GUIDE TO A RAPID ADAPTATION AND DIGITALISATION OF EDUCATIONAL CONTENT

Output 2
EDUCATIONAL CONTENT DIGITALISATION

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Contents

Introduction

Schools that had to transit their operations from the classroom to an online learning environment, due to the COVID-19 pandemic, had to support their teachers in digitalizing the learning content they used in the physical classroom. As the use of online learning environments in school education was not the norm prior

to COVID-19, this transition has tested the level of mastery of teachers' digital competences and knowledge.

Furthermore, teachers during similar crisis, will not only have to develop the appropriate content to use online, but also must find the proper digital tools, adapt to the online learning environment to successfully agree the desired learning outcomes, etc. It is, therefore, important to design and describe a set of processes that this can be achieved with and make it available to the educational community to use when the need arises.

The aim of this guide is to provide valuable information on how to successfully proceed in digitalizing learning content and utilizing it using online tools and platforms. The digitalized learning content will have to effectively facilitate the online learning process.

Digital Learning Resources

There are several definitions for what a Digital Learning Resource is. This guide has adapted the following definitions:

Digital learning resources include digitally formatted, educational materials like; graphics, images or photos, audio and video, simulations and animation technologies, that are used to support students to achieve their learning outcomes.

The term Digital Learning Resources (DLRs) refers to digital resources such as applications (apps), software, programs, or websites that engage students in learning activities and support students' learning goals.

Type of Digital Learning Resources:

1. *Simulation:* This resource aids teacher's explanation and allows learners to test out their ideas and experiment.

2. *Animation:* This can demonstrate processes which are difficult to describe or show in two dimensions.

3. *Quiz:* This allows learners to test their own understanding and gain feedback promptly.

4. *Electronic textbook:* All learners can access a copy of the relevant resources.

5. *Learning object:* This resource has been designed to meet specified learning outcomes and can be incorporated into and reused in a range of learning materials.

Digital resources are often made up of separate digital media including text, video, images and sound. These are the building blocks which are often used to make composite learning objects such as those displayed above. You may want to use the individual elements to make your own learning resources.

Online Learning

Online learning can be defined as follows:

The type of instruction that is mediated via the internet. Instruction may be synchronous or asynchronous and various technologies can be used to mediate the process. (Dabbagh and Bannan-Ritland, 2005).

Learning through the internet via devices that have internet access.

Digital Educational Content

It is clear by the definition of the online learning and given that the constant factor in all definition is the use of the internet, the digital learning resources must be appropriate for online use. This may be extended to digital resources that can be used in the context of online learning (e.g., a digital interactive schoolbook to be used as a resource in an online student project).

For the purposes of this guide, we will define the digital educational content as the set of digital learning resources to be used in the context of the online learning process of students. The digital education content should be developed considering the achievement of the learning objectives that the teacher has set.

A teacher may develop his/her own digital learning resources or explore, find and use Open Educational Resources.

Open Educational Resource (OER)

Open Educational Resources (OER) are teaching, learning, and research materials that reside in the public domain or have been released under an open license that permits their free use and re-purposing by others.

A similar definition is that OERs are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others.

Exploring existing OERs

There are several Open Educational Resources (OER) repositories available on the internet as part of an OER repository. The teacher will have to navigate through repositories that host OERs relevant to the subject they teach and to the curriculum they must align with. To be able to find the relevant OERs through a repository it is important to be able to identify keywords related to the topic and effectively use the filters provided.

OER REPOSITORIES

Repositories that host open educational resources from a range of publishers and sources.

Open Textbook Library
(link)

About: "Textbooks every student can access and afford. Open textbooks are textbooks that have been funded, published, and licensed to be freely used, adapted, and distributed. These books have been reviewed by faculty from a variety of colleges and universities to assess their quality. These books can be downloaded for no cost, or printed at low cost. All textbooks are either used at multiple higher education institutions; or affiliated with an institution, scholarly society, or professional organization. The library currently includes 721 textbooks, with more being added all the time."

