How to Develop and Use Open Educational Resources

Flavio Azevedo, Department of Interdisciplinary Social Science, Utrecht University
f.a.azevedo@uu.nl | 0000-0001-9000-8513

Emily Friedel, School of Psychology, Deakin University
emilyjfriedel@gmail.com | 0009-0001-0917-5398

Sarah Ashcroft-Jones, Mailman School of Public Health, Columbia University, New York, USA
sarah.ashcroft-jones@columbia.edu | 0000-0002-8614-9310

Max Korbmacher, Department of Neurology, Haukeland University Hospital, Bergen, Norway;
Department of Radiography, Western Norway University of Applied Sciences, Bergen, Norway
max.korbmacher@gmail.com | 0000-0002-8113-2560

Kelly Lloyd, Leeds Institute of Health Sciences, University of Leeds, UK
k.e.lloyd@leeds.ac.uk |0000-0002-0420-2342

Dushime Richard Mudahera, Framework for Open and Reproducible Research Training
mudaherarich@gmail.com | 0000-0002-1281-9895

Antonia Krasteva, Framework for Open and Reproducible Research Training
antoniakrasteva65@gmail.com | 0009-0006-8034-0401

Hakile Resulbegoviq, University of Ljubljana
hakile.resulbegoviq@gmail.com | 0009-0006-2864-4424

Giorgia Andreolli, Institute for Applied Linguistics, Eurac Research
giorgia.andreolli@eurac.edu | 0000-0001-9511-0496

Leticia Micheli, Social, Economic and Organisational Psychology, Leiden University
l.rettore.micheli@fsw.leidenuniv.nl | 0000-0003-0066-8222

Priya Silverstein, Center for Neuroscience and Cell Biology and Centre for Innovative Biomedicine
and Biotechnology, University of Coimbra; Institute for Globally Distributed Open Research and
Education
priyasilverstein@uc.pt | 0000-0003-0095-339X

Correspondence:
Correspondence concerning this article should be directed to Flavio Azevedo:
f.a.azevedo@uu.nl.

Abstract

This chapter explores the critical role of Open Educational Resources (OERs) in advancing open science and promoting educational equity. OERs are freely-available teaching and learning materials that can be reused and adapted, making them powerful tools for democratising access to knowledge. Drawing on principles from critical pedagogy, feminist, and decolonial scholarship, we position OERs not only as cost-saving tools but as instruments of epistemic justice and inclusion. This chapter outlines five foundational principles for OER development—accessibility, inclusivity, collaboration, sustainability, and social justice—and offers a step-by-step framework for creating, implementing, and sustaining high-quality OERs. Case studies are presented to demonstrate participatory and community-driven approaches to OER creation. We also examine common challenges such as structural inequality and linguistic barriers, providing actionable strategies for addressing each. By embedding values of openness, fairness, and co-creation, we show how OERs can help reshape curricula and cultivate more inclusive academic ecosystems.

Keywords: Open Educational Resources; Educational Equity; Epistemic Justice; Critical Pedagogy; Knowledge Co-Creation; Decolonising Education.

1. What are Open Educational Resources?

Open Educational Resources (OERs) are teaching and learning materials made freely available under licences that permit reuse and adaptation. By removing cost barriers, they expand access and help democratise knowledge. As such, OERs are fundamental to the broader open science movement, which promotes access to data, publications, and educational materials (Parsons et al., 2022). Both OERs and open science emphasise empowerment, discourse, and social equity within research, educational, and pedagogical settings. Defining OERs invites a deeper question: why should educators and institutions invest in creating and using them? The following section explores the motivations behind OER adoption, drawing on empirical evidence and social justice frameworks.

2. Why Create and Use OERs?

International bodies such as UNESCO, the EU Commission, and NASA have endorsed OERs as a means to expand universal access to high-quality open learning materials and foster more inclusive and equitable knowledge societies (European Commission, 2013; NASA, 2025; UNESCO, 2021). Empirical research supports these claims: students using OERs perform as well as those using commercial textbooks, with marginalised students benefiting substantially from OER adoption (Nusbaum et al., 2020; Colvard et al., 2018). OERs thus offer a means to advance educational equity while preserving academic quality. By alleviating financial burdens without compromising rigour, OERs can mitigate inequities in educational participation and success.

