their future career	**Open up assessment to real-world contexts**	Assess students' work by sharing it publicly (Ireland)	Implement OER-based renewable assignments (USA)	Engage Students with Professional Communities of Practice (Portugal)	1. Use open licenses, 2. Search for OER, 3. Create, revise and remix, 8. Implement open assessment, 6. Guide students to learn in the open
8. Use the learning potential of students' online life	**Support students to learn in the open**	Collaboratively created online publications by students (Germany)	Foster students collaboration through online dialogue (Spain)	Use social media to build an open and collaborative learning environment (Portugal)	1. Use open licenses, 3. Create, revise and remix OER, 6. Guide students to learn in the open

Table 1. Relation between challenges, open teaching practices and open educational competences.

3. OPEN TEACHING PRACTICES

In this section we present the 24 real-life open teaching practices, divided in eight areas. The areas have been selected since they respond to a specific challenge that contemporary educators are facing, as in the first column of Table 1 above.

AREA 1. USE OER IN YOUR TEACHING ACTIVITIES

Practice 1.1: Use open textbooks as teaching resources: the WikitoLearn example

Practice implemented by: Riccardo Iaconelli, University MIlano Bicocca

Description of the practice

Riccardo Iaconelli teaches Physics at the University of Milano-Bicocca in Italy, and does so by using an open and collaborative textbook. At the beginning of his course students get access to the open book on the web, they can download it (and print it) for free, and share it with anyone. Also, during the course they can annotate the book online and propose improvements and modifications, for example in case a paragraph is not clear or a problem could be improved. At the end of every course, Prof Iaconelli is checking the improvements proposed by the students and is deciding whether or not to release a new version of the book. The book itself was not fully written by Prof Iaconelli, as there were many chapters with high quality content already written that could be integrated in the open textbook. Luckily, he can access other CC-BY-SA material uploaded by other professors of the same field, and after a thorough review they become part of the same PDF respecting the same look and feel.

The main reason he did so is because he wanted to have a "flexible book" that could also include the notes that he used to provide to students, and at the same time he liked the idea that students would not have to pay for the textbook and that could improve it during the course.

He has developed his Open Textbook by using the WikiToLearn platform, because this tool allows producing professionally looking books out of "wiki" pages and it is specifically suitable for scientific subjects such as mathematics and physics. WikiToLearn was created in 2015 in Italy out of the idea of some students who had the necessity to share their notes to study for their exams and decided to do so through a wiki. The platform further developed and is now supported by an international community that has built and shared textbooks composed of hundreds of chapters in several languages.

Impact

Using an open textbook has proved to be beneficial for both students, teachers and universities, in many ways.

Students like open textbooks as they can save costs which are potentially very high in college. They leverage on the experience of the previous generations and know that their annotations and corrections will be useful in the future. Thanks to the integration with Telegram they can also discuss the content of the book in real time, meeting virtually with other students from

different universities who study the same material. This chat allows them to get help and clarify the subject.

Professors appreciate the open textbooks as well, but for different reasons. Providing the students with an open content at the beginning of the course, and allowing the students to annotate, provides a tool of immediate feedback of the level of the lectures. Having an editable version on the web allows to keep the textbook updated, it can help identify errors, and, when the students can participate in the editing, it can motivate them by considering them almost co-authors of the resources. Professors who are teaching niche courses have an additional reason to love open textbooks. These curricula typically lack traditional literature, and they are too specific for more than a few good resources to be usable. Using the power of networks a new textbook can emerge for all the world to use. This kind of material can start from existing lecture notes or even students' notes. They can be expanded with the work coming from other universities and integrated with third party chapters. After some iterations and thorough review they can become a reference working manual for the subject, which multiple institutions have cooperated to build.

Lastly, universities and educational institutions make large use of promotion through the dissemination of open textbooks and other open educational resources. Editing popular books on centralised platforms, such as WikiToLearn, can promote the quality of their teaching, allowing them an edge when competing for the best and brightest students. This effect is compounded, as, unlike a video, it is much easier to keep a text alive over time. By doing so, the text will always improve as it is read and studied by generations of students.

What you need to replicate the practice
In order to develop an open textbook, you do not need any particular technical competence. You just need to learn how to use a platform to actually "build" the textbook", such as [WikiToLearn](), and invest some time to populate it with content. Typically, if you are able to use a word processor, you will be able to use these platforms. In terms of time, it depends entirely on the type of content you already have at hand. Transforming a PDF of around 100 pages into an open textbook can take you around 1 day of work. Typically this work will require more than cut and paste, as you will need to manually create the sections and upload any embedded image manually. However, if you are working with LaTeX or typical word processor files (.doc/.docx/.odt) there are ways to import at least some of the content automatically. Revising a text is on the other hand much quicker, so you can consider asking some of the brightest students who might already have some of the lecture notes in a digital format for help in kickstarting the work, and assuming more the role of a reviewer.

Whatever approach you choose, we suggest you to start small, by editing a few chapters and adding content over time. You will find it easier to adapt to the logic of every platform, anticipate pitfalls, integrate the students' suggestions and possibly even find other professors who want to collaborate with you. Also, smaller units (think in terms of 10-15 lectures) are typically easier to remix and keep up to date should the need arise.

In case of technical difficulties, most platforms have a community of peers that you can reach out to in case of problems with the platform. In the case of [WikiToLearn](), you can contact them via [email]() or on [Telegram](). Most other platforms include references on the website homepage.

To know more...
- WikitoLearn: http://www.wikitolearn.org
- Guide to Developing Open Textbooks: http://oasis.col.org/handle/11599/2390
- MOOC "Adopting Open textbooks" by the P2P University: https://courses.p2pu.org/en/courses/2675/adopting-open-textbooks/
- OpenStax, one of the most known Open Textbooks platforms: https://openstax.org/

Practice 1.2: Use a MOOC in the classroom

Practice implemented by: Nick van de Giesen, Herman Russchenberg, Hubert Savenije, Marcel Stive, Delft University of Technology, Netherlands

Description of the practice

TU Delft is a world leading provider of OERs and MOOCs, available at edX and TPM DelftX, with close to 2 million learners. All its MOOCs are used in campus education, mostly in a blended model. The institution has also a unique reputation in water and climate, with faculty world-renown experts in the fields of climate research, water management and hydraulic engineering.

While developing the MOOC "Introduction to Water and Climate", launched in 2015, one of the authors became aware of other MOOCs in the same area. As a result, he found additional MOOCs from other universities which he considered useful to support his on campus teaching. From that point onwards, he began using several MOOCs in his course, not just the one he co-authored, using a flipped classroom approach. For specific topics, he would recommend his students to complete specific parts of different MOOCs and would also organize side discussions around the contents of those MOOCs in class.

The TU Delft MOOC which he co-authored is also used in the classroom. The course provides students with a first introduction to the physics of water systems and their role in climate. It includes knowledge clips, movies, exercises, and exam assignments. MOOC participants have the opportunity to discuss course materials with fellow students and the course team. Interactive feedback video sessions are also provided in which lecturers discuss issues raised by students.

Impact

The use of MOOCs within classroom activities can be beneficial for both teachers and students, in many ways: it can provide high quality structured activities and resources for students to learn; teachers in their courses can reuse it as materials to watch and read before class or after class to reach a deeper knowledge. MOOCs from different providers can be reused in campus education, both in bachelor and master courses to support teaching and learning. Both teachers and students can have important benefits with this practice. In fact, students can save money with course materials and get in touch with different knowledge and research from different institutions. Teachers also benefit from international exposure and interchange, and get good quality learning resources. As a result, the quality of the course can improve one year after the other.

What you need to replicate the practice

In order to use existing MOOCs in on-campus activity, educators need to be able to search for and select MOOCs which feature good and useful content, learning activities and whose learning outputs match the ones in their campus-based courses. The resources and activities of those MOOCs can be used in the different parts of your campus course, but in order to be modified they must have been released with an open license that allows this. In order to use those MOOCs through a flipped classroom methodology, educators should have their students enrolling in the preselected MOOCs and use them as support materials in preparation of classroom-based discussions. At the end, educators should reflect and

evaluate with campus students the usefulness of using MOOC materials in the course: this would allow adapting the materials for the next rerun of your campus course.

To know more…

- Read more about the practice in this paper: Cabral, P.; Van Valkenburg, W.; Dopper, S. (2016). What have they done with the MOOCs?! The impact of MOOCs on Campus Education, presented at the EADTU Online, Open and Flexible Higher Education Conference in 2016.
- The MOOC Introduction to Water and Climate Course can be accessed at: https://online-learning.tudelft.nl/courses/introduction-to-water-and-climate

Practice 1.3: Implement "Open Flipped Classroom" teaching

Practice implemented by: Anna Förster, University of Bremen, Germany

Description of the practice

Anna Förster has revolutionised the introductory course on computer science for electrical engineers of the University of Bremen in Germany by converting it from a lecture-based course into an inverted classroom format. She has been rearranging the course structure: face to face encounters are organised as so-called hackathons, i.e. condensed and well-planned meetings arranged around practical exercises. For self-studying she has produced short explanatory videos and supporting self-study material that are available as OER online on both the university learning platform and on Youtube (https://www.youtube.com/channel/UCrTmm3wMlSlUU-O9Ritn-Pw).

The learning objectives of the introductory course in computer science include not only the theoretical basics but also practical exercises, such as "What do I have to do to make a light flash or a game work?". Students can more easily understand such processes by watching videos that can be reviewed multiple times until they are able to carry out the exercises independently. The videos are released as OER through a Creative Commons license that allows anyone to reuse them. The videos are a combination of studio recording and screencast, and jointly with self-study exercises facilitate a flexible elaboration of the learning content in terms of time, place and learning pace. In addition, instead of a weekly lecture, students take part in face-to-face team-based project work sessions, the Hackathons. These take place in a two-week rhythm through sessions of four to five hours of intensive work, for a total of six hackathons altogether per semester. In a hackathon, small teams of students work on collaborative programming exercises where they can clarify open questions and are supported by their teacher and tutors.

Impact

The lessons preparation time for Anna Förster has greatly reduced and a replacement in case of illness can be organised with relatively little effort. The collaborative deepening of knowledge between teachers and students during the hackathons enables immediate and flexible support, whereas the blended learning format facilitates the handling of the heterogeneous composition among the students (students with little or no computer science experience versus very advanced students, different language skills, and different professional employment situations) as they study at their own pace. Students learn to face challenges and solve complex problems together and independently.

