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# Open Source & Education Through Three Lenses:

## A 50,000 ft. (or 15240 m) overview

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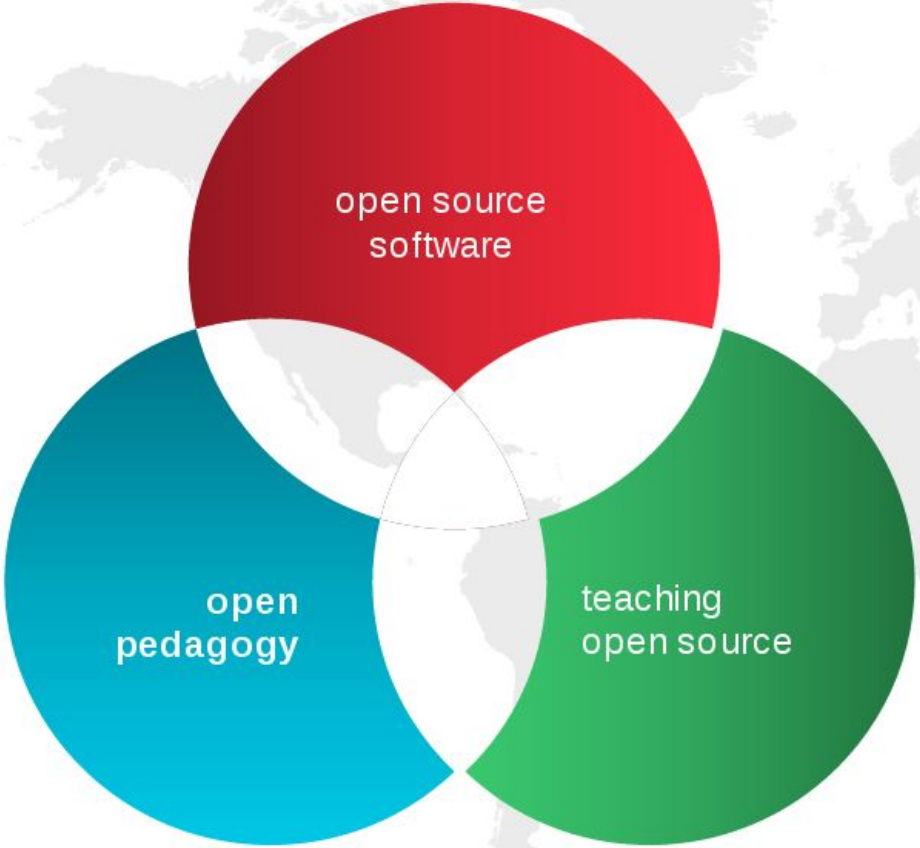
# Open Source in Education: three lenses




01 Classroom & infrastructure

02 Incorporating FOSS project work into CS & SE courses

03 Student-directed learning, collaborative learning, open classrooms

# Classroom & infrastructure

Using open source systems for same reasons businesses do

- Cost (as a replacement for proprietary software)
- To avoid lock-in
- Because they can change it
- Security and privacy

**The Kerala state government in India has saved Rs 300 crore ($45 million) through introduction and adoption of Free & Open Source Software (FOSS) in the school education sector, said a state government official on Feb. 27, 2017**

# Open Pedagogy

Applying the principles of open source software development to education

- Two definitions:
  - Narrower:  Open Educational Resources (OER)
  - Broader: Non-traditional teaching methods reflecting FOSS principles

- Narrow: OER
  - Learning materials shared with open source licenses
  - “4R (reuse, revise, remix, redistribute)” + 5th R (retain)