Beyond simple cost-saving benefits, OERs carry a deeper promise of democratising knowledge production and decolonising curricula. Critical pedagogy urges educators to move away from a 'banking' model of education where students are passive recipients of knowledge, towards a participatory model that treats learners as co-creators (Freire, 1970). OERs operationalise this vision by inviting both instructors and students to actively engage in producing, revising, and improving educational materials. Such collaborative knowledge-making fosters what Freire called 'critical consciousness', empowering learners to question and shape the knowledge structures that affect their lives (Freire, 1970). Similarly, feminist pedagogues like bell hooks emphasise that teaching can be an act of liberation and inclusion—a process of transgression against racial, gender, and class hierarchies in traditional education, especially when teachers and students learn together (hooks, 1994). Openly sharing educational resources resonates strongly with these values, offering opportunities for diverse voices to be heard and integrated into learning materials.

Decolonial scholars further emphasise that the co-creation and free distribution of knowledge challenge the legacy of science for domination and disrupt colonial power imbalances in academia (Kato et al., 2023). By valuing indigenous knowledge systems, local contexts, and multilingualism, OERs resist one-size-fits-all narratives and instead promote epistemic justice (Fricker, 2007).

Thus, developing and using OERs is not only a technical and logistical endeavour, but a pedagogical and political project aimed at epistemic emancipation (Cassiani, 2021; dos Santos et al., 2024). This chapter outlines a detailed framework for creating and utilising OERs within open science education. The following sections provide academics, early-career scholars, and educators with the guiding principles and practical steps to harness OERs to advance open and equitable education. We conclude with OER case studies from the Framework for Open and Reproducible Research Training (FORRT), which illustrates a community-driven model for open education in open science.
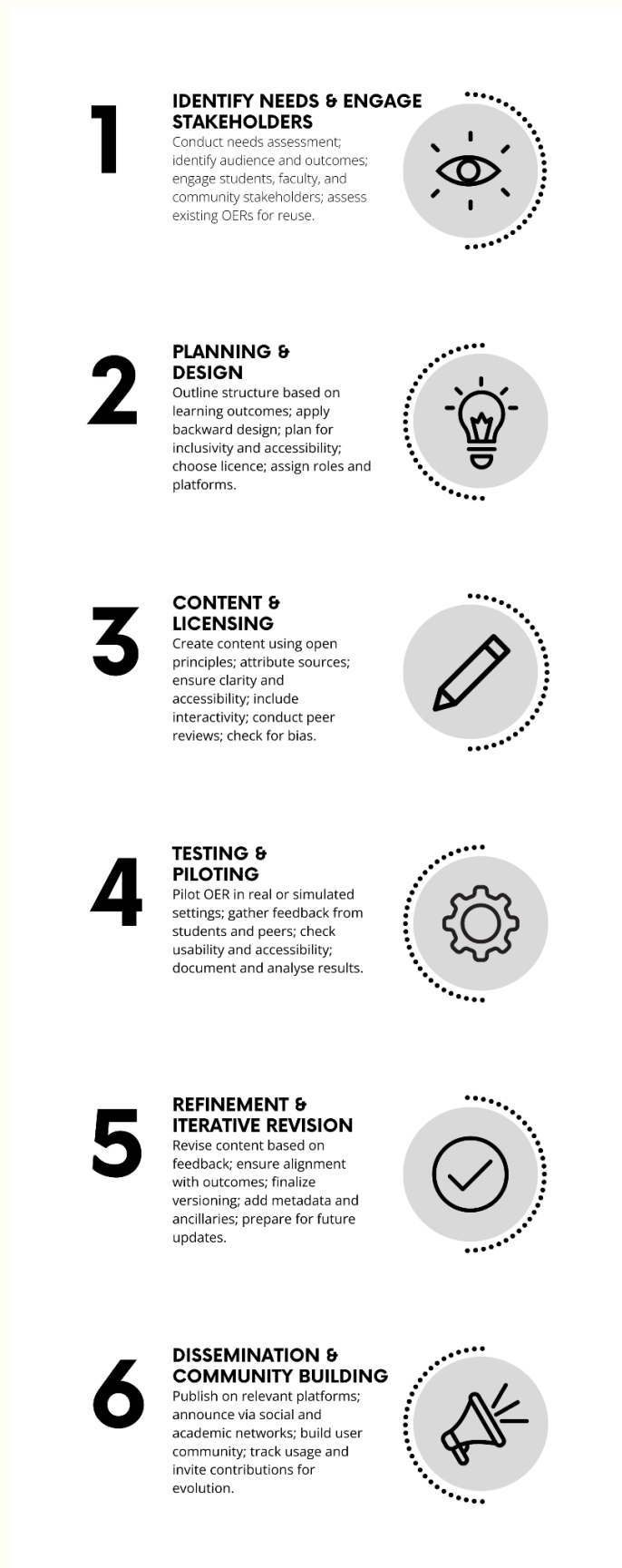
3. How Can We Create OERs?