What you need to replicate the practice

In order to convert a lecture into an inverted classroom format, you have to divide the material into small, discrete sections and develop related scripts for the videos. It is highly recommended to keep the videos as short as possible, at around five minutes. Thus, you have to condense the content to the absolute minimum. Please keep in mind that you can provide background readings or any kind of additional material. Flexibility is required when recording the explanatory videos, the principle is the simpler the better. Since you may have to make a

few attempts at the beginning until your video succeeds, set up a place where you have easy access and which requires little preparation. Apart from the videos of accompanying self-study exercises, additional learning material and team projects for the Hackathon has to be prepared. Finally, you have to set-up the online learning content including videos and self-study exercises within an online learning environment. Due to the Hackathon format, the assessment is delivered through a portfolio examination.

To know more…
- A more detailed description of the practice is at this link: https://www.uni-bremen.de/zmml/projekte/forsta-digital/fb01-grundlagen-der-informatik-i/
- A detailed article on the practice here: https://www.uni-bremen.de/fileadmin/user_upload/presse/Publikationen/update/2019/Update_1_2019_zweiseitig.pdf
- The videos on Youtube produced for the practice: https://www.youtube.com/channel/UCrTmm3wMlSlUU-O9Ritn-Pw
- More information on flipped learning methodology: https://flippedlearning.org

AREA 2. RELEASE YOUR TEACHING RESOURCES AS OER

Practice 2.1: Integrate course content with an OER slides playlist

Practice implemented by: Leonel Morgado, Universidade Aberta, Lisboa & Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal

Description of the practice

Leonel Morgado currently teaches at Universidade Aberta, the Portuguese Open University. A reputed scholar, he lectures and researches on programming and the use of virtual worlds as tools for learning and business, focusing on multi-user platforms. This practice started when he was still lecturing at Universidade de Trás-os-Montes e Alto Douro (UTAD), in northeast Portugal.

In order to help his students better understand the content of upcoming learning materials, Leonel produces six minutes long or less slideshows focusing on introducing the main course concepts. In the slideshows, he highlights the intended learning goals for each concept, and this helps students build their own learning path. There are three slide sets playlists, for two courses: Web Programming (4 slide sets), Software Development Lab (8 slide sets), Research Methods (1 slide set). The narrative is intentionally voiced by the lecturer, as this increases the level of personal authenticity.

These slideshows are then shared as OER with an appropriate open license and in an open-access digital platform. Originally, it was SlideShare. Later on, when that platform stopped allowing audio narratives, Morgado started publishing them on YouTube. His aim was to encourage public comments, but also to reach a wider dissemination.

The slide sets originally meant to support class interactions then evolved into audio-supported slideshows, and rather than being used as class records, they morphed into flipped classroom dynamics elements. This was maintained while the lecture transitioned into Universidade Aberta, a fully online university and slide sets were expanded, refined, and improved.

The time needed to create a playlist of narrated slideshows depends on the number of such resources produced but also on their content, media complexity, and media quality. Planning, preparing, scripting, graphics, rehearsing, recording, eliminating noise and audio editing, time adjustments, etc. implies that teacher's dedicate at least half a day per slideshow. But, using more advanced visuals and sounds could extend this significantly.

Impact

By using playlists of lecturer-narrated short slideshows, both teachers and students get important benefits. These slideshows provide students, colleagues, and the public in general with a perspective on the lecturer's intent as a complement with respect to the course contents. Using the lecturer's own voice enables a more human touch in distant and online learning contexts.

As pointed out by Leonel Morgado in his evaluation of this experience, when applying this approach teachers are encouraged to rethink and identify the core aspects, concerns and

perspectives in each cluster of course content. This is due to the short duration of the slideshows which forces them to focus their approach.

On the other hand, students get a direct insight on what characterizes and justifies the teacher's perspective on given topics. This may contribute to improving the framing and better support the learning effort. In addition, the resources produced allow prospective students and the public to quickly grasp the relevance of the course. Without having to enrol, they have access to the content and the approach used in the course with a degree of detail far superior to a syllabus.

What you need to replicate the practice

In order to replicate this practice, you need to be able to use video publishing websites and create slideshows. This can be done with many tools, including PowerPoint. It's also important for you to know how to time slides to match recorded audio. Also make sure to know how to record audio and edit it for crispness and noise reduction.

Start by creating a playlist on a video-sharing website (e.g. YouTube). Then, cluster parts of your study materials and activities, framing your goals, perspectives, and advice for each cluster. Subsequently, prepare a slideshow and a script for that particular framing. Record your reading of the script. Perform audio cleanup (noise reduction) and editing (cut out long spaces, clicking noises, etc.). After that, insert the audio in the slideshow, time it to the audio, and save as a video. Finally, publish your video in the video-sharing website and include it in the playlist.

To know more…

- Morgado, L. (2016). Desenvolvimento de Software [video playlist]. YouTube. https://www.youtube.com/playlist?list=PL6CParGm9W65sMQdmPJ8D5MQjLZoLNFcd
- Morgado, L. (2016) Funcionamento dos servidores HTTP [video playlist]. YouTube. https://www.youtube.com/playlist?list=PL6CParGm9W651muXp5kraTHti0pHVsiWV

Practice 2.2: Transform your course into a MOOC: the AMMIL methodology

Practice implemented by: Juan Quemada, Universidad Politécnica de Madrid, Spain

Description of the practice

Professor Juan Quemada has been teaching software engineering in the Telecommunication Engineering School at the Universidad Politécnica de Madrid (UPM) for many years, and in 2013 was approached by the Spanish MOOC platform, MiriadaX, with the request to develop a MOOC titled "Design in HTML, CSS and JavaScript of Web and FirefoxOS Apps". Juan took the challenge, and started a deep revision process of the concepts and activities of his course, so as to distribute them in videos able to keep the learners' attention high and at the same time to replicate the intensity of the classroom teaching. To develop the first MOOC, he worked around xx days, and the result was rewarding. More than 15.000 people registered, out of which 12.500 started the course and 2.500 finished, by completing all the 70 learning micro-learning activities. All in all, over 200.000 persons have registered in 8 editions offered since 2013.

Three years into the process, in 2016 Juan and his team have consolidated the lessons learnt through this transition from a course to a MOOC in the AMMIL methodology (Active Meaningful Micro Inductive Learning), aimed to improve the quality and effectiveness of self-learning materials used in MOOCs, flipped classrooms and online courses. This methodology has proven able to minimise students' effort to achieve a given set of learning objectives, by dividing these into micro-learning objectives that need to be addressed by each activity within the module.

From a technical viewpoint, Juan has developed the so-called SAGA Recording Studio, a mobile recording studio through which professors can record their MOOCs videos in an agile and efficient way. The system has a number of innovative features: the videos don't need post-production, opening and closing videos are inserted automatically, the lecturer sees what's being recorded while he records, the recording can be repeated if necessary with a small effort, and it can be run without the need of technical support.

Impact

The AMMIL methodology was assessed through two MOOCs and an on-campus course of the Bachelor's Degree in Telecommunications Engineering at the UPM. Overall, the results of the student surveys suggest that the MOOCs created following the AMMIL methodology were useful and that students would take more courses created following this methodology. Overall, 89.8% participants of the MOOCs studied the modules following the order outlined by the teachers, rating the videos as the most useful resources, followed by the slides used within them. The least useful resources were considered to be the online forums.

What you need to replicate the practice

First, you should define the course learning objectives (LOs) in a way that each one can be addressed in one module, and structure the MOOC accordingly. In parallel, defining the module evaluation tools (or projects, if the course follows a project-based learning methodology) is a fundamental starting point. Then, you should divide each module into activities, each activity being associated to micro-LOs, and the union of each micro-LO must cover the overall module LO. Proper examples for each activity should be defined, the resources should be created (slides, documents, evaluations) assuring coherence among them, checking that everything that is explained is evaluated, and that everything that is being

evaluated has been previously explained. as a last step, you can start recording, but only when the structure of the course has been properly defined and the version of the generated materials is mature enough.

To know more…
- See the AMMIL methodology explained in details here https://innovacioneducativa.upm.es/saga/metodologia-ammil
- Check this paper: J. Quemada, E. Barra, A. Gordillo, S. Pavon, J. Salvachua, I. Vazquez, S. López-Pernas (2019) AMMIL: A METHODOLOGY FOR DEVELOPING VIDEO-BASED LEARNING COURSES, ICERI2019 Proceedings, pp. 4893-4901.

Practice 2.3: Create an OER-based module for teaching foreign languages

Practice implemented by: Dr Julia Titus, Yale University, USA

Description of the practice This practice, developed by Dr Jula Titus in Yale, is focused on producing and sharing open educational resources (OER) for use in foreign language classrooms at varying levels of proficiency through an openly accessible website. In this particular practice, OER were developed that are dedicated to teaching Russian through poetry by using the most celebrated Russian poems. Each poem is composed by the text itself, additional background information, a glossary of terms, a series of exercises, an audio file of the poem, and access to detailed information relating to the poet (see the website relating to this project). The project is completely open and easily adaptable to other foreign languages, and it can be used in a variety of academic settings, from traditional classroom setting, to a blended classroom, to an online learning setting. Dr Titus is passionate about her field and wants to provide an open opportunity to gain the wonderful rewards that come from reading literary masterpieces in the original as part of learning a foreign language. This practice makes this a reality.

Impact This practice now provides both a specific, open resource for engaging with Russian poetry and an adaptable resource for others designing foreign language learning materials. This practice was nominated for a national award for Best Contribution to Language Pedagogy by the American Association of Teachers of Slavic and East European Languages (AATSEEL). Reading short poems supplemented with supported materials online and glosses allows the learners to have an authentic and meaningful foreign language experience increasing learner motivation and leading to better learning outcomes.

What you need to replicate the practice To replicate this practice you need to first develop foreign language learning materials (text, audio, and interactive content/formative assessments) centred around literary masterpieces in the original language. Use the Russian poetry learning materials as an example to adapt from. Secondly, code the materials by the difficulty of comprehension in order to provide direction to users of the materials. Finally, you will need to share these learning materials as open, creative commons licenced open educational materials. To do this you will need to know how to apply a CC license to teaching resources and recognize the respective requirements and restrictions of a licence.

To know more… • The website for this practice: http://russianpoetry.yale.edu/index.html • Titus, J. (2017). Using Poetry in a Foreign Language Classroom. In Conference proceedings. ICT for language learning. 10th Edition (pp. 476-481): Pixel.

