

# For a Racially-Just, Inclusive, Open, STEM education: The **RIOS Institute** imagines an Open Education as the radical idea that education should be affordable, accessible, equitable, inclusive, and relevant to everyone

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By asking “Open for whom,” RIOS imagines an Open Education as the radical idea that education should be affordable, accessible, equitable, inclusive, and relevant to everyone regardless of their background.

We envision classrooms which center students as co-constructors of the learning process, in an Open Science ecosystem which democratizes knowledge, tools, and access to information. Inclusive and socially-just science education must be the core framework for investing in tomorrow’s science. The RIOS institute provides resources to STEM education and organization leaders to implement social justice, equity, diversity, and inclusion-centered Open Education and Open Science pedagogy. RIOS supports *Thought Leadership* by providing funding and resources to working groups, builds *Leadership Capacity* through Learning Communities (professional development) and fosters *Cross-Sector Partnerships* connecting organizations and people to share resources and expertise.



Open Educational Resources by Ron Mader [CC BY 2.0]

## What are Open Educational Resources (OERs)?

Teaching, learning, and research materials in any medium—digital or otherwise—that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation, and redistribution by others with no or limited restrictions. (UNESCO).

OERs can include:



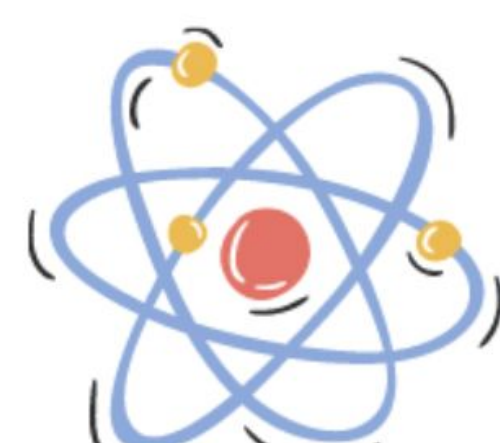
Open Source Software



Freely available curriculum (via websites or by the college)



Open Access publication



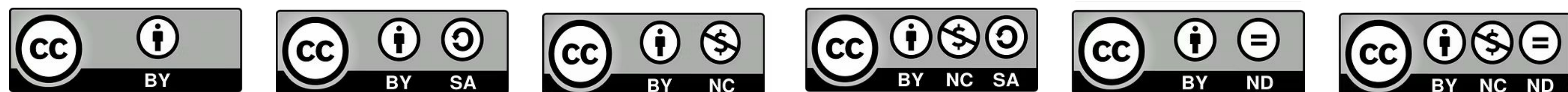
Open Data (and Open Science)  
Images from Canva

