

# Open Educational Resources

Yin-Chan Janet Liao

the **5Rs** Retain  
Reuse  
Revise  
Remix  
Redistribute

## Learning Objectives

- Define Open Educational Resources (OER);
- Identify types of OER, benefits of using OER in teaching and learning, examples of OER used in K-12 education, and platforms to search for and share OER.

As a teacher working in an elementary or a secondary school, it

## The K-12 Educational Technology Handbook

is very likely that you need to face a crucial reality - having limited time to deal with all kinds of school duties, including developing lesson plans, creating teaching materials, and documenting student learning progress, etc. This reality in K-12 educational settings could be particularly overwhelming if you are a beginning teacher. Luckily, with the advent of technology and the emergence of K-12 Open Educational Resources (OER), more free and quality resources become available for K-12 teachers. OER allow teachers to save the time creating teaching materials from scratch, yet still have access to materials that support student learning engagement. OER have created an extraordinary opportunity for educators to customize teaching and learning as well as sharing knowledge in various forms across communities, states, and even countries.

### Key Terms

#### [Open Educational Resources \(OER\)](#)

materials for teaching, learning, and research that people have free access with no cost and can legally retain, reuse, revise, remix, redistribute them

#### [Openness](#)

the level of license on educational resources which indicates different conditions, restrictions, or permissions users need to follow when they use or share the educational resources.

## What Are Open Educational Resources (OER)?

OER can be a wide variety of materials used for educational purposes such as videos, lesson plans, digital books, online courses, and teacher websites. Although there are slight differences among how people define and evaluate quality OER, the general understanding describes OER as openly licensed materials that provide users free access and permission for 5R activities:

Here are definitions and examples of the 5R activities teachers can engage in OER for their teaching and learning:

<b>5R Activity</b>	<b>Description</b>	<b>Example</b> <b>Let's say you found other teachers' lesson plans licensed as OER on teachers' websites. You would be able to...</b>
Retain	The right to make, own, and control copies of the content	download, duplicate, store, and manage the lesson plans
Reuse	The right to use the content in a wide range of ways	use the lesson plans in your class and post them on your class website
Revise	The right to adapt, adjust, modify, or alter the content itself	delete two instructional goals on the lesson plans

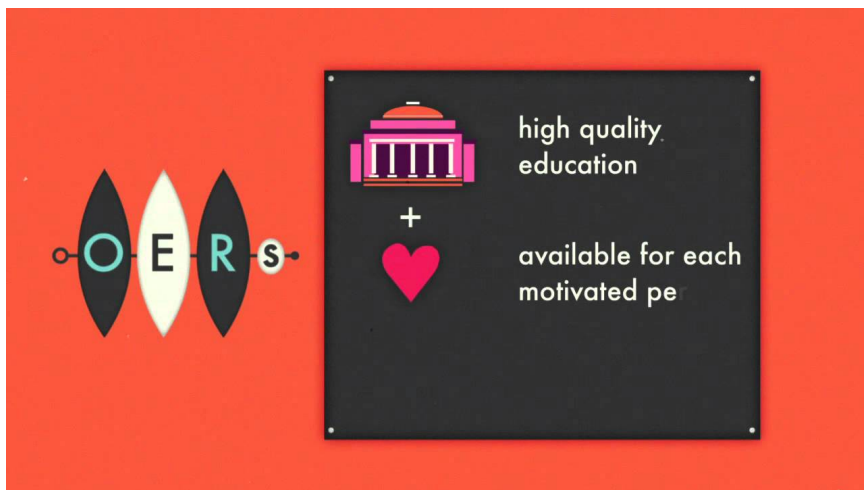
## The K-12 Educational Technology Handbook

5R Activity	Description	<b>Example</b> Let's say you found other teachers' lesson plans licensed as OER on teachers' websites. You would be able to...
Remix	The right to combine the original or revised content with other material to create something new	add a video and an activity to the lesson plans and make them your new lesson plans
Redistribute	The right to share copies of the original content, your revisions, or your remixes with others	give a copy of the original or new lesson plans to your colleagues in the school

*This material is based on original writing by David Wiley, which was published freely under a Creative Commons Attribution 4.0 license at <http://edtechbooks.org/-tFQ>*

## **Why Open Education Matters?** **“Education is SHARING”**

## The K-12 Educational Technology Handbook



Watch on YouTube: <http://edtechbooks.org/-Wd>

“The OERs - Open Educational Resources” by intheacademia is licensed under CC BY.