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https://opengame-project.eu/ @OpenGame_eu

AREA 3. USE OER PRODUCED BY OTHER EDUCATORS AND EXPERTS

Practice 3.1: Switch from a commercial textbook to an open textbook

Practice implemented by: Dr James Brunton & Patrice Byrne, Dublin City University
Description of the practice Dr James Brunton is Chair for the open education, online DCU Connected Psychology Major programme in Dublin City University. This open access programme has flexible progression routes for students in order to widen participation in higher education and so attracts those whose life load would not allow them to attend a full-time or even part-time on-campus programme. The programme team is continually seeking ways to further remove barriers to both access to the programme and to engagement with learning while on the programme. Up to the 2017 academic year, the Psychology Foundation module on the Psychology Major programme used a commercial textbook (Gleitman et al., 2011) to compliment the online learning materials provided by the programme team. For this module this represented an additional cost to students. From the 2018 academic year a switch was made from this commercial textbook to Stragor and Walinga's (2018) open textbook: Stangor, C. & Walinga, J. (2018) Introduction to psychology – 1st Canadian Edition, B.C. Open Textbook Project, British Columbia. This textbook was selected because it was high quality in terms of content and structure, and was sufficiently detailed to replace the textbook that had been used. As with every open textbook, this one is accessible on the web at no cost. This change from using a commercial textbook to an open textbook makes this module a zero textbook cost module and eliminates any issues with students access to the required textbook due to cost or lack of access through the institutional library.
Impact This practice has changed the module into a zero textbook cost module through its replacing of a commercial textbook with an open textbook. Students do not now encounter any issues with access to the required textbook due to cost or lack of access through the institutional library. The success of this practice in this module has opened the door to, and strengthened the case for, the replacement of commercial textbooks with open textbooks in other modules' reading lists.
What you need to replicate the practice The first step in replicating this practice is to review the use of a textbook in a teaching module, to assess the role the textbook plays in student learning alongside the module's other study materials. Some textbooks are vital to student learning on a module, others seem to be there just because there is an assumption that a module should have an assigned, required-reading textbook or textbooks. Where there is a genuine need for a textbook, the use of an open textbook will remove barriers to engagement that are inherent in the use of a commercial textbook. To locate open textbooks you need to locate repositories that contain appropriate open textbooks. Once in those repositories, identify specific open textbooks that are appropriate

for the associated module in terms of content, difficulty level, etc. Remember that, as an open textbook, you have the ability to amend the textbook to suit your context if necessary.

You will need to gain agreement from stakeholders for the change, for example other programme team members, line managers, and the students, which may require an explanation of the benefits of open textbooks and/or a defence of the quality of the chosen open textbook. Once you have both the open textbook and stakeholder agreement, you then need to embed the open textbook into the module curriculum.

To know more…
- The open textbook adopted in this practice: https://opentextbc.ca/introductiontopsychology/
- MOOC "Adopting Open textbooks"by the P2P University: https://courses.p2pu.org/en/courses/2675/adopting-open-textbooks/
- Some open textbook repositories to explore: https://openstax.org/, https://www.oercommons.org/hubs/open-textbooks, https://edtechbooks.org/, https://courses.lumenlearning.com/catalog/lumen, https://textbooks.opensuny.org/browse-by-subject/.

Practice 3.2: Transform your MOOC into an OER

Practice implemented by Domenico Brunetto, Politecnico di Milano, Italy

Description of the practice
Politecnico di Milano was the first Italian technical university to develop a MOOC platform, called Polimi Open Knowledge (POK). The platform was launched in August 2014 with two courses in Italian: Introduction to physics and PreCalculus. Like many MOOCs, PreCalculus, which aimed to recap the essential mathematics for enrolling in a STEM program in the university, was based on a set of copyrighted content, mainly videos. In the following 5 years, the content of the MOOC was used for different purposes within the university: within the design of a new blended preparatory course for first-year students, as a part of the "FlipMath" research project, and as part of the math course for the first-year Architecture students. These multiple uses showed clearly that the value of the MOOC contents was in their reusability, and that the fact that they were copyrighted was preventing their potential further use. Therefore, it was decided to change the licenses of all the MOOCs contents, moving towards Creative Commons licenses.

As the first step, the main authors were informed by the Educational staff and IT team about such a possibility and the procedure. Then, the authors decided to change the license of all the materials in the MOOC, such as videos and quizzes. Therefore, the decision process was quite easy. However, the most challenging part was to contact all the instructors of the MOOC explaining them the reasons for such decisions. In particular, the idea of "losing" something they have done was addressed with the idea of "spreading" knowledge through those materials. This a-posteriori process requires a lot of effort that could be avoided by more linear procedure, namely launching the MOOC as OER from the beginning.

From a technical perspective, it was necessary to check again for all materials in order to be sure that everything was consistent with the decision of going for a CC license, which means it was necessary for all materials to be owned by authors or reusable according to the chosen license. Then, all authors shared a document in which each of them declared to be willing to use a CC BY NC license. Then the MOOC was changed from all rights reserved to CC BY NC licensed, and all video uploaded in the MOOC playlist in Youtube were associated with a CC BY NC license in their description. Given that the MOOC is uploaded in POK, Polimi Open Knowledge, which is developed starting from OpenEdX, then it was quite easy to change the license of the MOOC because the platform supports CC licenses and makes it easy the change.

Impact
It is early to observe the impact of such a choice, since the MOOC is under CC-BY-NC license since the beginning of 2020. However, the instructors involved in the process are aware of the possibility to share materials under the open license. For instance, some of them are considering to change the license of another national project on social-mathematics. Thanks to the new adopted licence, now every Italian professor of mathematics can use the contents of this MOOC in their teaching, without having to ask permission but simply quoting the source of the content. At the same time, students taking the MOOC can save and reuse the course videos, text, and activities as much as they like.

About the MOOC team, the impact was related to some management issues, the preparation of the documents for the licenses, some minor changes in the POK platform and some changes in the video descriptions in the Youtube channel, given that the materials were developed just for the MOOC itself and didn't include other author's materials, so just MOOC's authors documents were required and no need to go back to editing videos or contents was needed. Also, being that Polimi has an Institutional team working toward Sustainability and being that the awareness about SDGs is quite popular within the MOOC team, motivation played an important role in jumping on board of the work needed, because it contributes directly to SDG 4, "Quality education for All", and the team is proud to support its achievement.

What you need to replicate the practice
First, you should consider adopting open licenses for your MOOCs from the beginning, whenever possible, because it is not always possible to go back to open when the MOOC is closed and built without this sensitiveness.
If you want to open up the licenses of an existing MOOC, these are the suggested steps:
- Contact all the experts to have their permission, one by one, by asking them to sign a document in which they declare to be willing to license their materials with a certain license, with date and signature.
- Check all contents used in order not to infringe any copyright within the materials (any formats, eg. Quizzes, videos, etc.)
- Assign the chosen license to all the materials, wherever they are published, in order to be easily retrievable by others and with clear indication about how to quote the original work, following the rules available on CC website.

To know more…
Read this paper on the differences and the relations between OER and MOOCS: Are MOOCs Open Educational Resources? A literature review on history, definitions, and typologies of OER and MOOCs by Christian Stracke et al.

Practice 3.3: Use open video tutorials to foster explorative learning

Practice implemented by: Florian Schmidt-Borcherding, University of Bremen, Germany

Description of the practice

Cooking recipes, repair instructions, tutorials on IT problems, gardening tips: in all these cases the use of free explanatory videos is a great source of informal learning, especially for young people. So why not use video tutorials to communicate academic-related content?

Florian Schmidt-Borcherding created, also reusing existing OER, teaching videos on empirical research methods within two courses of the Master's program in education in the University of Bremen, with the aim of supporting explorative learning. The videos are intended to be accessible as a tool for explorative learning throughout the entire course studies. Thus, they can be used by the students both within and after the course for the acquisition of competences in research methodology.

For this purpose, Florian introduces the students to the materials (videos & tasks) and to the basic principles of the face-to-face classes as support for online-based independent learning. Students work through both the videos produced by Forian and the ones suggested by him. Accompanying self-study exercises complete the flipped classroom and blended learning formats. During face-to-face meetings, questions regarding the video contents and self-study tasks are clarified and contents are deepened.

Impact

Video tutorials are a highly important source of information for young people. Accordingly, students use those videos to elaborate a topic and to find alternative solutions to a problem. This ability of independently researching and using information is a crucial part of the so-called exploratory learning which is a crucial competence of students in higher education. The use of explanatory videos within the scope of a course promotes those skills. In addition, students benefit from the format of the inverted classroom since the resulting open spaces are used to compensate for the large differences among students regarding their previous knowledge.

The feedback from students was generally positive. As far as the inverted classroom as a principle is concerned, the students rated the flexibility they gained in terms of knowledge acquisition, the self-study questions, the communication, and atmosphere during the face-to-face meetings as positive. Furthermore, the e-assessment results were significantly higher compared to previous years.

What you need to replicate the practice

As a first but crucial step, educators have to restructure their existing course structure in order to run it through a flipped classroom and blended approach, i.e. students watch the digital learning modules, they take the self-study exercises, all of this is discussed in the classroom. Then they can start searching for suitable videos on the respective topics. Florian Schmidt-Borcherding used course records and SPSS video tutorials provided by the YouTube channel "Statistics on the PC". Another possibility is to create video material for your needs. Then, educators have to design the face-to-face sessions (discussions and/or working on exercises, question and answer session, consolidation of content and objectives) as well as an

assessment format that ensures coherence between learning objectives, teaching materials and examination requirements.

Before starting the course, the online learning contents including videos and self-study exercises must be uploaded in an accessible platform. During the introductory session ("kick-off") it is important to introduce students to the materials (videos & tasks) and the flipped-classroom format. The exercises have to be completed on a weekly basis and the videos can be used for both preparation and support during the exercises.

To know more…
- Description of the course and its transformation: https://www.uni-bremen.de/zmml/projekte/forsta-digital/fb12-forschungsmethoden-und-forschungsdesign-i/
- A detailed report on the course can be found here: https://blogs.uni-bremen.de/resonanz/2019/10/14/erklaervideos_ew/

AREA 4. SHARE LESSON PLANS AND CONTENT WITH OTHER EDUCATORS

Practice 4.1. Co-produce OER through teachers' content clubs

Practice implemented by: Various educators at Baden-Württemberg Cooperative State University in Karlsruhe, Germany

Description of the practice
In order to share and receive content for their courses, educators at Baden-Württemberg Cooperative State University in Karlsruhe, Germany have the possibility to use the iShare methodology, which is based on the idea of so-called content clubs. These are working groups of teachers in related subjects that permanently team-up, creating sustainable working communities to support their teaching. Thus, by creating a content club you can benefit both if you want to develop a new course as well as if you want to improve and update your materials.

iShare fosters the synergetic creation and use of teaching material (released as OER) via the university Moodle platform in connection with the central OER repository of the universities in Baden-Württemberg (ZOERR). Within the content clubs, teachers are engaged and enabled to create and jointly publish teaching content and to discuss didactic issues. These content clubs are set up on the initiative of teachers in related fields that seek for exchange. Within the content clubs, experts share learning materials and provide peer feedback. Trust, acceptance and expertise are basic ideas of sharing learning materials which enable synergies and cooperation even across subject boundaries or institutions.

