

Open Science Principles for Teacher Education

Dr. Amit Dhakulkar and Prof. Karen Ferreira-Meyers
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Plan of the presentation

- Introductions
 - Main Teacher Training Challenges
 - Ineffective Solutions
 - Covid-19 Pandemic
- The Proposed Model
- Conclusion and Co-construction of the Way Forward

As remarked in the 2007 McKinsey Report, “[t]he quality of an education system cannot exceed the quality of its teachers”, the state of school education is a reflection on the quality of its teachers.

Introduction

- Teacher education and professional development pose a formidable challenge to the Global South
- The lack of qualified teachers and relevant local teaching-learning resources are two of the major problems identified in Africa
- Scalable and replicable programmes to address these are lacking
- Our proposed approach to tackle this dual challenge uses the Open Science Framework (OSF) and envisions creation of grassroot-level **Communities of Practice** via networking of teachers and students
- The model offers the opportunity to extend “openness” to teachers and students by fostering sharing and collaboration while also focusing on self-directed learning and constructionist/connectivist pedagogies

Challenges to Teacher Education

- Lack of trained (science) teachers (De Beer, 2016)
- Lack of relevant educational resources and infrastructure (Tikly et al., 2018; Ogunniyi and Rollnick, 2015)
- Neglect of indigenous knowledge systems (IKS) (Le Grange, 2007).
- Dominance of European languages (English in particular) in academia – epistemicide - the killing of knowledge systems (Hall and Tandon 2017; Santos, 2015)
- Personal, cultural and psychological challenges for effective use of OERs (Harley, 2011).

Ineffective Solutions

- Need for both long-term pre-service professional development along with short courses for in-service teachers; they suggest continuous support for in-service teachers. (Ogunniyi and Rollnick, 2015).
- Lack of in-service teacher support for addressing curricular reforms and implementing student-centred pedagogical practices, Ramnarain and (Schuster, 2014).
- Theoretical emphasis on ideas such as constructivism, inquiry, group work and practicals, and lack of application of these in the “real” classrooms (Stutchbury and Katabaro, 2011, p. 3).
- The most common mode of in-service teacher professional development is disjointed and ineffective workshops (McCarthy and Bernstein, 2011; De Beer and Mentz, 2019).

Covid-19....

- All teaching learning processes were affected
- The online mode was forced upon us, whether we were ready or not
- But also made us realise that certain things are possible even with existing infrastructure
- The future of education is largely online – the pandemic acted as a catalyst in a way
- We need to create infrastructures so that we ensure the last mile connectivity