3.1 Key Principles for Developing OERs

When developing OERs, educators should be guided by principles that ensure these resources fulfil their promise of openness and equity. We highlight five of these interrelated principles—accessibility, inclusivity, sustainability, collaboration, and social justice—that are central to OER creation. Accessibility in design is an ethical imperative in OER creation, ensuring that 'open' truly means open for all. Inclusive OERs are intentionally designed to reflect diverse identities, cultures, and epistemologies, rather than centring traditional hegemonic or dominant viewpoints. Sustainability in OERs involves long-term maintenance planning, which includes building an enduring, supportive community. The collaborative principle recognises that open education is a shared endeavour, moving beyond the lone instructor model to collective knowledge-building. Underpinning all of these is a commitment to social justice: OERs should actively promote equitable access and outcomes in education. The FORRT case studies at the end of this chapter provide examples of these five principles in action. Grounded in these foundations, we propose a practical, replicable framework that educators can implement and adapt in OER development.

3.2 Practical Steps to Create OERs

Developing OERs—whether a single lesson or an entire textbook—can be approached systematically. Here, we outline a step-by-step guide to creating OERs, from initial planning through iterative improvement, informed by best practices in instructional design and community.

Figure 1. Six practical steps for OER creation

1 IDENTIFY NEEDS & ENGAGE STAKEHOLDERS
Conduct needs assessment; identify audience and outcomes; engage students, faculty, and community stakeholders; assess existing OERs for reuse.

2 PLANNING & DESIGN
Outline structure based on learning outcomes; apply backward design; plan for inclusivity and accessibility; choose licence; assign roles and platforms.

3 CONTENT & LICENSING
Create content using open principles; attribute sources; ensure clarity and accessibility; include interactivity; conduct peer reviews; check for bias.

4 TESTING & PILOTING
Pilot OER in real or simulated settings; gather feedback from students and peers; check usability and accessibility; document and analyse results.

5 REFINEMENT & ITERATIVE REVISION
Revise content based on feedback; ensure alignment with outcomes; finalize versioning; add metadata and ancillaries; prepare for future updates.

6 DISSEMINATION & COMMUNITY BUILDING
Publish on relevant platforms; announce via social and academic networks; build user community; track usage and invite contributions for evolution.

Step 1: Identify Needs and Engage Stakeholders. Every OER project should start with a clear understanding of the educational need it intends to fill. Gaining this understanding may include conducting a needs assessment (what problem are you solving?) and articulating the specific project goals. Critically, identify the audience (e.g., first-year undergraduates) and your target learning outcomes.

In participatory OER design, early stakeholder engagement is key to building buy-in and including diverse voices and perspectives. Stakeholders can include students, other instructors or colleagues, and community representatives. For example, consider holding a focus group with students about what they find challenging in the current materials, or consult academic peers regarding the most helpful content or format. If the OER is intended for a global audience, connect with educators from different regions to ensure maximal adaptability. Open education ethos also encourages reuse and remix, so assess existing resources — you might find an open dataset or graphic you can adapt rather than creating one from scratch.