...and more

## How do I know if resources are open?

Creative commons licenses clarify permissions

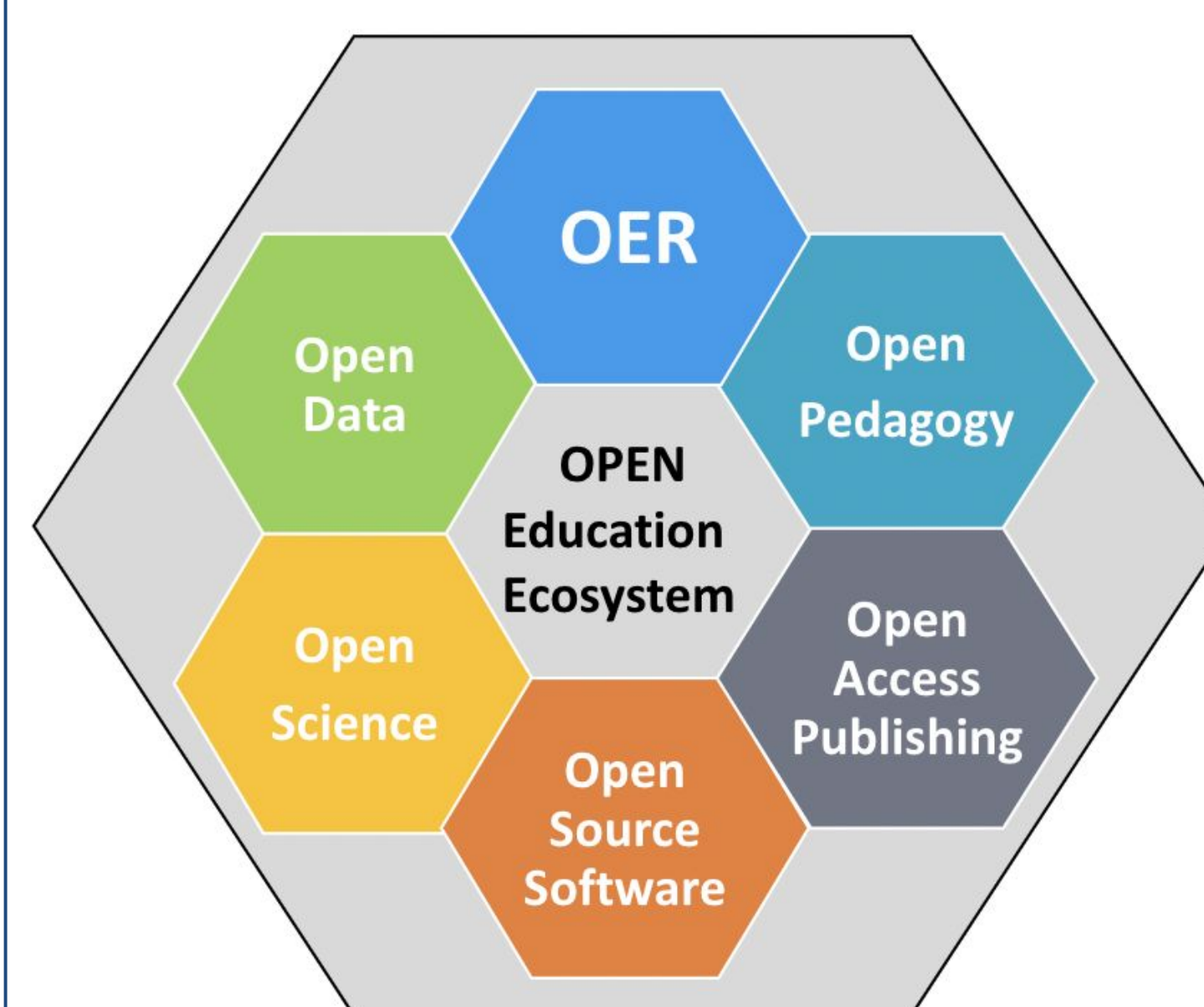
More open  Less open



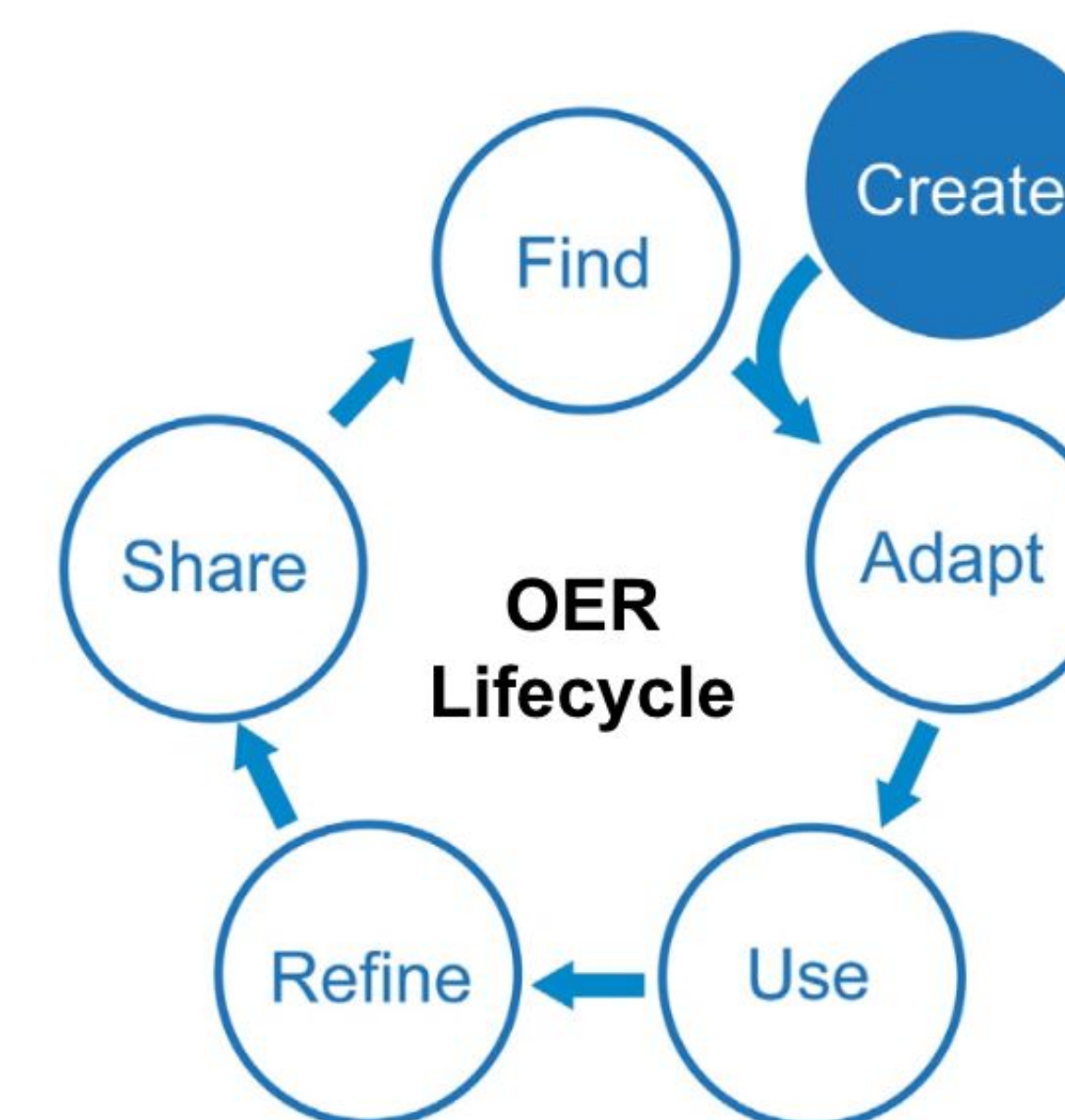
## Why Open?