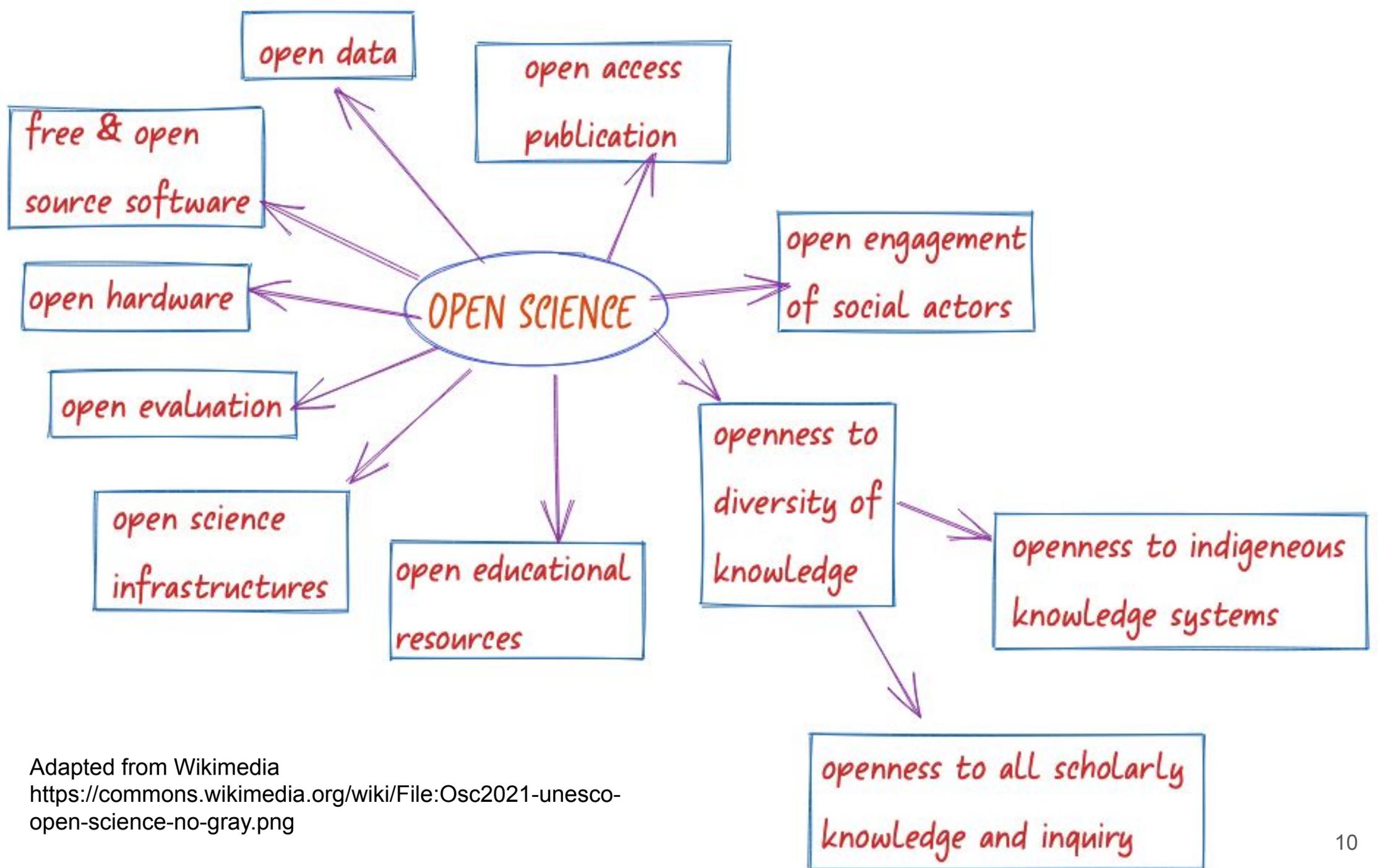
What is possible?

- Given this background what is possible?
- How can we make the best use of technology and learning frameworks to enhance the teaching and learning processes?

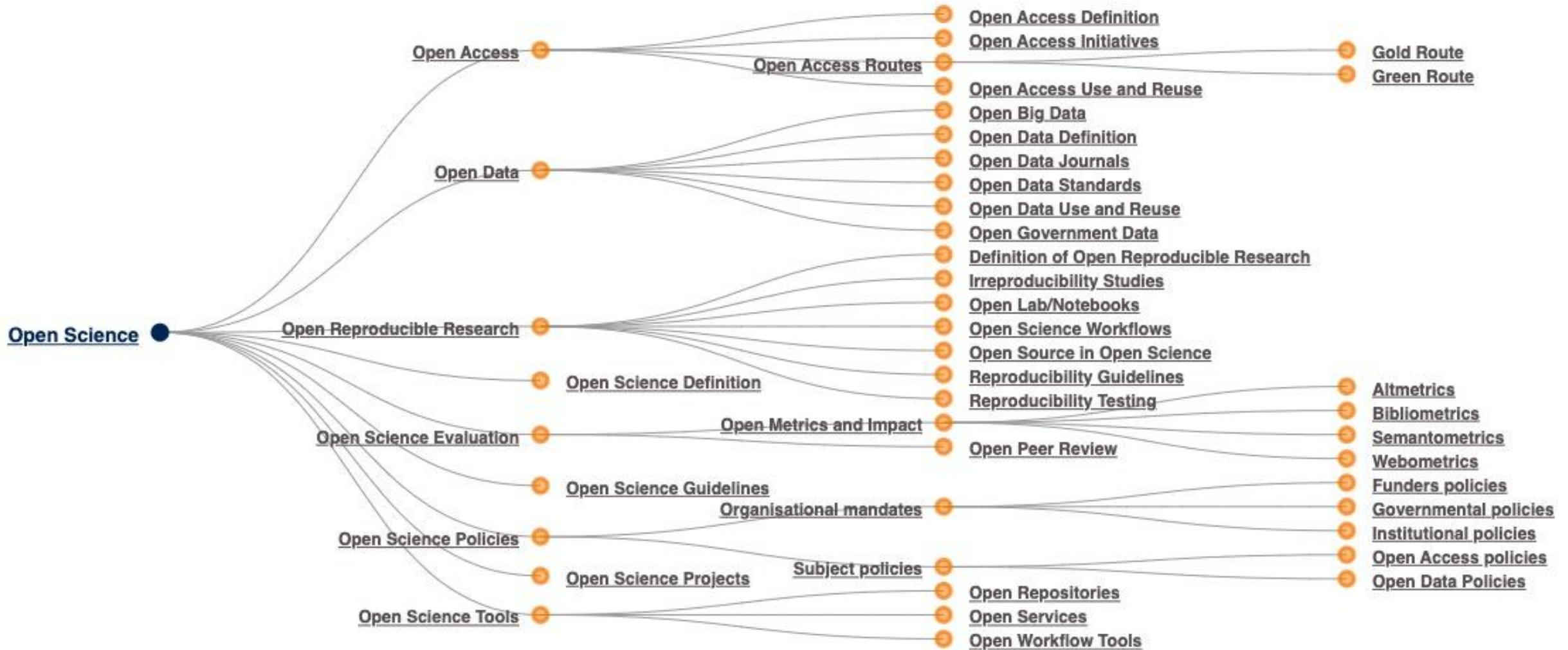
What is Open Science?