As described in the video above, there are many characteristics of OER that can be beneficial to K-12 teachers in supporting their teaching and professional growth, as well as student learning.

One of the important characteristics of OER is that OER must be **free** - both to give and to take. Imagine when teachers are motivated to put effort in their teaching preparation for instructional materials, many of them might need to start from scratch or pay out of their own pocket to purchase some existing resources created by other educators. However, teachers should not be dealing with this situation in a school environment that already has very limited time and resources for teaching preparation. With OER, any teacher can search for

## The K-12 Educational Technology Handbook

thousands of high-quality online instructional resources in a wide spectrum of content areas and get access anytime for free. When teachers commit part of their time creating and sharing open and free teaching resources with the education community, in return, the collective effort will allow them to save time and money on quality teaching resources for their own classrooms. For instance, instead of paying ten dollars to download a low-quality worksheet from ABC.com for a Math classroom activity worksheet, Mr. Johnson would be able to search on different OER websites and download three different worksheets with high reviews from other teachers for free.

Utilizing OER can not only save teachers' money, but also save their time to prepare for their teaching more efficiently. For instance, Ms. Williams, a beginning 5th grade teacher, can search for existing lesson plans other 5th grade teachers created that align with the same Math standards she wants to teach. Instead of creating a lesson plan starting with a blank document, Ms. Williams already has an idea what activities can be integrated in a lesson plan to address specific instructional goals by searching OER created by other teachers. From there, Ms. Williams can easily gather different ideas and activities she found from standard-aligned OER and create instructional materials for her own class.

In addition to saving teachers' time and money, OER can be useful and beneficial for teachers because they are **customizable**. Teachers are encouraged to take an advantage of this feature of OER allowing users to engage in 5R activities. With the permission to remix and revise, teachers have the **flexibility and choices** to change whichever parts of OER that do not apply to their classes can customize the content based

## The K-12 Educational Technology Handbook

on their own teaching needs and students' learning needs. For example, Mrs. Harrison downloaded a series of digital reading materials for readers in different levels from an OER website, including news and stories that she would like to let her 2nd grade students practice reading. Yet, it would be impossible for her to directly adopt all the materials in his class due to learners' various language proficiencies. This issue could be quickly resolved with OER resources as users are generally granted the rights to revise the content according to their own teaching needs. Thus, Mrs. Harrison can easily modify the difficulty level of a reading to offer a differentiated reading activity to her students. In addition, Mrs. Harrison could also remix the resources to fit her teaching needs. For example, she could create three folders (Beginning, Intermediate, and Advanced) in her Google Drive and categorize all the reading materials she found in those folders. Then, by continuously adding more reading materials in those three folders over time, she would be able to collect and customize OER resources to address a wide variety of learning preferences and needs of different groups of students.

Lastly, OER can also help teachers keep their instructional materials **stay current**. Compared to the traditional hard copy textbooks that K-12 schools usually replace on a multi-year cycle due to huge cost on replacement, teachers can update the content on OER anytime for free. Thus, OER is also particularly handful for teachers who need to meet new standards and instructional goals.

## Openness of OER

Anyone can search for and engage OER in the 5R activities because OER are made available under open licenses. [Creative Commons licenses](#) are commonly used for giving copyright permissions to the creation of OER. Creators can decide the **openness** of their OER by having their work licensed under different levels/types of Creative Commons license. Then, OER users need to follow the conditions of the licenses when they engage in the 5R activity. Here is a table showing the six levels/types of Creative Commons license with their conditions:

### License Types

### Description



Attribution  
CC BY

This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials.



# The K-12 Educational Technology Handbook

## License Types

## Description



Attribution-ShareAlike  
CC BY-SA

This license lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms. This license is often compared to “copyleft” free and open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use. This is the license used by Wikipedia, and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects.