Impact
Collaborative creation of teaching materials saves time and resources, and increases the relevance and quality of your teaching and materials. Beyond the benefits of collaborative content creation and sharing, you will learn about Open Educational Resources. At Baden-Württemberg Cooperative State University after a build-up period of six months supported by the Education Support Center, the content clubs continue and organize themselves independently. Out of a total of 13 content clubs, 8 meetings were realized, 4 will take place in the near future. Within the content clubs, teaching material is constantly being shared and developed and the members are in active exchange about the didactic methods.

What you need to replicate the practice
Building a content club is very simple. First, of course, you have to find colleagues that are interested in sharing and exchange. For this purpose, you may promote the idea of sharing and collaboration across your faculty or your university etc. and provide information on the creation of a Content Club for your colleagues. Then you have to organise your first meeting with your interested colleagues, at least there should be two teachers. Optionally, you can decide to create the position of a curator who is responsible for facilitating the club and ensuring that new club members are integrated, that conflicts are resolved, and that the collegial spirit is being maintained. The club members should then determine and agree on

the content structure of the course they might want to develop and on the common main topics. In order to share and exchange course materials, a course space with content sharing option within your existing learning platform should be set up.

To know more…
- General description and contact for more information: https://www.karlsruhe.dhbw.de/forschung-transfer/schwerpunkte-aktivitaeten/ishare.html
- Information for teachers about this practice: https://www.karlsruhe.dhbw.de/esc/vernetzung-der-lehrenden.html#anchor-main-content

Practice 4.2: Share innovative teaching practices through an online repository

Practice implemented by: Ángel Fidalgo-Blanco, Polytechnic University of Madrid, Spain; María Luisa Sein-Echaluce, University of Zaragoza, Spain; Francisco José García-Peñalvo, University of Salamanca, Spain

Description of the practice
This practice, developed within the University of Zaragoza in Spain, relates to the sharing teaching innovation good practices among educators. Through a peer-reviewed process, teachers take a series of steps from the definition of the educational innovation project to the final description of the innovation and its main results, so that the practice can be replicated. The process relies on an online repository, which is a shared place for sharing the best university teaching practices, so that they are available and organized to facilitate their transfer to the entire university community and beyond. This facilitates the creation of a community around educational innovation.

The repository, developed by the GIDTIC research group in the University of Zaragoza, the Innovation Lab in Information Technology in the Polytechnic University of Madrid and the GRIAL research group in the University of Salamanca, allows educators from the University of Zaragoza to upload their best teaching innovation projects, and allows other teachers to improve these educational innovation, building on previous iterations of successful practices and not falling into the 'reinventing the wheel' pitfall. The repository is open to any interested actor and utilises a set of categories that permits the classification of the stored practices and makes complex searching procedures possible, which facilitates the reuse of the repository's accumulated knowledge and the transferability of educational innovations.

Impact
The repository is being able to help teachers apply educational innovation to their subjects through open access to knowledge. Knowing what other teachers have done in their subject area, finding information based on specific needs, or identifying experiences based on the results they wish to improve in the subjects themselves are some of the possibilities. Also, the repository is the base from which a robust and mature educational innovation community is being created. As individuals and teams from other institutions access stored practices, this results in both the spreading the knowledge within the academic community and an increase in the visibility of the host institution through its open sharing of the educational innovative good practices.

The impact of this practice is shown by the fact that the University of Zaragoza is using the process and repository as the basis of its institutional programme of teaching innovation, with more than five editions and a demonstrable increase in open knowledge based on innovation in education. Also, the practice supports the creation of a real open interdisciplinary education community for educational innovation. This community is consolidated around the CINAIC International Conference, involving educators and researchers from different educational levels and institutions.

What you need to replicate the practice
The repository is available to be used by anybody upon registration, in Spanish.

If a university wants to implement the practice, which can be done both at faculty or degree levels, the most important aspect is not the technology used to build the repository, but the definition of the workflow to build it, which should be divided in three phases: definition, deployment and exploitation. First, it is necessary to define the educational innovation workflow and the related ontology, taking into account the context (institution, faculty, degree). This phase could be carried out using a collaborative approach in which teachers collaborate to ensure that the workflow and the ontology covers their educational innovation needs. Based on the workflow and the ontology, the next phase is the installation and configuration of a new instance of the repository. It is possible to use an Open Source software such as DSpace or Drupal to create it. Furthermore, if there is historical data relating to local educational innovation practices, it is possible to populate the repository with this information. Finally, the exploitation phase will be based on the workflow previously presented, which usually includes the definition of the educational innovation project call, usually at institutional level; the communication of the process, the call and the repository to the community; and the opening up of the repository to others beyond the institution.

To know more…
- The website of the repository, openly accessible to everybody upon registration, is here http://www.buenas-practicas.net/

Practice 4.3: Produce OER playlists with the help of Artificial Intelligence

Practice implemented by: any teacher, through the X5-GON-Learn platform

Description of the practice
OER can be found by searching within one of the [many existing OER repositories](#), still searching for OER that are relevant for an educator's work is a non-trivial task that deals with quality control, granularity and language of the resource among other aspects. Even more difficult, is to make available to others the OER that educators find useful and usable, as well as the ones they produce.

Through the X5-Learn platform, a tool built in the context of the [X5-GON European project](#), teachers are able to find OER, assemble these into a playlist by using different Artificial Intelligence (AI) tools, and redistribute the playlist as a new OER.

X5GON is a state of the art Artificial Intelligence powered recommendation engine for OER materials. It uses a portfolio of human-centered artificial intelligence methods, algorithms and tools which are unobtrusive and away from the eye of the users, thus making it intuitive and easy to use, as well as making very clear the different usages of data, ensuring the necessary transparency. It works on two levels, first it crunches educational materials data, estimates the quality of these materials and difficulty levels and if connected into a network of OER sites, it calculates and recommends a material to the most appropriate learners in a way that it will benefit their learning journeys.

Impact
Currently the platform connects 117.781 resources to 2.2M users and has facilitated 10.7 user-material learning interactions. It connects data from 17 repositories, counting a total of 370.069 contents, which are automatically transcribed and translated with native AI so that effectively more than half of these are material translations into other languages, including Slovenian, English, Portuguese, Spanish, Catalan, French, and German.

Early evaluations of the system (in Slovenia and with the help of UNESCO) are underway. The expected impact should be something like: facilitating the reuse of OERs, which is one of the main problems when a teacher wants to use them: where to find it, which one to select, etc.

What you need to replicate the practice
The steps to create a playlist through X5-Learn are the following:
1. After registering in the platform http://x5learn.org, the teacher can create his/her first OER playlist and use the search engine to find resources connected with their interests and subjects in several repositories. When they find some interesting material, they can save it for later by including it to their playlist.
2. Artificial Intelligence helps through the process: since resources can be in different languages, automatic translation tools are available. Also, a tool called "Optimise Learning path" can help them organize the Playlist in a supposedly better pedagogic way. Also, teachers can understand how the AI works as transparency is encouraged.

3. When the Playlist is ready, the teacher can publish it: he/she has just created a new OER collection! The playlist can be shared with others or downloaded into an "mbz" format compatible with Moodle.

4. If the participants are working together (in a classroom or online) they can collaborate and build shared playlists, understanding how OER remixing works.

The practice can be replicated by following the different steps indicated. The platform can also be used with students, by supporting them in the process of developing their own individual or collaborative playlists.

To know more…
- OER metafinder: https://library.gmu.edu/oermetafinder
- Databases ingested: https://discovery.x5gon.org/databases
- X5LEARN http://x5learn.org/
- Some OER repositories:
    - Merlot http://www.merlot.org/merlot/index.htm,
    - OER commons: https://www.oercommons.org/oer
    - OER padlet: https://padlet.com/joerdis/repositories

AREA 5. USE OER TO ADDRESS LEARNERS' PREFERENCES AND LEARNING NEEDS

Practice 5.1: Co-design your syllabus with your students

Practice implemented by: Prof Amy Nelson, Virginia Tech, USA

Description of the practice

Course syllabi are the first contact of students with a course. They explain what the course is about, what the requirements are, what kind of assessments will be used, what the course schedule is, and what kind of activities and assignments are required. Most syllabi are prescriptive and written entirely by the instructor. They tend to marginalize students from courses they should be co-creating rather than taking.

To change this, and to make her course more learner-centered, prof Amy Nelson experimented with collaborative syllabus design. Instead of distributing a traditional syllabus on the first day of class, she invited the 20 students who enrolled in her course on Contemporary Russia to join a learning community. She distributed a preliminary syllabus and explained that they would work with her to complete it over the following two weeks. Prof Nelson proposed the Learning Objectives, module requirements, assessment methods, and ICT tools to be used. These items were then discussed and amended by the students. Through individual reflection and group discussion with the instructor, the class elaborated expectations for all stakeholders. Students also developed a set of collaboratively-built expectations for what the instructor's role should be and how she should facilitate class activities.

At the beginning, the idea of "collaborative syllabus writing" generated some confusion among students. But after an initial phase of buzz the group embraced the project, welcoming the opportunity to articulate their goals for the course and to generate (through a google document) a list of "Class-Generated Learning Objectives". Following this, the other syllabus components were discussed, resulting in a collaboratively built syllabus that then guided the course activities.

Impact

In a nutshell, co-building the syllabus puts students and their goals and concerns at the center of the pedagogical approach. It increases students' sense of ownership and belonging and their motivation throughout the course. It also incorporates students' diverse needs and learning preferences into the pedagogical structure of the course. Achieving consensus on expectations for grading, appreciation of the skills needed to succeed in the class, and on expectations for everyone's contribution to the learning community can take a large amount of class time. Depending on the time that can be devoted to this activity, the impact can be more or less profound.

What you need to replicate the practice

First, you should assess the appropriateness of this approach for your course, asking yourself to what extent the syllabus can be co-developed with students. Note that even in subjects where content is rather fixed, many other syllabus parts can be negotiated and co-developed.

Then, you should develop a preliminary syllabus upon which all stakeholders can collaboratively build. On the first day, distribute a preliminary syllabus and tell the class to work on completing it over the next couple of weeks. Following an organised framework, work with students to complete the syllabus, recognising that in some instances student input may also highlight gaps in their understanding of the topic(s) and so influence the development of the syllabus in that way as well. As part of the finalisation of the syllabus include discussion and documentation of teacher-student, student-student, and student-teacher expectations. Share the finalised, collaboratively built syllabus as the basis for the rest of the module, and adapt the module content and activities to the resulting syllabus.

To know more…
- The final version of the collaborative syllabus developed through this practice is here.
- Read more about this practice in a post by her author: http://openpedagogy.org/course-level/collaborative-syllabus-design-students-at-the-center/
- More about collaborative syllabus development here: https://www.hastac.org/blogs/ckatopodis/2019/02/19/writing-learning-outcomes-your-students

Practice 5.2: Use OER to support socialisation of perspective students

Practice implemented by: Dr James Brunton, Dr Orna Farrell, & Noeleen O'Keeffe, Dublin City University

Description of the practice
The full-time members of the Humanities Team (Dr James Brunton, Dr Orna Farrell and Noeleen O'Keeffe) in the Open Education Unit of Dublin City University academically lead a number of open education/access online programmes. These programmes provide flexible progression routes for students in order to widen participation in higher education and so attract those whose life load would not allow them to attend a full-time or even part-time on-campus programme. A key focus of the team is to support students as they transition into their higher education online programme in order to facilitate student success.