“Open Science is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods.”

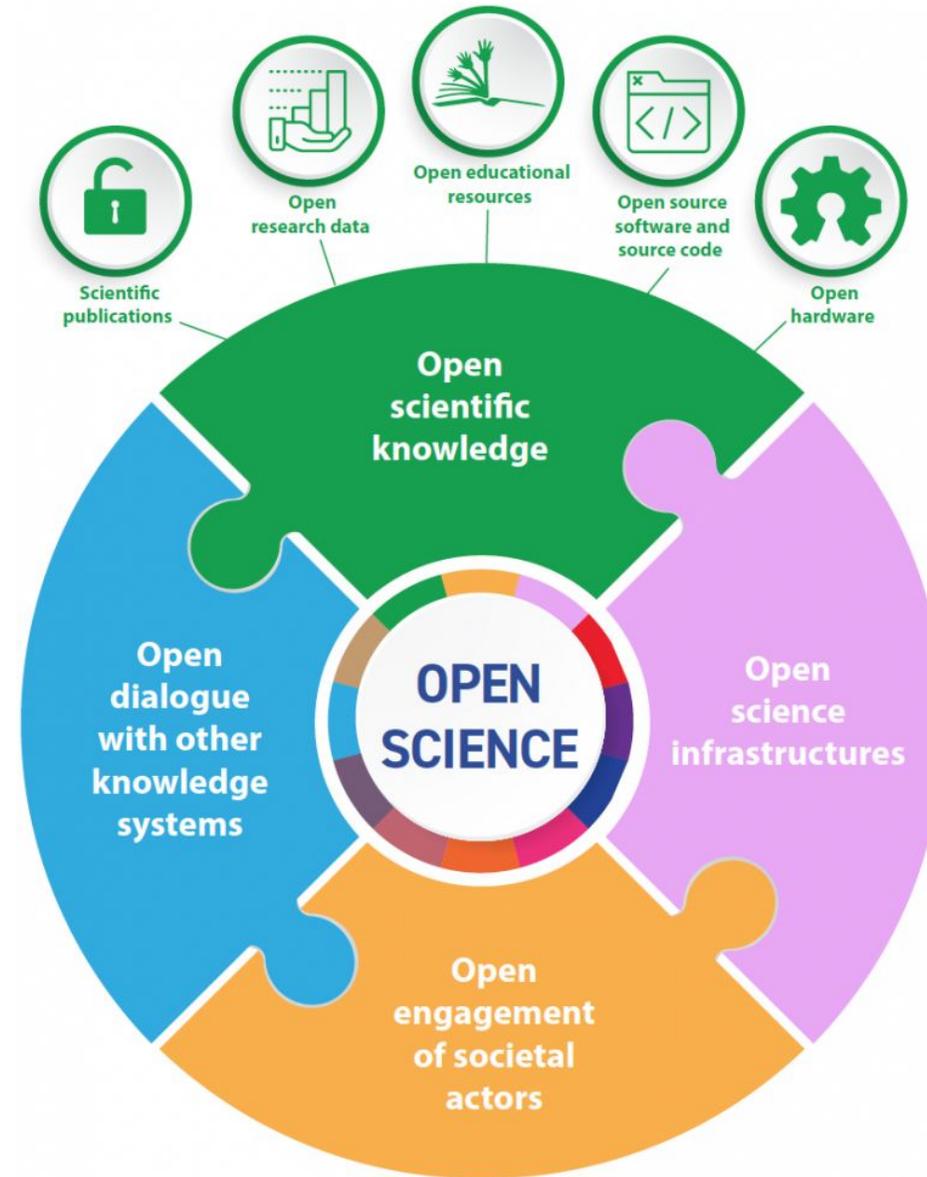
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What are Communities of Practice?