Focus: Open Access Textbooks

License: "Creative Commons licenses. The library no longer accepts new open textbooks that include a CC ND (No Derivatives) license component. The vast majority of open textbooks have a Creative Commons license that allows for editing, adapting and making derivatives. We believe the ability to make changes to an open textbook is integral to its definition as open. That's why we no longer accept open textbooks that include a CC ND (No Derivatives) license component."

Sign-in needed for download? No

OER Commons - Open Textbooks
(link)

About: "From a single point of access in OER Commons, you can search, browse, and evaluate resources in OER Commons' growing collection of over 50,000 high-quality OER. Here are some curated collections to start exploring: Full university courses; Interactive mini-lessons and simulations; Adaptations of existing open work; Open Textbooks; K-12 Lesson Plans, worksheets, and activities."

Focus: Open Educational Resources.

License: Various CC Licenses

Sign-in needed for download? No

BC Campus OpenEd
(link)

About: Open Access Textbooks repository with all content available to read and download for free.

Focus: Open Access Textbooks

License: "Most licensed under a Creative Commons Attribution 4.0 International Licence, which means you are free to share and adapt the content, as long as you give appropriate credit, provide a link to the licence, and indicate if changes were made."

Sign-in needed for download? No

WikiBooks
(link)

About: "Wikibooks is a wiki-based Wikimedia project hosted by the Wikimedia Foundation for the creation of free content digital textbooks and annotated texts that anyone can edit. Initially, the project was created solely in English in July 2003; a later expansion to include additional languages was started in July 2004."

Focus: Open Access Textbooks

Licences: Various CC Licenses

Sign-in needed for download? No

The Orange Grove: Florida's Open Educational Resources
(link)

About: This collection offers open books and textbooks from many sources. They may also have non-restrictive licenses that allow for customization and derivative works.

Focus: Open Educational Resources.

License: Various CC Licenses

Sign-in needed for download? No

Merlot Open Textbooks Collection
(link)

About: "The MERLOT system provides access to curated online learning and support materials and content creation tools, led by an international community of educators, learners and researchers."

Focus: Open Access Textbooks ;

For OA Monographs & General Collections visit https://www.merlot.org/merlot/categories.htm

License: Various CC Licenses

Sign-in needed for download? No

Galileo: Open Learning Materials
(link)

About: "GALILEO Open Learning Materials brings together open educational resources throughout the University System of Georgia, including open textbooks and ancillary materials. This repository is administrated by Affordable Learning Georgia, an initiative of GALILEO and the University System of

Georgia which aims to reduce the cost of textbooks to students and contribute to their retention, progression, and graduation."

Focus: Ancillary materials, grants collections & open textbooks

License: Various CC Licenses

Sign-in needed for download? No

GoOpenVa
([link](#))

About: "GoOpenVA is a collaborative initiative that enables educational entities throughout Virginia to create, share, and access openly-licensed educational resources."

Focus: Open Access Monographs & Open Educational Resources.

License: Various CC Licenses

Sign-in needed for download? No

Manitoba Open Textbook Initiative
([link](#))

About: "Campus Manitoba launched the Manitoba Open Textbook Initiative in 2015. The goal of the initiative is to make higher education more accessible by reducing students costs through the use of openly licensed textbooks in Manitoba. Campus Manitoba and BCcampus have partnered to build a website that allows students and faculty to browse, view, and download open textbooks for use in their courses. The textbooks in our catalogue have all been created, reviewed, or adapted by faculty at post-secondary institutions in British Columbia."

Focus: Open Access Textbooks

License: Various CC Licenses

Sign-in needed for download? No

RMIT University OER - Textbooks
([link](#))

About: Listing of OER from various platforms.

Focus: Open Textbooks

License: Various CC LicensesSign-in needed for download? No

Open Library Ontario
([link](#))

About: "The eCampusOntario Open Library provides educators and learners with access to more than 250 free and openly-licensed educational resources."