### Open can be a Key Lever for Social Justice in STEM Education (Lambert, 2018)

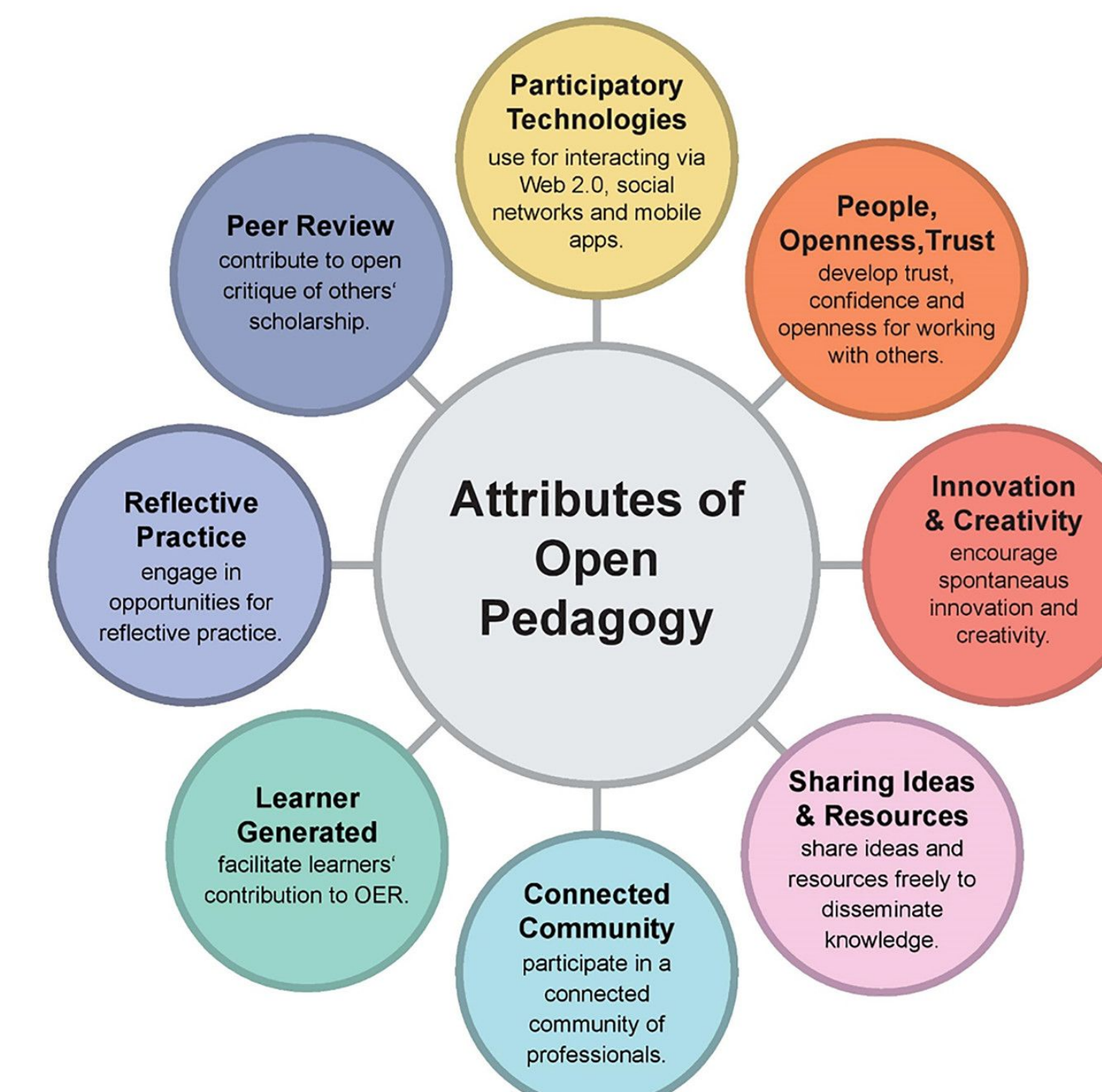
- **Redistributive justice** - assists re-allocation of material resources towards equity
- **Recognitive justice** - recognition and respect for cultural and gender differences
- **Representational justice** - equitable representation and political voice



Open Ecosystem by Karen Cangialosi [CC BY 4.0]



Modified from Clements and Pawloski (2012; adapted from Pawloski and Zimmermann, 2007).



Credits: Adapted from Attributes of Open Pedagogy from Bronwyn Hegarty, licensed under CC BY 3.0.

### Redistributive justice:

Open Education saves institutions and students money

### Recognitive justice:

Adapting and remixing enable modification of Open resources for accessibility, inclusion of minoritized voices and cultural relevance

### Representational justice:

Open Pedagogy centers students as co-creators of knowledge and creates opportunities for student choice and voice

## Some RIOS initiatives connecting partners and supporting socially-just Open STEM Ed:

### Building Leadership capacity through Learning Communities

- 6-week community of practice facilitated by experts and focused a topic, examples:
  - SJEDI
  - Open Educational Practices
  - Social justice dialogues in STEM classrooms
  - Open Pedagogy
- Suggest new topics and ideas
- Join us next time!

### Supporting innovative approaches to community challenge in Open STEM Ed

- Working groups - we fund \$2,000-5,000 per project
- Examples:
  - Reclaiming the Language of Advocacy
  - Building Learning Ecosystems for STEM Students' Wicked Competencies
  - Broadening Representation and Recognition in STEM curricula with OERs
- **We are currently accepting new proposals!**

To learn more, get involved, & stay informed - Join the RIOS Institute: [riosinstitute.org](http://riosinstitute.org)  
twitter: @RIOSCommunity



See our new paper in CBE-LSE: Sustainability and Justice: Challenges and Opportunities for an Open STEM Education (Diaz Eaton *et al.* 2022)  
<https://doi.org/10.1187/cbe.20-08-0180>

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