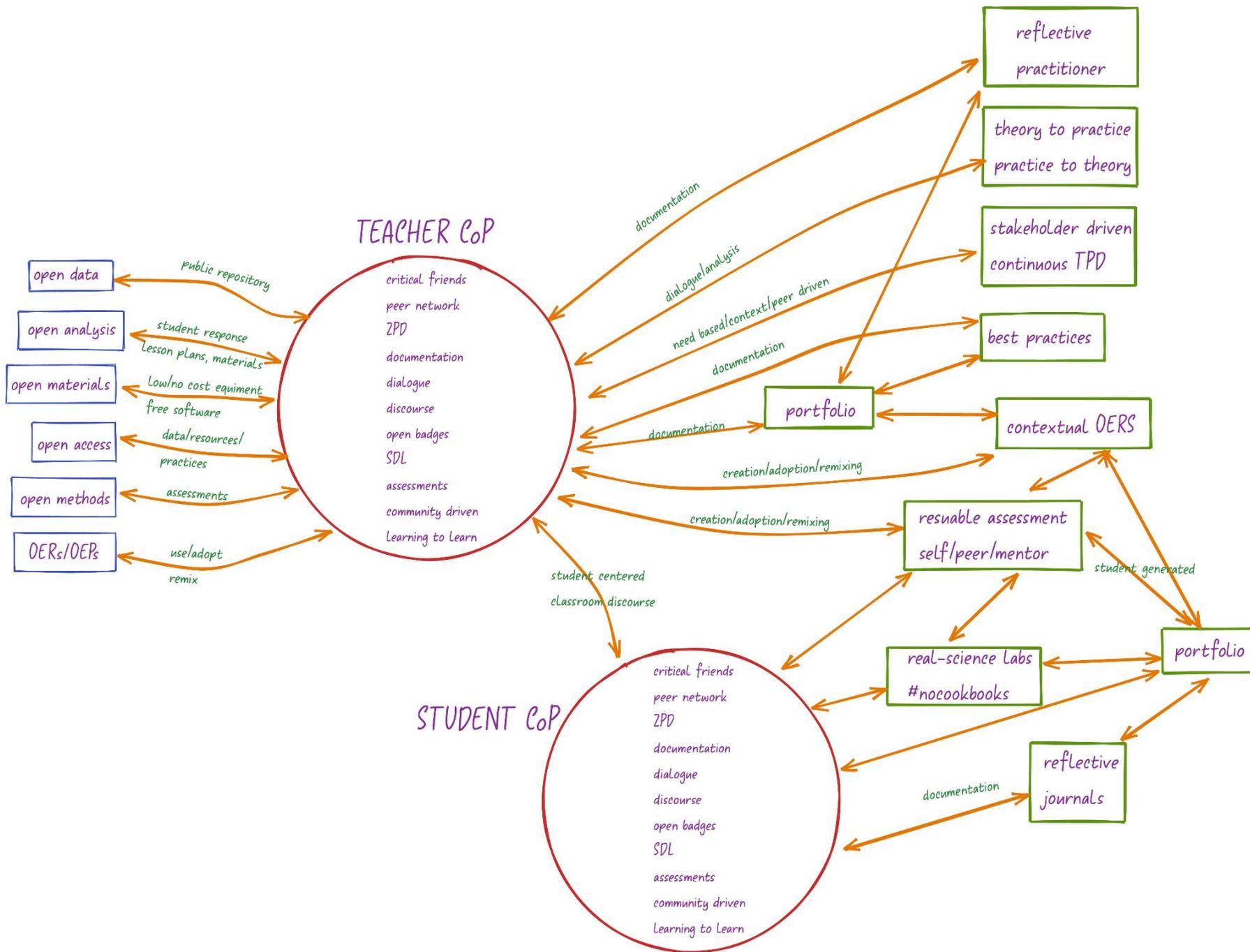
- A community of practice (CoP) is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals.
- Communities of practice often focus on sharing best practices and creating new knowledge to advance a domain of professional practice. Interaction on an ongoing basis is an important part of this.
- Many communities of practice rely on face-to-face meetings as well as web-based collaborative environments to communicate, connect and conduct community activities.