In 2017 the Humanities Team used a suite of OER created by the Student Success Toolbox project in order to address an identified learner need around supporting our new students before they begin their first academic year. We used these OER in the creation of a pre-entry socialisation course for adult, online higher education learners. The Student Success Toolbox project (2014-2016) was focused on addressing the problem of effective transitions and the foundations for student success during the initial stages of the study lifecycle with a specific focus on flexible learners. In the context of this project a broad definition was adopted of flexible learners, which includes adult learners engaged in part-time and online/distance learning. The particular focus of this project was on supporting flexible learners through key transitions in the early stages of the study lifecycle: from thinking about study, making choices, the registration process and through to the first few weeks.
As the OER developed by the Student Success were freely available the team was easily able to adapt them for a local course focused on addressing the identified need to easing learners into online learning. The pillars of the new course were the tools developed by the project that help new students to learn about their: readiness for study at higher education level; their available time for study; their support networks; their computer skills; and expectations around what producing academic work will be like were. Additional content (text, audio, and video) and activities were created around these interactive tools to flesh out the course.

Impact
Since implementing the pre-entry socialisation course in 2016-2017 new online students on the Humanities programmes have, in the month before they begin their studies, access to staff supports along with digital readiness and preparation tools that help to scaffold them as they prepare to study for the first time in an open education, online higher education programme.
The pre-entry socialisation course has received consistently positive feedback from students since it began, and now forms the backbone of a first-year student success initiative. This shows the way in which OER can be effectively utilised to develop good quality resources for students that have a demonstrable positive impact on those students.

What you need to replicate the practice

The Student Success Toolbox project website provides guides (available from http://studentsuccess.ie/publications/) to support learner transition into higher education, to develop a strategic plan for a pre-entry socialisation course. These should be used to create a strategic plan for how new students will be supported through a thoughtfully designed pre-orientation course. Once your course is designed, you can adapt the OER tools from the Student Success Toolbox project for your specific context. This does require some technical expertise, or access to staff with those skills. Develop your course using the OER tools and additional resources relating to your institution, for example, video or audio stories from current students or graduates and/or links to your institutional student supports. If possible add a facilitated element with a staff member acting as a point of contact for queries and worries in the weeks leading up to the start of the academic year. Finally, build the course into programme information and your communications with new students such that they know about the course and can make best use of this facility.

To know more…
- DCU Connected undergraduate programmes: https://www.dcu.ie/connected/Undergraduate-Courses.shtml
- Student Success Toolbox website: http://studentsuccess.ie/
- Github webpage with a number of the tools: https://github.com/studentsuccesstoolbox/StudentSuccessToolbox

Practice 5.3: Use OER for personalised and inclusive pedagogy: the path²in approach

Practice implemented by: Prof. Dr. Frank J. Müller, University of Bremen, Germany

Description of the practice

Since 2018 prof Muller is using the so-called path²in methodology in his course "Introduction to Inclusive Education", with the aim to provide students with individual learning paths in the area of inclusive pedagogy. Within the framework of teacher training and general studies, students discover explorative learning through blended learning OER modules. Furthermore, they contribute in shaping the course by introducing their own questions and ideas.

At the beginning of the course, prof Muller jointly identifies with his students 30 core topics related to inclusive pedagogy. In a next step, he and his students prepare these topics for explorative studying, by using existing interviews and text material from 18 researchers from the field of inclusive pedagogy. This material is then independently examined by the students on the basis of self-selected questions. The multimedia material (videos, podcasts, qualitative and quantitative OpenData offerings) supports different approaches to the 30 core topic and offers opportunities for in-depth work. The materials are developed interactively, with students raising their own questions on the topics, which are then integrated into the material. Due to the elaborated didactic concept and the free license, the created materials can also be used in other teacher training courses.

Impact

By creating a working environment of self-selected and changing teams, you will contribute to the students' independence and ability to cooperate. Working autonomously and independently on self-imposed questions creates a higher degree of comprehension for them and enables a deeper examination of the contents. Thus, core topics receive more attention through in-depth engagement than within chalk and talk lectures. Since the content is available online it enables students to access the topics and materials even beyond the course. The modularisation of the content and the publication of the materials as OER ensures that they can be independently reused by teachers. The methodology has been continuously developed since 2018, in February 2020 a podcast and a YouTube channel were added.

What you need to replicate the practice

To use this methodology within a blended learning course, you have to select core topics and research questions are jointly identified with the students at the beginning of the course. Then you have to enable the independent processing in self-chosen teams with the help of the multimedia teaching material that is available as OER licensed under a Creative Commons Attribution 4.0 International License. The results are presented and discussed in the seminar and new core topics and questions can be selected.

In order to implement the idea in an online learning format you have to select a core topic online and questions. To enable independent processing individually or in a team you will have to add background readings and additional material that you can find online. Then the students prepare their presentation independently. Presentation and discussion can be conducted within your learning platform or in thematic blogs (admission by contribution).

To know more…

- Course website containing detailed information and material: https://path2in.uni-bremen.de/
- General description of the practice: https://www.uni-bremen.de/zmml/projekte/forsta-digital/fb12-path2in-individuelle-lernpfade-in-die-inklusive-paedagogik
- An article on the practice https://www.pedocs.de/volltexte/2019/18062/pdf/Esefeld_et_al_2019_Inklusion_im_Spannungsfeld_II.pdf#page=31
- Resources of the practice on Spotify and Youtube https://open.spotify.com/show/2AHN0TgxwuisRuITwHY9xI https://www.youtube.com/channel/UCNJ3asCAbjk7wgfoVZ1m4IQ

AREA 6. CO-PRODUCE TEACHING RESOURCES WITH YOUR STUDENTS

Practice 6.1: Edit Wikipedia in the Classroom

Practice implemented by: Cathy Gabor, University of San Francisco (USF), USA
Description of the practice Cathy Gabor, Associate Professor in the Department of Rhetoric and Language at the University of San Francisco (USF) in the United States, co-produces open knowledge with students in a Rhetoric class by leading them in editing Wikipedia entries. In her course (NewMedia/YouMedia: Writing in Electronic Environments), which is focused on helping students to understand how to write academically to meet the university's expectations, students are asked to develop research questions, work through the research process, and process writing based on that research. In an effort to open up student work in line with open pedagogical principles, the assessment of her course was changed to a project-based method where students would work openly on a public platforms. This work involves students, working in groups, developing Wikipedia pages from scratch or making significant edits to existing pages. Before the start of each semester, Prof Gabor identifies a number of terms relevant to the class that either do not have a related Wikipedia page or have underdeveloped pages. Students are presented with a choice of four terms around which they form groups and begin the researching and editing process. Assessment of such an activity is complex and should reflect an understanding of wikipedia itself. For some entries, improvement means extending or expanding. for others it is more about streamlining and organizing. A fundamental aspect of the grade is the group element: group members are surveyed anonymously to find out if there are students who under or over performed.
Impact In 2017, Prof Gabor won the Innovation in Teaching with Technology Award at USF. Students have reported finding the project to be fun, interesting, and challenging. Prof Gabor has continued working on the topic and is currently working on the overlap between the Wikipedia code of ethics and the history of Jesuit rhetorical principles.
What you need to replicate the practice This practice can be used as a model to bring a Wikipedia editing project into any discipline as Wikipedia supports the creation of new pages or the editing of existing entries in any field. Such a project can be created from scratch or can replace or enhance existing traditional assessment activities. There are a number of possibilities and combinations for assessment, from individual presentations to collaborative papers that present the work done on Wikipedia. Once the project has been shaped, educators need to identify a number of terms that are absent or underrepresented in Wikipedia that are appropriate to their course. The number of terms can vary depending on the design of your project and on the number of students in your class. The identification of terms can also be a part of the project itself. Detailed

guidelines need to be developed for students around what it means to work openly in this way, how to mitigate the risks of working in the open, and providing the technical instructions on how to become a Wikipedia editor. WikiEdu (https://wikiedu.org/) is a good starting point for developing guidelines, and it is recommended that you edit some entries first to understand the process. You may wish to provide an opt out or alternative assessment for students who do not wish to work openly. If they have not already received guidance on working effectively in groups, students would also benefit from explicit support in this area. Finally, students form groups, or are placed in groups, and begin the process of researching and editing.

To know more…
- A detailed article describing the practice: https://wikiedu.org/blog/2017/11/21/teaching-rhetoric-in-digital-environments/
- A short video of a student explaining her experience of engaging in the Wikipedia editing project: https://www.youtube.com/watch?v=EgwSgblhY1s&feature=youtu.be

Practice 6.2: Make your course digital with the help of your students

Practice implemented by: Baden-Württemberg Cooperative State University in Karlsruhe, Germany

Description of the practice

If you are interested in improving your teaching digitally, have you ever thought about getting support from your students? SMILE adopts this approach through an innovative course concept, that aims to contribute to the development of an innovative and digital teaching and learning culture across the university. The novelty of the approach is that, through it, you as a teacher receive support from your students in digitising your teaching. Besides the overall concept, the resulting teaching materials can also be reused as they are available as OER. This includes both the materials provided for qualification as well as the produced learning objects. Smile is based on a reverse mentoring concept in which, out of the usual way, students support teachers. The approach is simple: students are trained to advise teachers in developing their digital teaching and innovative methods and in transforming their course materials in Open Educational Resources.

In order to accomplish that, the concept has two steps: 1) find (other) teachers who want to further develop their teaching in an innovative and digital way and need and want (!) help in doing so, 2) train students to be digital guides. A 5-phase cycle is repeated annually. After the selection of interested teachers, students are trained in innovative teaching methods and didactics for higher education and test themselves in the role of teachers and consultants within a two-semester course. Thus, students become multipliers for innovative and digital teaching; they acquire not only technical and didactic skills but also advisory skills. Furthermore, the support by students can be a great door opener for teachers towards more diversified teaching-learning formats.

Impact

The SMILE approach addresses the resource-related constraints in the introduction and implementation of digital learning offers. Students act as mentors and supporters. They first acquire theoretical knowledge of innovative teaching methods, independently develop online self-study units and design attendance phases in team-teaching procedures with activating methods. As consultants their tasks range from conceptual advice on the redesign of lectures (e.g. inverted classroom approach) to the review of OER and the revision of slides and other content forms. Often they also help with the development of an online self-study space, explanatory videos, slides with audio support, web-based training or activating teaching media. Future generations of students benefit from these refined courses and teachers acquire skills to further develop their teaching.