# The K-12 Educational Technology Handbook

## License Types

## Description



Attribution-NoDerivs  
CC BY-ND



Attribution-NonCommercial  
CC BY-NC



Attribution-NonCommercial-ShareAlike  
CC BY-NC-SA

This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.

This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.

This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.

## The K-12 Educational Technology Handbook

### License Types

### Description



Attribution-NonCommercial-NoDerivs  
CC BY-NC-ND

This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially.

[\*“Six Types of Creative Commons Licenses”\*](#) by [Creative Commons](#) is licensed under [Creative Commons Attribution 4.0 International License](#).

## OER Attribution

*“Education is sharing”* is the key concept behind OER. While creators of educational resources give their permissions to others for using their original work for free, it is necessary for OER users to give credit to creators and attribute their original work when they reuse, remix, revise, and redistribute the work. In other words, attributing the creative work you used to its original creator is the premise of a respectful and legal use of OER.

Here are examples of an appropriate way to give attribution:

# The K-12 Educational Technology Handbook

Attribution of Original Work



"[Creative Commons 10th Birthday Celebration San Francisco](#)" by [tyol](#) is licensed under [CC BY 2.0](#)

Remember:

**Title?** "Creative Commons 10th Birthday Celebration San Francisco"

**Author?** "[tyol](#)" - linked to his/her profile page

**Source?** "[Creative Commons 10th Birthday Celebration San Francisco](#)" - linked to original Flickr page

**License?** "[CC BY 2.0](#)" - linked to license deed

Attribution of Modified Work



"[Creative Commons 10th Birthday Celebration San Francisco](#)" by [tyol](#), used under [CC BY](#) / Desaturated from original

Remember:

**Title, Author, Source, and License are all noted**

**Modification?** "Desaturated from original"

*"[Examples of Appropriate Attribution](#)" by [Creative Commons](#) is licensed under a [Creative Commons Attribution 4.0 International license](#)*

More information about OER attribution can be found here:  
[Best Practice for Attribution](#)

## Where Can K-12 Teachers Look for OER?

Here is a list of resources teachers can use to search for OER for teaching, learning, and their own professional development:

### General Search

- [Google Advanced Search](#) (Scroll down in advanced search and set "usage rights" parameters to "free to use, share,

## The K-12 Educational Technology Handbook

or modify”)

- [CC Search](#) (The CC Search tool automatically filters your search to find Creative Commons licensed resources)

### Image Search

- [CC Search](#) (You can pick a number of image sources you want to search across)
- [Wikimedia Commons](#)
- [Flickr](#) (You can search through content under each type of Creative Commons license)
- [Google Image](#) (Scroll down in advanced search and set “usage rights” parameters to be “Free to use, share, or modify”)
- [Pixabay](#) (Pixabay images are public-domain images that you can use freely for personal and commercial purposes without attribution to the original author)
- [The Noun Project](#) - Collection of CC Licensed Icons
- [Europeana](#) (Access to digital resources of Europe’s museums, libraries, archives and audio-visual collections. Not all the works are openly licensed so be sure to check for usage right)

### Video Search

- [YouTube](#) (Type in your search term followed by a comma and then “creativecommons” the videos returned are CC licensed. For example: World War 1, "creativecommons")
- [Vimeo](#) - post and search for Creative Commons licensed videos)
- [Internet Archive](#) - a great collection of old video and movie footage

## The K-12 Educational Technology Handbook

- [TED - Ideas Worth Spreading](#) (All TED videos are released under a Creative Commons BY-NC-ND license)
- [Al Jazeera](#) (various Creative Commons licenses)

### Audio/Music Search

- [Jamendo](#) - free music tracks licensed under Creative Commons
- [ccMixer](#) / [digccmixter](#) (music for videos, games, podcasts, etc.)
- [Free Music Archive](#)
- [SoundCloud](#)