Focus: Open Educational Resources

License: Various CC Licenses

Sign-in needed for download? No

OpenLibra
([link](#))

About: Internet platform for downloading free scientific and technical books.

Focus: Open Access Scientific & Technical textbooks.

License: Various CC Licenses

Sign-in needed for download? No

LibreTexts
([link](#))

About: "The LibreTexts mission is to unite students, faculty and scholars in a cooperative effort to develop an easy-to-use online platform for the construction, customization, and dissemination of open educational resources (OER) to reduce the burdens of unreasonable textbook costs to our students and society."

Focus: Open Access Textbooks & Open Educational Resources.

Subjects Section: Click here.

Licenses: Various CC Licenses

Sign-in needed for download? No

Worldreader
([link](#))

About: "Worldreader is a non-profit championing digital reading in underserved communities to help readers build a better world."

Focus: Open Access Books & Open Educational Resources.

License: Various CC Licenses

Sign-in needed for download?

OAPEN
([link](#))

About: "OAPEN works with publishers to build a quality controlled collection of open access books, and provides services for publishers, libraries and research funders in the areas of deposit, quality assurance, dissemination, and digital preservation."

Focus: Open Access Books & Open Educational Resources.

License: Various types.

Sign-in needed for download? No

DOAB
([link](#))

About: "The primary aim of DOAB is to increase discoverability of Open Access books. Academic publishers are invited to provide metadata of their Open Access books to DOAB. "

Focus: Open Access Books & Open Educational Resources.

License: Various CC Licenses

Sign-in needed for download? No

Collections of open educational resources from a single publisher or provider.

Open Book Publishers - Textbooks
([link](#))

About: Free online editions of every title in PDF, HTML and XML formats that can be read via the website, downloaded, reused or embedded anywhere.

Focus: Open Access Monographs & Textbooks.

Licenses: CC-BY

Sign-in needed for download? No

Open SUNY Textbooks
([link](#))

About: "Open SUNY Textbooks is an open access textbook publishing initiative established by State University of New York libraries and supported by SUNY Innovative Instruction Technology Grants."

Focus: Open Access Textbooks.

License: CC-BY

Sign-in needed for download? No

OpenStax
(link)

About: "High-quality, peer-reviewed, openly licensed college textbooks that are absolutely free online and low cost in print [and] low-cost, research-based courseware that gives students the tools they need to complete their course the first time around, and a new online math homework system with step-level feedback."

Focus: Open Access Textbooks.

Subjects Section: Click here.

License: Various CC Licenses.

MIT Open Courseware Online Textbook
(link)

About: "This page is an index to the online textbooks in MIT OpenCourseWare. Some of these online textbooks are open-licensed electronic versions of print books. Others are self-published online books, or course notes which are so thorough that they serve as an alternative to a conventional textbook."

Focus: Open Access Textbooks & Open Educational Resources.

Open Access: Various

License: Various CC Licenses

Sign-in needed for download? No

Saylor Academy Open Textbooks
(link)

About: "The open textbooks on this page include several titles published through Saylor Academy's Open Textbook Challenge and a collection of titles re-published by Saylor Academy in 2012."

Focus: Open Access Textbooks & Open Educational Resources.

Sign-in needed for download? No

University of Minnesota Open Textbooks

About: "The open textbooks have been published by the University of Minnesota Libraries Publishing and are licensed to be freely used, adapted, and distributed."

Focus: Open Access Textbooks & Open Educational Resources.

License: CC-BY

Sign-in needed for download? No

Creating Digital Educational Content

As indicated in the beginning of this guide, a teacher may either explore online repositories and find existing OER or create his/her own digital learning resources. Based on the definitions used in this guide, the digital learning resources are categorized as follows:

- Simulation
- Animation
- Quiz
- Learning Object

As a teacher must also consider all the digital resources that a student may need during the occurrence of the online learning, there are several more type of resources that may be included in the digital educational content such as digital textbooks, interactive books, multimedia, useful websites, etc.