Since the first run in 2015/16, each year between 7-9 Lectures have been supported by 18-22 students per year across different faculties of the Baden-Württemberg Cooperative State University in Karlsruhe. Three other universities in Germany and Austria have already adopted the programme.

Through smile, the support students provide for the technical creation of e-learning objects, led to an acceptance of innovative and digital teaching methods by the teachers and serves as an enabler for teachers towards more diversified teaching-learning formats.

What you need to replicate the practice
First of all, the teacher has to implement the smile course (two semesters) in the study programme; Optional you can reuse the existing materials. Then the call for interested teachers (D-Teacher) within your institution has to be organised. In this regard you will have to communicate and promote the idea, the concept, and the call within the institution. When conducting the call applications are submitted by D-Teachers who would like to develop their teaching in an innovative and digital way and are looking for support. At the same time, up to 20 students of business informatics decide for the two-semester course "smile". During the qualification-phase (a seminar), students are trained in didactics for higher education in addition to their media technology knowledge to become so-called D-Guides (8 weeks, 5 ECTS). This is followed by the development-phase where one D-Teacher and a team of two D-Guides digitise an existing course within a cooperation project (11 weeks, 5 ECTS). The result is the so-called D-Lecture. Then the D-Teachers will conduct the refined course in one of the following semesters and the course will be evaluated. In a further cycle restarting from qualification-phase it can be improved.

To know more…
See the practice presented in the university website here: https://www.karlsruhe.dhbw.de/esc/hochschuldidaktische-beratung.html.

Practice 6.3: Use Open Data as teaching resources: a case from social sciences

Practice implemented by Katie Shamash, Juan Pablo Alperin & Alessandra Bordini, Simon Fraser University, Canada

Description of the practice
Open Data, intended as openly-licensed and accessible datasets, have a great potential for teaching, both because data-related competencies are increasingly required in contemporary jobs and because working with open data enables the development of transversal skills such as digital and data literacies, critical thinking, teamwork, and global citizenship.

In order to build the capacity of students to work with digital datasets, one activity focusing on data metrics and measurement was included in the 2015 course Technology and Evolving Forms of Publishing, part of the Master of Publishing Program of Simon Fraser University in Canada.
Students were assigned the tasks of choosing a dataset and an API of their choice (Twitter, VPL, Biblioshare, CrossRef, etc.), combining them using OpenRefine, and manipulating the data for analysis. The assignment specified that evaluation would behave focused on the value of the analysis carried out, the number of different types of data manipulations made run, the number of different tools successfully employed in the analysis, and the presentation of the results. The students chose to work with the Article Level Metrics (ALM) dataset from the Canadian Public Library of Science (PLOS), which contained information on the social media usage of every article published by PLOS between 2009 and 2014. Students cleaned, formatted, and analysed the dataset. Even though it was not required, the team published the results they deemed most interesting on The Winnower, an open-access scholarly publishing platform that employs open post-publication peer review. Also, they uploaded their cleaned dataset to FigShare, for it to be reused by other researchers. The publication on The Winnower brought the students into conversation with other interested academics, as well as with PLOS staff who provided further contextual information to better understand the data.

Impact
Overall, both the students and the professor felt the project was a success. As planned, students learned how to manipulate and analyse data, but more importantly, they overcame their fear of using open data. Moreover, they learned the value of open data itself and experienced how they themselves could, with little additional effort, contribute to this open data ecosystem and engage with the wider community. As students learned more about the project, it became important to deemphasize the first point (the value of the analysis) in favour of focusing the project around its exploratory aspects. This allowed students to feel comfortable experimenting with data analysis techniques and software, without getting caught up in finding meaningful results. The opportunity for students to work with a dataset of their own choosing—one relevant to their area of study, publishing—was also key to overcoming their initial fear and resistance.

What you need to replicate the practice
In order to implement such activity in their courses, teachers need to be familiar with working with open data or otherwise be able to support the students working with the heterogenous datasets they'll acquire need to get advice from somebody with these skills. The main steps

to set up such activity are a) plan the task clearly, keeping in mind that students might not know anything on open data use, b) pre-select and propose some datasets that could be used within the activity, c) select some tools that students can use to refine the data and d) make sure that students get support in their work, either by identifying some students that know how to use and analyse open data or to engage with a knowledgeable person in the university. Also, teachers should bear in mind that overcoming the students' resistance in working with this new method might be the main challenge, especially of those students with non-technical degrees and with little or no experience in maths, statistics, or computing.

To know more…
- A longer description of the case is available at Open Data as Open Educational Resources Case studies of emerging practice, report edited by Javiera Atenas & Leo Havemann.
- The publication resulting from the project is Alperin, J. P., Bordini, A., & Pouyanne, S. (2015). PLOS, Please publish our articles on Wednesdays: A look at altmetrics by day of publication. The Winnower. Retrieved from http://doi.org/10.15200/winn.142972.29198
- See these two related papers: Open Data as Open Educational Resources: Towards Transversal Skills and Global Citizenship, by Atenas, Havemann and Priego (Open Praxis 2015) and The use of open data as a material for learning by Coughlan (Education Tech Research Dev 2020).

AREA 7. OPEN UP ASSESSMENT TO REAL-WORLD CONTEXTS

Practice 7.1: Assess students' work by sharing it publicly

Practice implemented by: Dr Megan Gaffney & Dr James Brunton, Dublin City College, Ireland

Description of the practice

In the 2018-2019 academic year Dr Megan Gaffney and Dr James Brunton worked to introduce an open assessment component in the online, DCU Connected Psychology Major programme in Dublin City University. Following the open pedagogy principle of empowering students to create and share useful information, they sought to enhance the assessment design for an undergraduate developmental and educational psychology module. This entailed amending the module's third and final assignment such that it changed from being an applied assignment where students produced a 'mock' report for schools that was marked but not shared outside of the module, to one where they produce a communication to the public that will be shared openly/publicly.

The assignment brief asked students to first write a literature review on mental health and wellbeing in the young in the context of the steps post-primary schools take to protect adolescents from risk and increase wellbeing. Also, students were asked to create a communication, in the form of a digital information pamphlet or an infographic, that can be shared with the public, advising schools and educators on how to improve adolescent mental health and wellbeing. When submitting their assignment students have the option to grant permission for the team to publicly share these digital pamphlets and infographics under a Creative Commons CC-BY licence through a blog dedicated to sharing student work. All student work submitted is marked but only where they have opted to grant permission is the work shared publicly so that students retain control over their work.

Impact
The assessment ran successfully in its first year. The open assessment practice is now embedded into the Developmental and Educational Psychology module. The artefacts produced by students previously now become available as exemplars to future cohorts of students. Data collection from a study that is following and documenting the new practice has found that students find this type of assignment beneficial in that it makes them think more about where information comes from in society, and about how one must have responsibility for the knowledge one produces. Some concerns raised by students, for example, students wanted more explicit details on how their work would be shared, helped to shape the assignment document released in 2019/2020.

What you need to replicate the practice
To replicate this practice you first need to identify an existing assignment, or design a new one, where it is feasible and appropriate for students' work to be shared publicly. You will need to develop detailed guidelines for students on what they will do in the assignment, including information on open pedagogy principles and realistic information about what it means to share work publicly. Students need to understand copyright and Creative Commons Licences such that they can make an informed decision about placing an open

licence on their work. You should provide an opt-out for students who are not comfortable sharing their work publically, and ensure that you obtain explicit student permission for their work to be shared publicly. In order to share student work you will need to Identify an appropriate outlet or outlets for publicly sharing student work and decide whether staff or students will share the work. Always ensure there are supports available for students should any issues arise due to their work being publically available, and finally, promote the students' work to appropriate audiences.

To know more…
- The blog used to share student work: https://openpsych.home.blog/
- A first blog post on this initiative: https://thethirdspace.home.blog/2019/03/27/piloting-an-open-pedagogy-assessment/
- A second blog post on this initiative: https://thethirdspace.home.blog/2019/05/16/follow-up-on-piloting-an-open-pedagogy-assessment/

Practice 7.2: Implement OER-based renewable assignments

Practice implemented by: Robin De Rosa, Plymouth State University, USA

Description of the practice

Typically, the work produced by students in university courses ends up being thrown once it's marked by the teacher: David Wiley calls these "disposable assignments". On the other hand, with renewable assignments, learners are asked to create and openly license valuable artifacts that, in addition to supporting their own learning, will be useful to other learners both inside and outside the classroom.

Prof Robin De Rosa had assigned her students with the assignment to adapt existing materials to create a new open textbook, as part of their work in her course. The result was "The Open Anthology of Earlier American Literature", an OER anthology produced by the students. This renewable assignment includes collaborating with other learners to write new parts of the textbook, create "explainer" videos that can be embedded in the textbook, and modify learning materials to adapt them to learners' local cultures and needs.

The important difference with respect to traditional (disposable) assignments does nit stand in the assessment rubric used by the professor, but in a deeper difference: in Robin's course the assessment 'lives on' beyond the course, and it does 'make a difference' for other learners that will take that course in the future, and the content can be updated in future course offerings by other students.

Impact

As noted by David Wiley, "the most powerful part of renewable assignments is the idea that everyone wants their work to matter. No one wants to struggle for hours or days on something they know will be thrown away almost as soon as it is finished. Given the opportunity, people want to contribute something, to give something back, to pay it forward, to make the world a better place, to make a difference." (Wiley, https://opencontent.org/blog/archives/4691)

In Robin's case, co-producing an open textbook as the main assignment allowed for student contribution to the "master text" of the course, which seemed to change the whole dynamic of the course from a banking model (teacher download info from the textbook into their brains) to an inquiry-based model (students converse with me and with the text, altering both my thinking and the text itself with their contributions).

What you need to replicate the practice

In the case of Prof DeRosa, the process is divided in two main phases. A first phase based on retrieved public domain text to build the first version of the open textbook; and a second phase focused on editing and improvement of the open textbook with the involvement of the students. An online tool to support the creation process of the open textbook is necessary, such as Pressbook.

Once the selected public domain texts are edited and excerpted to be part of the textbook, the first draft version of the open textbook is made available, to be used with a new group of students inside a course. The students will work in the introduction of the texts previously

selected and edited. This introduction generally provides historical and biographical context which help students engage more fully with the primary documents. Finally, it is possible to define other activities around the primary text, such as short films, discussions, or assignments related to the primary texts, so they enrich the open textbook.