(<https://www.communityofpractice.ca/background/what-is-a-community-of-practice/>)

The proposed model (Ferreira-Meyers and Dhakulkar, 2021)

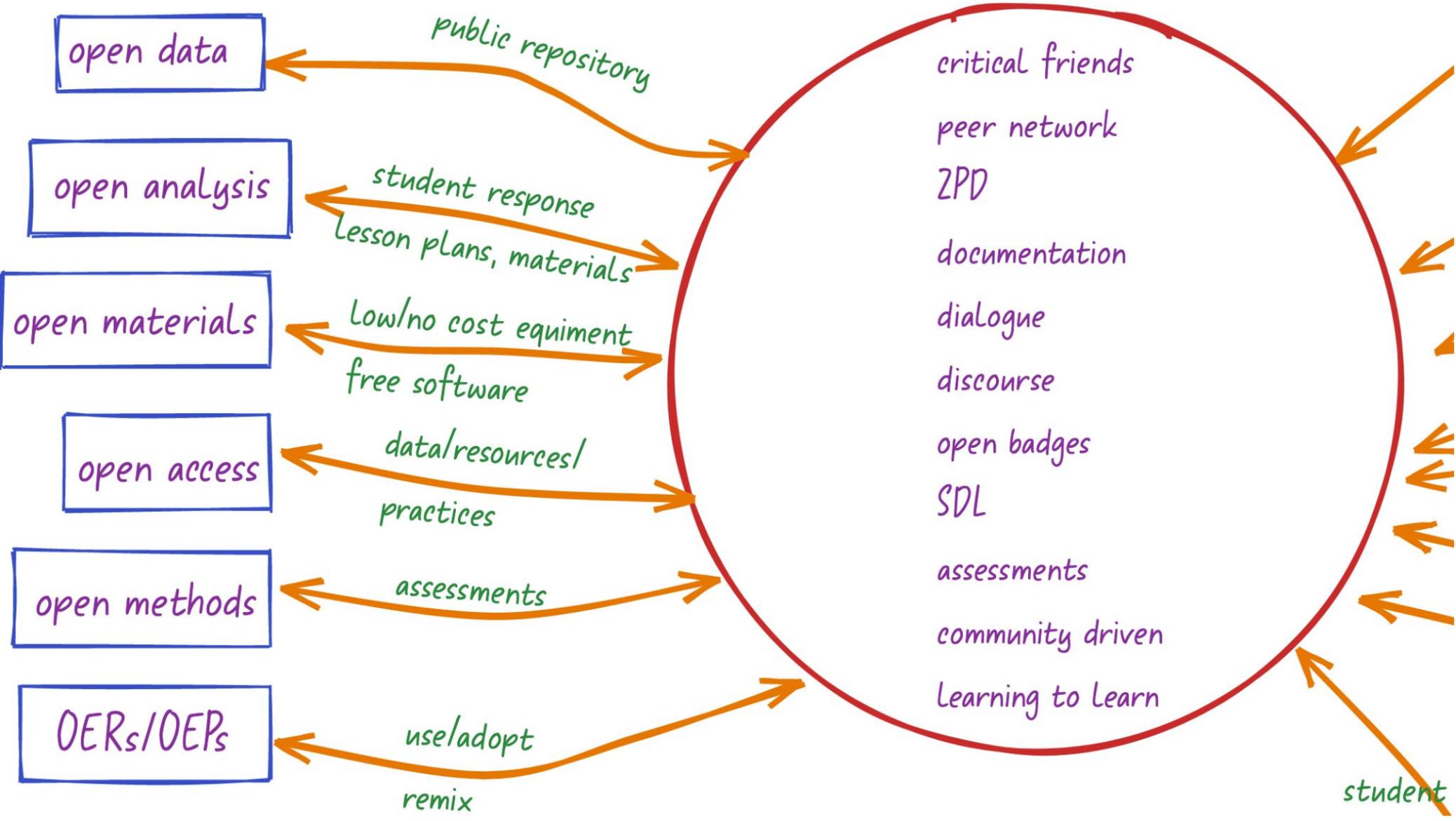
- As a synthesis from OS framework using CoP of teachers as well as students, we propose a model for transforming teacher education and professional development practices
- This model advocates transparency in the process of preparing teachers and documenting the best practices from the field
- The CoP will create an enabling and empowering environment for teachers which is continuously updated
- Theory to Practice and Practice to Theory, ZPD, Critical Friends, Portfolios
- SDL, Discourse, Dialogue, Learning to Learn