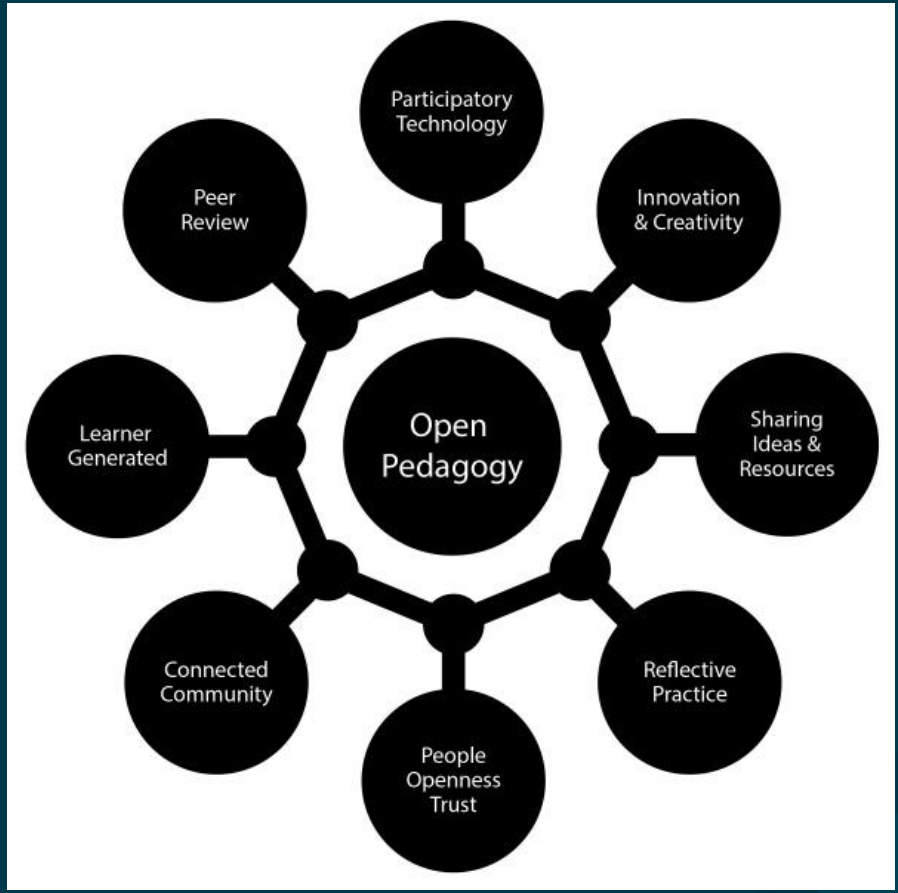
**“Using OER the same way we used commercial textbooks misses the point. It’s like driving an airplane down the road.” -- *David Wiley, Iterating Toward Openness***

# Open Pedagogy, cont'd.

Broad: Non-traditional teaching methods reflecting FOSS principles

- Often not possible without OER (controversy: is OER necessary?)
- (No single definition of what this is)
- Terms you'll hear:
  - Disposable Assignments → Valuable Assignments
  - Flipped classroom
  - Collaborative curriculum building
  - Reciprocal Teaching

**Attributes of Open Pedagogy, by Bronwyn Hegarty**



# Open Pedagogy, cont'd.

Concepts:

- Learners own & are responsible for learning process - can explore interests independently
  - In open source projects you work on the pieces that interest you
- Open-ended problem sets - no "right" answer
  - Often multiple solutions are possible for problem -- and multiple may be tried; which works depends on combination of circumstances
- Unmeasurable outcomes
  - How do you say this solution is "best" when you haven't tried/tested everything?
- Process of learning is a greater focus than facts -- learners should begin to see how they learn best

# Teaching Open Source

## Integrating FOSS project work into CS & SE courses

Why?

- Students learn skills beyond coding
- Real code!  Real big code!
- Students can contribute to greater good: HFOSS Projects
- Project work builds relationships
- Open Source developers are in demand
- Project work builds portfolio of code

Learn how:

- Professors Open Source Software Experience
- teachingopensource.org

# Risks & Challenges

- Gone with the wind
- Misunderstanding of FOSS -> Free != FOSS
  - at student -- and teacher -- level
- Adoption of LMSs (even FOSS LMSs) create “walled gardens” of content
- OER create boundaries that preclude student-directed learning
- Current systems make remix nigh impossible -- no concept of pull request

# Questions?

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# THANK YOU