From the above a teacher with the average digital literacy may be effectively supported in developing the following type of resources: *Animation, Quiz, Digital/Interactive textbook and, Multimedia*.

Developing Animations

Animations may have several different uses as part of an online lesson. They may be used to demonstrate a science experiment (even a big scale that would not be possible in a science lab), represent a natural phenomenon (earth orbiting the sun), used by students having been assigned with developing an animation as a result of a STEM project related to a rocket launch in space, etc. Online tools that a teacher may use or engage students with, to create digital educational content, in the form of animations are Powtoon, Animaker, Visme, Moovly, wave.video, Voki, Prezi and flipanim.

Developing Quizzes

There are multiple online tools to support the making and hosting of online quizzes. There are two main types of online quizzes used in teaching. The one is the traditional quiz where the student is given a set of questions (any type e.g., closed, or open questions) and answers individually. The second type of quizzes used are the online multiuser quizzes where multiple users are presented with questions that they have to answer and is usually accompanied by gamified features.

Individual Quizzes

For this purpose, any type of forms collecting tool may be used. Some of the commonly used tools are Google Forms, Microsoft Forms, SurveyMonkey, Typeform, etc.

The tools allow for multiple type of questions such as:

- Short answer
- Checkboxes/ Choice
- Dropdown
- File upload
- Linear Scale
- Multiple choice grid
- Tick box grid
- Likert Scale
- Rating

The data is collected by the tool and the teacher may access the results both individually but also collectively. All of them offer visual representation of the replies when possible (e.g., closed type questions).

Multiuser Quizzes

This type of quizzes allows for online synchronous multiuser quizzes that a teacher can engage students with and add an element of competitiveness occurring through the game-based approach and leading to increased motivation.

Commonly used tools to create and host such quizzes are Kahoot, 99math, and Quizzalize.

Developing Digital/Interactive Textbooks

As both the teacher and the students are used to learning and working with books in the classroom, it may be in some cases effective to utilize a digital and/or interactive textbook. For many EU countries, content transferring from the national curriculum textbooks is easy as they have already been digitalized and are publicly available by the local school education authority. The content of the digital textbooks with the content of the schoolbooks may be enhanced with the use of multimedia and interactive features (e.g., google map integration, mini game, pop-up question, student poll, etc.).

There are sone online tools to create digital textbooks such as Reedsy, and Google Docs, but also teachers commonly use Microsoft's OneNote, Calibre, Apple Pages, and Kindle Create.

Developing Multimedia

The teacher may create several types of multimedia educational resources such as videos, pictures, music, etc. Multiple tools may be used for this purpose depending on the case and more specifically on the type of the resource to be created.

Video Development

There are several types of tools that a teacher may use to develop videos and to some of them they are on average well acquainted with. Such an example are the commonly used Microsoft's PowerPoint and, the free to use with a Gmail account, Google Slides, that may export a video from the slides and the animation they include.

There are tools that are friendly to the unexperienced users and allow for the creation of animated content such as Powtoon, Animaker, Visme, and Moovly. Most of the tools are common with the tools that may be used to create animations as they offer features that accommodate both.

Picture Development

Teachers may create pictures again by exporting them from PowerPoint and Google Slides but also may use a more focused free applications such as Windows Paint, Windows Photo Editor, Photos Apple and or online tools such as Canva, Pixlr, Photopea, and PhotoKit but also famous software such as Adobe Photoshop that require a paid plan but belong under a big tech company suite which is might be available to some schools.

Music Development

Teachers may record their own audio or music files by default applications found across all digital devices (mobile phones, tablets, and portable computers), but also may utilize online tools to create music or initiate and set up a project to engage students with in an online environment such as PatternSketch, Soundation, and Online Sequencer.

Resources

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