The Proposed Model: A Community of Practice

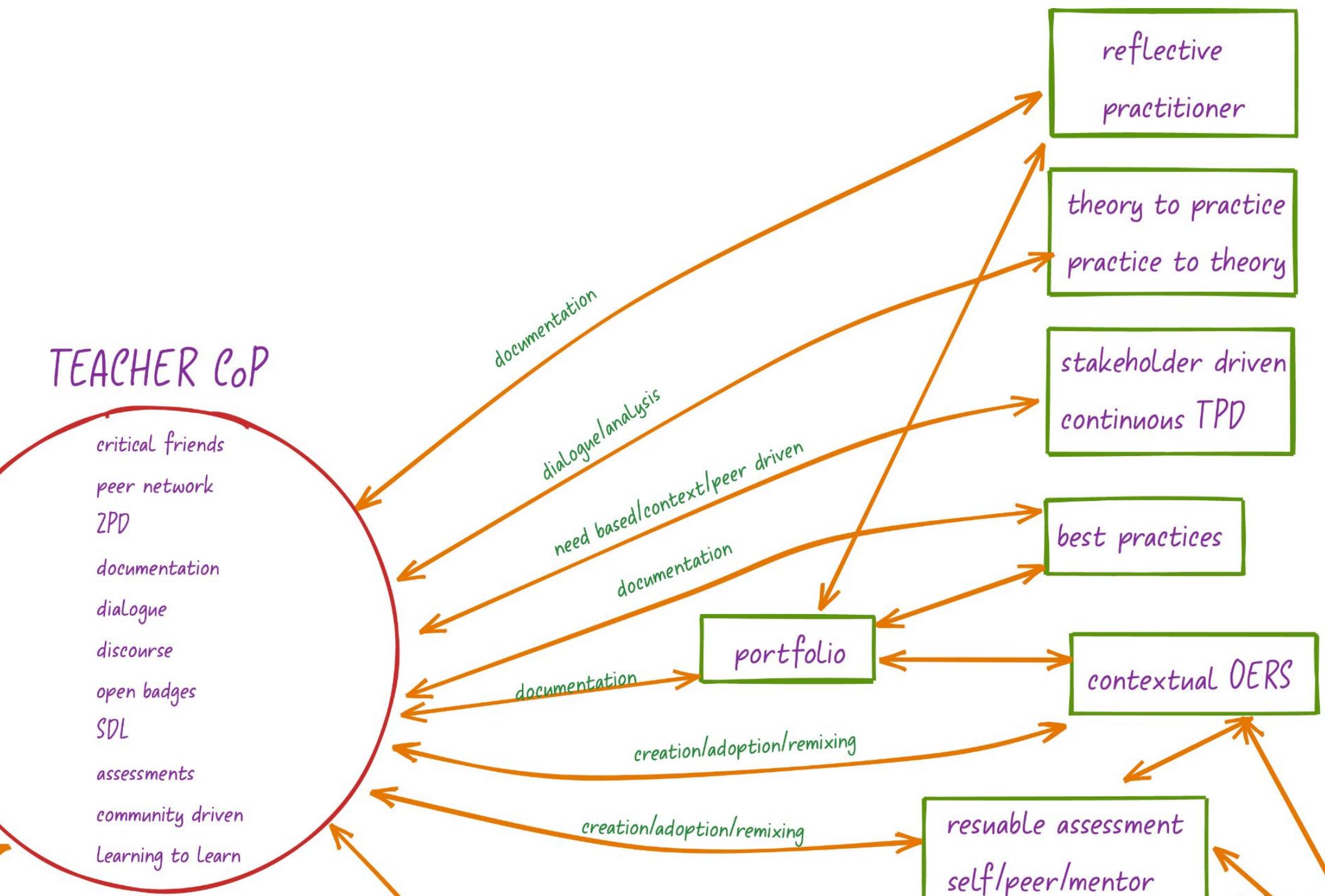


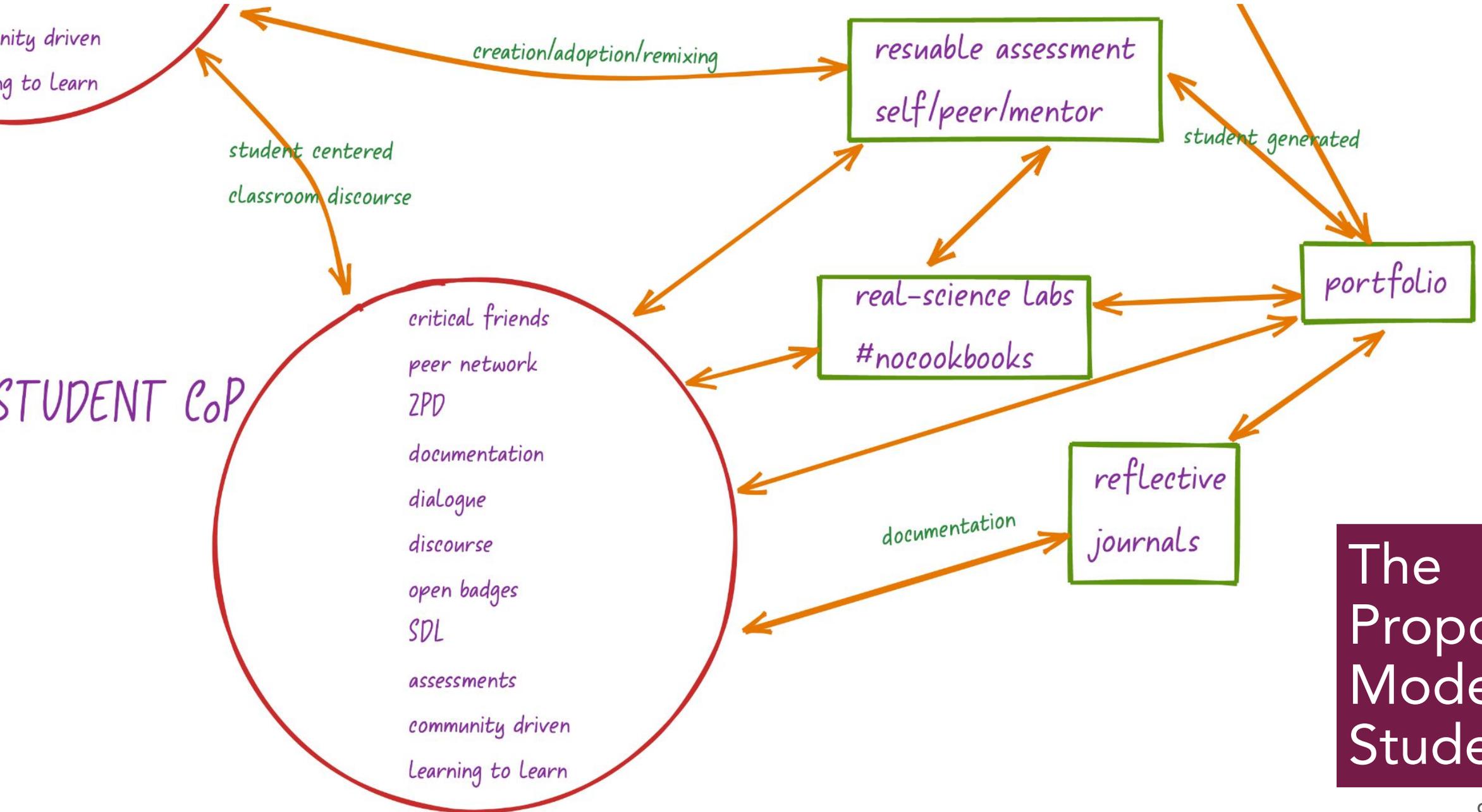
TEACHER CoP

The Proposed Model: Teachers

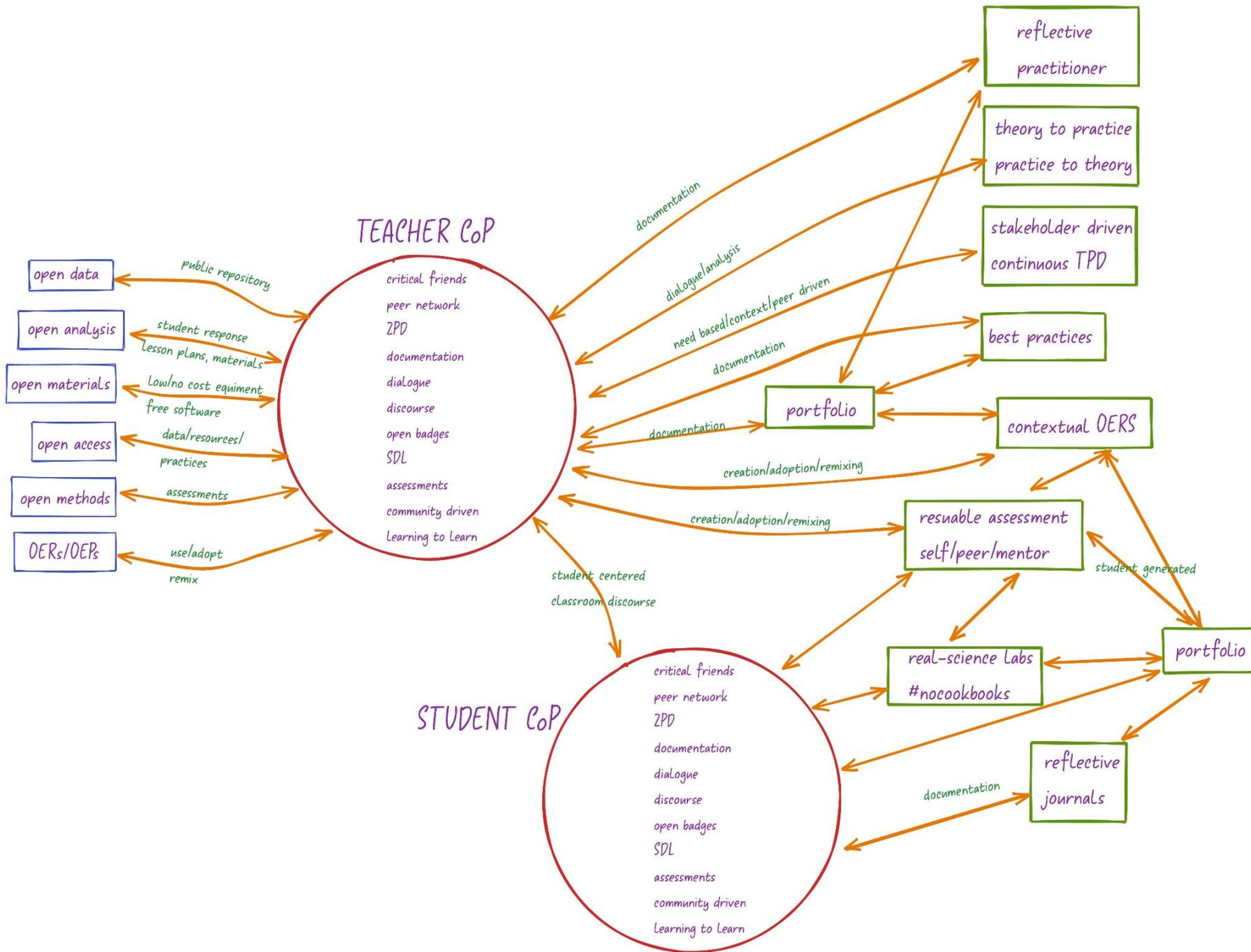


The Proposed Model: Teachers





The Proposed Model: Students



The Proposed Model: A Community of Practice

Some take home points...

- Traditional approach to teacher education and professional development needs a radical shift - **process vs. product**
- Developing grassroots-level communities of practice will empower teachers and create local networks - **decentralisation**
- Communities of practice will help develop local contextualised resources - **flexible ZPD**
- The use of Open Science Framework will allow teachers to use, share, remix and adapt teaching-learning resources with each other
- Assessments need an overhaul - **self, peer, mentor and standardised**
- Challenges remain in the form of infrastructure and institutional support in the form of policy

Co-constructing a way forward...

We would like to know if you found this model interesting and your feedback about what can be done to improve it, implement and collaborate to develop it further with the spirit of Open Science Framework...

Thank you for your attention!

damitr@gmail.com

karenferreirameyers@gmail.com