Step 2: Planning and Design. With a clear need identified, begin designing the OER by defining the scope and structure of the material, ensuring alignment with learning outcomes, and creating an outline. Applying principles of backward design can be useful (Wiggins & McTighe, 2005). First, start with the learning outcomes or competencies, then plan content and activities that lead to them, and finally consider how learners will demonstrate their learning (Stein & Graham, 2020). During planning, inclusive design should be integrated from the outset rather than retrofitted later. This includes mindfully incorporating diverse examples, avoiding culturally-specific idioms that might not translate, and including explanatory context for learners less familiar with background knowledge.

Decide on the level of OER interactivity (e.g., static text vs. multimedia) while keeping accessibility in mind: multimedia should have alternatives, such as transcripts for audio and captions for video. Finally, select an appropriate licence type; most OERs use a Creative Commons CC-BY, CC-BY-SA, or CC-BY-SA-NC licence to maximise reuse. Ensure source materials such as illustrations and datasets are compatible with this selection.

Consider design modularity. Structure your content to ensure others can easily reuse individual components, such as by writing the materials using short, self-contained chapters. We recommend using storyboarding or outline templates to help organise your content. Overall, well-planned OERs should have a logical flow that enables the flexibility for future remixing.

Multiple approaches should be employed to ensure a collaborative OER design. This may include assigning roles based on expertise to draft different sections of the material, determining early how credit will be allocated (e.g., CRediT taxonomy; Brand et al., 2015), and planning a timeline for engaging various contributors (e.g., stakeholders, reviewers). We recommend utilising shared working platforms (e.g., Google Docs, GitHub, Open Science Framework [OSF]) to allow asynchronous contributions and foster transparency and version control from the beginning. By the end of Step 2, you should have developed a

comprehensive outline of the OER, a collaborative team plan for creation, and identified a shared working platform to guide subsequent development.

Step 3: Content Development and Open Licensing. This step is the core work of writing the textbook or building the course materials. As you develop content, continuously apply open principles: attribute sources and use open content whenever possible. For example, prefer Creative Commons images over copyrighted ones. If you include excerpts of text or data, ensure these are in the public domain, openly licensed, or fall under fair use; otherwise, seek permission or alternatives. Many OER developers maintain a spreadsheet to track permissions and licences of included materials.

Ensure clarity and accessibility in the original text by writing in clear prose, defining jargon, and avoiding unnecessarily elitist or overly technical language. Incorporate interactive elements and use open rather than proprietary software to enhance learning. For example, embedding quizzes using the open source tool, H5P, or including discussion prompts.

Periodic peer review is valuable for identifying errors, suggesting additional perspectives, or indicating where clarity is lacking. Checking for inclusivity and bias throughout is also essential: Are various social groups represented appropriately, and is the language inclusive? Engaging co-authors from different academic and sociodemographic backgrounds and consulting external advisors can help here. Throughout development, maintain documentation, such as a changelog, to record sources and rationales for content decisions to facilitate future revisions. Finally, apply the chosen open licence visibly on the work (e.g., a CC-BY licence statement on the front page and in the metadata). This clearly communicates how the material can be used, a hallmark of OERs.

Step 4: Testing and Piloting. Before full release, conduct a pilot review or, ideally, implement the OER in a live course for one term or module. Observe how students interact with the material: Do they understand it? Are there frequent questions or misconceptions? Gather feedback from learners through surveys or focus groups on usability (e.g., was it easy to navigate?), engagement (e.g., did the activities help learning?), and any content gaps or biases.

If a live pilot is not feasible, consider a review pilot by sharing the draft OER with a small group of peers or target users outside class. Some OER projects host workshops or hackathons where participants review materials and provide feedback, exemplifying the participatory principle by treating end-users as co-creators. Systematically analyse the feedback to assess for common themes and/or critical issues, and test all technical aspects (e.g., ensure all live links work).

To ensure inclusivity, accessibility checks are crucial. Use tools such as accessibilitychecker.org for websites, and wherever possible, involve users with disabilities to test accessibility (e.g., ask a screen-reader user to test an e-textbook). For transparency, document the feedback and planned changes openly (e.g., on a project site or appendix). By the end of Step 4, you should have a list of revisions to make, based on end-user input, to enhance the OER's effectiveness. At this stage, prepare the required supplementary

material, e.g., generate a table of contents, index, and accessibility transcripts, to help package your final OER.