To know more…

- The open textbook produced https://openamlit.pressbooks.com/
- Description of the experience by the author http://robinderosa.net/uncategorized/my-open-textbook-pedagogy-and-practice/
- An interesting blogpost on renewable assignments: https://flexible.learning.ubc.ca/news-events/renewable-assignments-student-work-adding-value-to-the-world/
- David Wiley's post on Renewable Assessment https://opencontent.org/blog/archives/4691

Practice 7.3: Engage Students with Professional Communities of Practice

Practice implemented by: Leonel Morgado, Universidade Aberta, Lisboa & Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal

Description of the practice

Leonel Morgado teaches at Universidade Aberta, the Portuguese Open University. An internationally reputed scholar, he lectures and researches on programming and the use of virtual worlds as tools for learning and business, focusing on multi-user platforms. For Morgado, student participation and contribution in communities of practice of actual professionals, and developing collaboration and discussion between students and professionals, raises mutual awareness to realities and contexts of professional practice and its learning by novices.

In fact, a critical moment for software engineering students learning computer programming is when they must move from novice programming to advanced programming. Proficient novices often disregard the importance of approaching their code architecture and techniques to this new reality, where social-organizational aspects become prevalent: team-based development, vs. individual development; specifications that evolve over time, and maintenance becomes a necessity.

This teaching practice leads students into the wild world of professional practice, by organizing students' participation and contribution towards online communities of practice of software development professionals, and then leveraging that participation towards developing collaboration and discussion between students and professionals, with the ultimate goal of raising the awareness of students to the new realities and context of computer programming in professional practice.

The teaching practice extends for three phases of two weeks each. Initially students grasp the online community spirit and scope, and try to contribute usefully. In the second phase, they try to present and discuss a problem there. The final phase is for a retry, in case the first student presentation of the problem was inadequate to gather professional's interest.

Impact

By getting involved with actual professionals in communities of practices, students can get important benefits, such as realizing the relevance and value placed by professionals onto curriculum contents. They also learn how attention in the field must be earned with adequate framing of a problem.

Another important advantage of this practice is helping students to understand that there are hardly clear-cut answers to hard technical problems, rather conflicting or alternative perspectives and approaches. Most importantly, by applying this practice, students realize that being able to decide about techniques is more relevant to the practice than simply knowing how to apply a technique.

What you need to replicate the practice

In order to replicate the practice, you need to be able to follow and contribute to a community of professionals, and to present a problem successfully. Also, students must not be novices in the techniques and concepts, but rather at an intermediate level.

You should start by explaining to students the basics of online communities of professionals, how to be polite and how to distinguish between useful participation and unwelcome participation. After that, identify potential communities for their participation. Have students follow a community for two weeks, initially just observing, then not presenting problems but rather trying to help community members. Have students also prepare a succinct and to-the-point exposition of their assigned problems, which adequately presents them with a rationale that is interesting for professionals. Following that, provide feedback and review. Students post their problem exposition and debate. In case the reception was not positive, or the exposition was not adequate, provide students with improvement feedback so they can retry. Do an after-action review of the outcome with the group of students, to identify which aspects professionals valued the most and the least, which aspects they ignored or misunderstood and which insights or bias they exhibited.

To know more…

Morgado, L.; Fonseca, B.; Martins, P.; Paredes, H.; Cruz, G.; Maia, A.; Nunes, R. & Santos, A. (2012). Social networks, microblogging, virtual worlds, and Web 2.0 in the teaching of programming techniques for software engineering: A trial combining collaboration and social interaction beyond college. Proceedings of the 2012 IEEE Global Engineering Education Conference (EDUCON), Marrakech, 2012, pp. 1-7. 17-20 April 2012. doi: 10.1109/EDUCON.2012.6201129

Course description with examples: https://pt.scribd.com/doc/91382235/Metodologias-de-Programacao-III-Relatorio-da-Unidade-Curricular

AREA 8. SUPPORT STUDENTS TO LEARN IN THE OPEN

Practice 8.1: Collaboratively created online publications by students

Practice implemented by:
Prof. Dr. Hans W. Hubert, Prof. Dr. Anna Schreurs-Morét, Jun.Prof. Dr. Bent Gebert, University of Freiburg and University of Konstanz, Germany

Description of the practice
The main goal of the practice is to inspire students to collaborate and share their results and knowledge by jointly creating wiki texts within basic courses (i.e. introduction to the history of the arts, medieval studies). Writing and revising texts together and publishing them in a Wiki on the Internet increases the motivation of the students as well as the scientific quality of their seminar papers and exams. Instead of chalk and talk, the two basic courses aim to foster cooperative knowledge building by self-directed and explorative learning, collaboration and sharing among students. To this end, students collaboratively produce Wiki-texts within small groups and revise and comment on the work of their fellow students throughout the entire course.

Students have used two wikis to collaborate on central concepts of art literature as well as study contents on literature and culture of the Middle Ages. Different scenarios of preparation and collaboration are applied to increase the motivation of the students to actively participate. For instance in one scenario within an art history course, preparation is done before the face-to-face meetings by using analog and digital teaching materials while the texts are produced within these meetings by using etherpads. Another possibility is to elaborate the subject matter within the face-to-face meetings and to shift the collaborative writing to the self-study phases, as it was done in a German studies course. However, besides writing, all scenarios require the editing and evaluation of articles by fellow students as a prerequisite for successful completion of the course.

At the end of the course, the resulting contributions (texts, revisions and comments) to the wiki are graded and recognised within the ECT system. Grading is based on the quality that the groups have jointly achieved.

Impact
Thanks to this approach, students train themselves in collaborative writing within an university teaching-learning environment and they gain key competences in scientific online publishing and licensing issues. Through the writing, commenting and editing on scientific texts students experience that the roles of authors, readers and editors of scientific texts are in principle permeable and fluid. Participants not only discover the enormous gain of information and enhancement effects that are associated with such role changes, but also the great need for critical knowledge management.

All this leads to an increase of motivation and responsibility for the contents of the study programme and thus, more effective study and examination performance. Furthermore the quality assured online resources from students can be reused by future students in future courses.

What you need to replicate the practice

In order to ensure the collaborative writing process, you have to decide upon one or more collaboration tools (i.e. etherpad, blog etc.). Furthermore, a suitable wiki-software has to be selected. Besides the technical preparation, the content also needs to be adapted. Therefore, you have to first define the content to be created and second the assessment scheme. In a kick-off meeting at the beginning of the course you have to introduce the students to the software and tools and/or study materials.

Afterwards the collaborative creation of content can take part during the face-to-face meetings or during the self-study phases. During the face-to-face sessions you should support your students in licensing and other legal matters when it comes to the use of image material, citing or the reproduction of external content. Finally, students are engaged to comment, edit and evaluate their fellow students' or groups' writings.

To know more…
- Further information and contact details: https://www.e-teaching.org/praxis/referenzbeispiele/kollaborativ-erstellte-online-publikationen
- Insight into the corresponding publication: https://www.bcf.uni-freiburg.de/people/papers-rotter/rotter-2015-ida.pdf

Practice 8.2: Foster students collaboration through online dialogue

Practice implemented by: Everton Knihs, Universidade Presbiteriana Mackenzie, Brazil, Alicia García-Holgado and Francisco J. García-Peñalvo, University of Salamanca, Spain

Description of the practice
The WYRED methodology aims to support the participation of young people in digital society through online social dialogues focused on the development of research projects based on the concept of citizen science to answer the questions that arise during the dialogues.

It is based on the principle of giving students a voice. A key first step is the identification of the themes that concern the students in relation to the topics covered in a subject, a degree, and/or in relation to transversal topics in the university context. A process of engaging in open dialogue begins, through which the main points of concern for students are identified. Finally, the students work together to construct answers to the questions, usually through research projects.

The main idea is to conduct these dialogues in two steps, with one step situated inside each classroom involved in the practice and after that a second online dialogue among the students interested in the same topics occurs irrespective of their original classroom. Furthermore, the practice can be conducted such that it includes international and intercultural interaction and collaboration, whereby the local dialogues involve students in the same place, and online dialogues involve students not only from different places and countries, but also from different educational levels. The practice was implemented across nine countries in different types of institutions: primary and secondary schools, youth associations and universities. The methodology is complemented within the WYRED Platform, a safe and private online space to support anonymous communication.

Impact
Over the course of the WYRED project (three year project), the partners guided some 2000 young people to ask questions and carry out research about themes and ideas that affect and shape their interactive, performative and communicative worlds. Over a series of interlinked cycles, participants were supported in a consultative process, leading to the development of 300 bottom-up projects. The methods ranged from creative approaches such as scientific posters, radio broadcasts, videos, explorative Internet research to literature research and the use of social science methods such as interviews or surveys. In Brazil, four different classrooms were involved, with a total of 95 students between 18 and 33 years old.

What you need to replicate the practice
The implementation of this practice is divided in three phases: first identify the key topics, then develop local dialogues, and finally foster dialogues between classes. Regarding the first phase, it is necessary the application of a survey to identify the key topics for the students; it is possible to provide a closed list of topics. If the survey allows the students to share their own topics, a second round should be conducted with closed options, so all participating students can take into account the topics identified by their classmates. The teacher will identify the main topics chosen by young people. The number of topics selected depends on the number of students involved in the practice and the learning objectives. For example, for 95 students three or four topics could fit. In the second phase, each class is divided into groups

according to the selected key topics. In each class the teacher organizes a social dialogue focused on the selected key topics. Meanwhile, teacher should prepare the online spaces to support the dialogues among the student groups focused on the same topic and in different classes/subjects/degrees. One online space per topic. Finally, during the last phases, students will identify the research questions related to each topic through the online dialogue sessions. The teacher will be a facilitator in the discussion. According to the research questions identified in the previous step, the students will be organized in groups to work together following a project based learning methodology. Each group will select which questions they will answer and how they will answer them. The aim is to guide them to prepare their own (micro) research projects. At this point, it is possible to provide some guidelines related to the approach that might be taken to answer the questions. The results from each group will be shared in the online space (or in a more open way) to be used by other classmates and by the teacher to cover the different topics of the curriculum.

The WYRED methodology is supported by a Platform that ensures the anonymity of the participation. The Platform can be replaced by other online spaces in which students can discuss topics of interest, but that space should be thoughtfully designed and controlled to ensure student safety.