### Education Search

- [Curriki](#) (a leading K-12 global community)
- [OER Commons](#) (search based on subject areas, education levels, and standards)
- [Gooru](#) (K-12 courses and instructional materials)
- [OpenEd](#) (K-12 Classroom Assessments, Homework, Videos, Lesson Plans)
- [ShareMyLessons](#) (search K-12 resources based on education levels and standards)
- [PhET](#) (K-12 simulations)
- [WatchKnowLearn](#) (K-12 free educational videos, various types of license)
- [Connexions](#) (modules that can be organized as courses, books, reports)
- [EDSITEment](#) (CC licensed K-12 lesson plans)
- [Feedbooks](#) (public domain ebooks)
- [Bookdash](#) (children's PDF eBooks and [audiobooks](#))
- [African Storybook](#) (children's eBooks in various

## The K-12 Educational Technology Handbook

languages)

- [GeoGebra](#) (free interactive Math materials)
- [CK-12](#) (standards aligned K-12 Math & Science resources)
- [Khan Academy](#) (K-12 Math and Science instructional videos)
- [Mountain Heights Academy](#) (course materials in high school STEM, Language Arts)
- [The Office of Superintendent of Public Instruction](#) (Secondary Math and ELA)
- [Siyavula](#) (open textbooks for high school Math and Science)
- [PBS Learning Media](#) (has different types of license)

### Complete Courses for Teacher Professional Development

- [P2PU](#)
- [OpenCourseWare Consortium](#)
- [Open Learning Initiatives](#)
- [Open Course Library](#)

### Practice: Let's engage in the 5R activities

Now, you have a general understanding of OER, including its definition, characteristics, and ways of use, let's begin to practice using OER and engaging in the 5R activities in two ways:

### **As a Taker - Get useful OER made by other people**

1. Identify your purposes/goals/needs of instructional materials you are looking for.
2. Search for openly licensed resources on different websites. It is a good start to search for OER from the list of resources provided above.
3. Get access to the resources you found and make sure they are openly licensed under Creative Commons which provides you the permission with stated conditions.
4. Get ready to reuse, revise, remix your OER.

### **As a Giver - Make OER for others**

1. Identify your purposes and goals of instructional materials you want to share.
2. Create a new material or revise and remix existing OER based on your purposes and goals.
3. Have your material licensed under Creative Commons:
  1. [Choose a type of Creative Commons license](#)
  2. Apply the license to the material you want to share
4. Redistribute your OER on one or more [websites](#) (e.g., Flickr, Vimeo, OER Commons).

## **Additional Reading Resources of OER**

- [Why Openness in Education?](#)
- [OER Mythbusting](#)
- [On Quality and OER](#)
- [OER Quality and Adaptation in K-12: Comparing Teacher Evaluations of Copyright-Restricted, Open, and](#)



[Open/Adapted Textbooks](#)

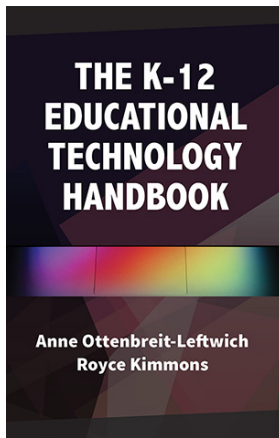
## **Suggested Citation**

Liao, Y. (2018). Open Educational Resources. In A. Ottenbreit-Leftwich & R. Kimmons, *The K-12 Educational Technology Handbook*. EdTechBooks.org. Retrieved from <http://edtechbooks.org/k12handbook/oeer>

## **Yin-Chan Janet Liao**



Yin-Chan Janet Liao is a Post-Doctoral Scholar of UChicago STEM Education at the University of Chicago. Janet received her Ph.D. from the Department of Instructional Systems Technology at Indiana University-Bloomington. She holds a M.S.Ed. in Learning Science and Technologies from the University of Pennsylvania. Janet's research areas focus on preservice and inservice teacher professional development for technology integration and computer science education in K-12 settings. Janet has taught educational technology courses at the undergraduate level. She has also served as a technology coach in preK-6 schools to support teachers' technology uses and computational thinking instruction since 2016.



Ottenbreit-Leftwich, A. & Kimmons, R. (2018). *The K-12 Educational Technology Handbook*. EdTech Books. Retrieved from <http://edtechbooks.org/k12handbook>



**CC BY:** This book is released under a CC BY license, which means that you are free to do with it as you please as long as you properly attribute it.