To know more...
- See the website of the initiative: https://grial.usal.es/wyredproject
- Knihs, E., & García-Holgado, A. (2020). Young people participation in the Digital Society: a case study in Brazil. Paper presented at the WorldCIST'20 2020, Budva, Montenegro.
- A. García-Holgado, F. J. García-Peñalvo, and P. Butler, Technological Ecosystems in Citizen Science: A Framework to Involve Children and Young People, Sustainability, vol. 12, no. 5, p. Paper 1863, 2020.
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Practice 8.3: Use social media to build an open and collaborative learning environment

Practice implemented by: Diana Manhiça, Instituto Superior de Artes e Cultura - ISArC, Mozambique & José Bidarra, Universidade Aberta, Portugal

Description of the practice Diana Manhiça is a Mozambican expert on media art and also a Video producer and director. José Bidarra is a Portuguese reputed scholar on educational media which teaches at Universidade Aberta and has co-designed the institution's virtual pedagogical model, which has been the quality reference for online learning in the country for a decade. In addition, he is also a professional photographer and a TV director. Both Diana and José consider OER and social media need not be defined as "essential tools" or "advised methodologies" but rather as contemporary creations whose diverse forms are strategic for education. The attitude of all students during this immersive experience was very positive and the resulting motivation clearly improved their learning process and outcomes. The use of Facebook and OER was carried out in a public institution of higher education in the surroundings of the capital - Maputo - during the first semester of the academic year of 2018. The context was a class of 23 students enrolled in the 3rd year of the degree on Cinema and Audio-visual, an undergraduate course with a total duration of 4 years. The practical course (workshop) was called "Introduction to the Co-construction of Film History(ies) in Mozambique" and essentially addressed issues of "history" as a constructed narrative of memory, collaborative and democratic processes. The subjects' (students) perceptions about the use of active methodologies, digital tools and mobile teaching-learning resources, was the object of research, which took place during the 16 weeks of the workshop, the whole duration of the semester. Facebook was used to motivate students and facilitate curriculum engagement: The sequence of steps was essentially: 1. Introduction by each student (describing personal interests); 2. Presentation (by the lecturer) of short videos to be discussed online; 3. Production of short critical views (by students) on specific topics (online resources); 4. Peer review and discussion of critical views (moderated by lecturer); 5. General feedback on lecturer marked assignments (face-to-face follow-up). Open resources used included text, video and quizzes integrated with social media.

Impact The main result of this teaching practice experience was the adoption of an innovative model that met the expectations of a new generation of students (who have "grown up digital"). In fact, the attitude of all students during this immersive experience was very positive and the resulting motivation clearly improved their learning process and outcomes. It should also be highlighted how the combination of social media and OER with predetermined learning objectives effectively resulted in giving more relevance to the learning experiences. Students showed also better performance in the attainment of their learning objectives and in demonstrating the intended competences.

What you need to replicate the practice No special competences are needed to replicate this practice besides having standard teaching abilities and basic digital literacy. Teachers should take into account potential distractions when using Facebook.

Start by designing a full semester curriculum week by week. Then proceed to introducing activities and workshop tasks (every 2nd week). Setup social media platforms and interaction (Facebook, WhatsApp). Follow-up on communications and moderate the interaction. Don´t forget to give constant feedback and continuously assess the students performance using a portfolio evaluation methodology.

To know more…
Manhiça, D. & Bidarra, J. (2019). Exploring the use of Facebook in the classroom: The case of a workshop on the history of Cinema in Mozambique. OOFHEC 2019 - the Online, Open and Flexible Higher Education Conference, EADTU, Universidad Nacional de Educación a Distancia, Madrid, 16-18 October 2019.

4. OPEN EDUCATION COMPETENCES FRAMEWORK

Analysing the cases presented above has helped identifying what specific competences are needed in order to put these approaches at work: we have structured these competences in a framework that we present here below. A competences framework can be understood as a 'containing structure' for descriptors of acquired formal knowledge or enhanced knowledge and skills along the career of a professional [31], an educator in our case. Along these lines, the OpenGame open education competences framework provides an overview of the knowledge, skills, and attitudes that educators should master in order to teach in the open.

The framework consists of eight key competences organized in two competence areas, OER and Open pedagogies (**¡Error! No se encuentra el origen de la referencia.**). Each competence is composed by knowledge and a set of specific skills. Regarding the attitude, the following is shared between all the key competences: *Be ready to openly share one's work and to use the knowledge created by others and openly distributed in order to improve access, participation and quality of teaching and learning.*

Finally, we note that open education competences and digital competences - intended as the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society [32] - are closely related. For example, the creation, revision and remix of OER is related to the competence area 3 "Digital content creation" of the European Commission's Digital Competence Framework for Citizens (Digcomp 2.1) [32] as well as to the area 2 of the DigCompEdu [30] "Digital resources". Furthermore, other areas of open education are related to the DigCompEdu framework, also when these are not directly focused on open approaches. For this reason, the OpenGame competences framework includes digital competence as a prerequisite.

Competence area	Competence	A. Attitude	B. Knowledge	C. Skills
1. OER	**1. Use open licenses**	Be ready to openly share one's work and to use the knowledge created by others and openly distributed in order to improve access, participation and quality of teaching and learning	Understand the (comparative) advantages of using open licences and know the existing open licences types	1.1. Know how to apply a CC license to teaching resources 1.2. Recognize teh respective requiremenets and restrictions of a licence and know how to determine whether a resource has one
	2. Search for OER		Know the major OER repositories and be able to identify those that are the most suited to your needs	2.1. Find OER that are relevant for own teaching 2.2. Assess materials within existing OER resources in order to use them
	3. Create, revise and remix OER		Know the different options for adaptation of an OER (translation, illustration, accessibility, contextualization, etc.)	3.1. Create an OER, taking into account the specificities of licences as well as its potential for reuse (format, language, granularity) 3.2. Revise an OER, taking into account the specificities of licences 3.3. Create an OER composed of various OERs, taking into account the specificities of licences
	4. Share OER		Know reputed OER repositories most suited for OER creators and cocreators to disseminate their creations for wider impact	4.1. Identify relevant OER repositories and publish your resource 4.2. Share your resource through social media and other means
2. Open pedagogies	**5. Design open educational experiences**		Know strategies on how to allow students participation in curriculum and learning design	5.1 Design engaging open educational experiences
	6. Guide students to learn in the open		Know about connected and network learning strategies, Be aware of the issues connected to online privacy and personal data management	6.1. Support students to learn through the open web (social networks, online communities etc.) 6.2. Provide guidancer to students about online privacy and personal data management
	7. Teach with OER		Master knowledge related to 1, 2, 3 and 4 above	7.1. Support students in searching for and using OER (either collaboratively or individually) 7.2. Support students in producing OER (either collaboratively or individually)
	8. Implement open assessment		Know the comparative advantages of open assesssment and be aware of existing open assessment methods and tools	8.1. Deploy OER within an assessment (e.g. students analyse an open data set) 8.2. Guide students in doing their work in the public (e.g. blogging publicly) 8.3. Guiding students in producing OER for summative assessment

Figure 2. Open Education Competences Framework for Higher Education Educators

In the area of OER we have four competences and corresponding skills:

Competence 1. **Use open licences: Understand the (comparative) advantages of using open licences and know the existing open licences types.**

Skill 1.1. To know how to apply a Creative Commons licence to teaching resources.

Skill 1.2. To recognize the respective requirements and restrictions of a licence and know how to determine whether a resource has one.

Competence 2. **Search for OER: Know the major OER repositories and be able to identify those that are the most suited to your needs.**

Skill 2.1. To find OER that are relevant for own teaching.

Skill 2.2. To assess materials within existing OER resources in order to use them.

Competence 3. **Create, revise and remix OER: Know the different options for adaptation of an OER (translation, illustration, accessibility, contextualization, etc.).**

Skill 3.1. To create an OER, considering the specificities of licences as well as its potential for reuse (format, language, granularity).

Skill 3.2. To revise an OER, considering the specificities of licences.

Skill 3.3. To create an OER composed of various OERs, considering the specificities of licences.

Competence 4. **Share OER: Know reputed OER repositories most suited for OER creators and cocreators to disseminate their creations for wider impact.**

Skill 4.1. To identify relevant OER repositories and publish your resource.

Skill 4.2. To share your resource through social media and other means.

In the area of Open Pedagogies we have four competences and corresponding skills:

Competence 5. Design open educational experiences: Know strategies on how to allow students participation in curriculum and learning design.

Skill 5.1. To design engaging open educational experiences.

Competence 6. Guide students to learn in the open: Know about connected and network learning strategies. Be aware of the issues connected to online privacy and personal data management.

Skill 6.1. To support students to learn through the open web

Skill 6.2. To provide guidance to students about online privacy and personal data management.

Competence 7. Teach with OER: Master knowledge related to 1, 2, 3 and 4 above.

Skill 7.1. To support students in searching for and using OER

Skill 7.2. To support students in producing OER (either collaboratively or individually).

Competence 8. Implement open assessment: Know the comparative advantages of open assessment and be aware of existing open assessment methods and tools.

Skill 8.1. To deploy OER within an assessment (e.g. students analyse an open data set).

Skill 8.2. To guide students in doing their work in the public (e.g. blogging publicly).

Skill 8.3. To guide students in producing OER for summative assessment.

5. GUIDANCE FOR UNIVERSITIES ON HOW TO BUILD OPEN EDUCATION CAPACITY AMONG HE EDUCATORS

This handbook presents a set of real-life cases of open education practices in higher education contexts, connecting them to an original competences framework and underlying, for each practice what competences should a teacher possess in order to successfully replicate it in their own contexts.

The OpenGame consortium recognizes that building openness capacity among teachers is not a simple task. As noted by a recent JRC report, academics need to start from their teaching practices in order to find ways in which they can share and collaborate openly, and this must be accompanied not so much by new competencies but rather by a mindset shift [33]. Also, we note that openness is strongly connected with personal attitudes and preferences [34], and therefore generalist solutions should be avoided.

Still, we propose here some recommendations, inspired from the results of the consultations led by the OEF project[1] since its start in 2015, that can potentially increase the adoption of OEP within a university by improving faculty's capacities

- **Creation of an Enabling Environment.** Universities can play a critical role in supporting their teaching staff in the creation of open learning experiences for students, both through ongoing opportunities for professional development and by supporting in different ways the use of OEP and OER. What is important is the continuity of this effort, that should aim at creating an openness enabling environment, including clear guidelines on copyright and intellectual property rights (IPR), ICT support, financial and non-financial incentives for educators that embark in open projects, etc. Also, a reference structure within the university can help channelling the OER and OEP related actions in a coherent way.
- **Support Gradual Adoption**. Educators typically discover the benefits as well as the costs of openness starting from one aspect (often open content) and then they move to explore other openness areas. University decision makers and services in charge of teaching innovation should consider that the adoption of open teaching practices, similarly to the one of general digital practices, needs to be supported gradually, letting time and space for safe experimentation and making sure that different capacity building paths can be activated depending on the starting level of proficiency of educators.
- **Support Community Building**. Typically, educators start looking into the option of using OER starting from a recommendation from a trusted colleague or because they see this being done within trusted communities of practice. These close collaboration circles seem to be the necessary step to move towards open approaches, that ultimately rely on institutional and cross-institutional communities. Collaboration is an integral part of OEP and of OER creation, therefore the existence of communities that can support and maintain these collaborations is key.
- **Support Grassroots Experimentation**. In order to foster ownership of open practices among educators, institutional open education initiatives should be attentive and somehow build on the micro initiatives of the single educators: this would help open education sustainability beyond the necessarily limited funding of institutional projects.

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[1] See: https://rd.unir.net/pub/oef/.

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