Step 5: Refinement and Iterative Revision. Revise the OER according to pilot/review feedback, which may involve minor edits (typos, clarifications) or larger changes (e.g., reordering sections, addressing a noted gap). Carefully address any cultural or bias issues raised. This may include adding content from a crucially missing perspective or rephrasing text that inadvertently marginalises a group. Revisions should also consider alignment: double-check that the revised content aligns with the intended learning outcomes and assessments to ensure resource coherence.

Given the iterative nature of OERs, a key question is when to conclude the revision process. A practical approach is to publish the content with a version 1.0 once all major feedback is incorporated and the content meets the project goals, e.g., 'Open Science Lab Manual, Version 1.0 (2025)'. Using version control is best practice and signals to users that content is maintained and may be updated. Once the OER is ready to be published, the next challenge is ensuring it reaches those who most need it.

Step 6: Dissemination and Community Building. Share and promote your OER to help it reach relevant learners and educators. Start by choosing appropriate OER repositories or platforms for hosting, such as university OER libraries, OER Commons, MERLOT, the OSF, GitHub, or domain-specific sites (e.g., forrt.org). Include descriptive keywords and an abstract, and ensure metadata (e.g., author, licence, tags) are attached to improve discoverability.

Next, consider how to advertise the resource through social media, conference presentations, webinars, and/or directly contacting relevant networks (e.g., email Open Education listservs or relevant teaching organisations). Another powerful approach is to encourage early adopters and ask for short testimonials to be shared to enhance credibility. Building a community around the OER can lead to a virtuous cycle of dissemination. Establish forums for users to share experiences, tips, and feedback (e.g., a public GitHub page, an email inbox for feedback, etc.). These support newcomers and inform future user-driven revisions.

Where possible, track usage, such as through platform download statistics or records of adoption. This is useful for demonstrating impact, e.g., 'X University saved Y dollars by switching to this OER', which may encourage further adoption and can evidence future funding applications. From a social justice perspective, dissemination should target communities that stand to benefit most. This may also include identifying volunteers to translate the materials into relevant languages, and, where possible, acquiring funding for those efforts. While openness means anyone can use a resource, proactive outreach ensures everyone knows they are invited.
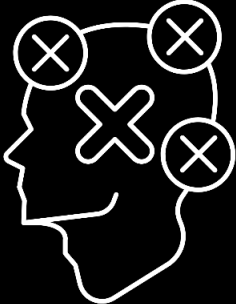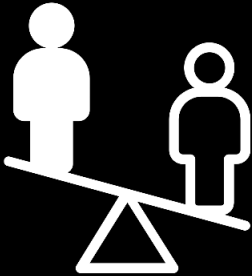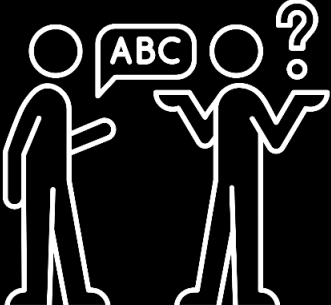
By following these practical steps—engage, plan, develop, pilot, refine, disseminate— educators can systematically create effective OERs that are embraced by the community. These steps are not strictly linear, as continuous improvement is a cornerstone of quality, open educational materials. Overall, these practices embody the earlier principles described at the beginning of the chapter: stakeholder engagement and piloting promote inclusivity

and social justice, collaboration is inherent throughout, sustainability is ensured by community building, and accessibility is considered at multiple stages.

3.3 Challenges and Solutions in OER Implementation

While OERs promise to democratise knowledge and expand access, they are not immune to the structural inequities and systemic challenges that pervade traditional educational systems. Without conscious intervention, OERs can replicate or even exacerbate existing disparities. Critical, feminist, and decolonial scholars have long cautioned that openness alone does not equate to justice—genuine transformation requires an intersectional awareness of power, representation, and access. The infographic below outlines these core challenges alongside key issues and promising solutions, serving as both a diagnostic tool and a roadmap. Recognising and addressing structural challenges is essential, but so is equipping educators to navigate and use OERs in their classrooms.

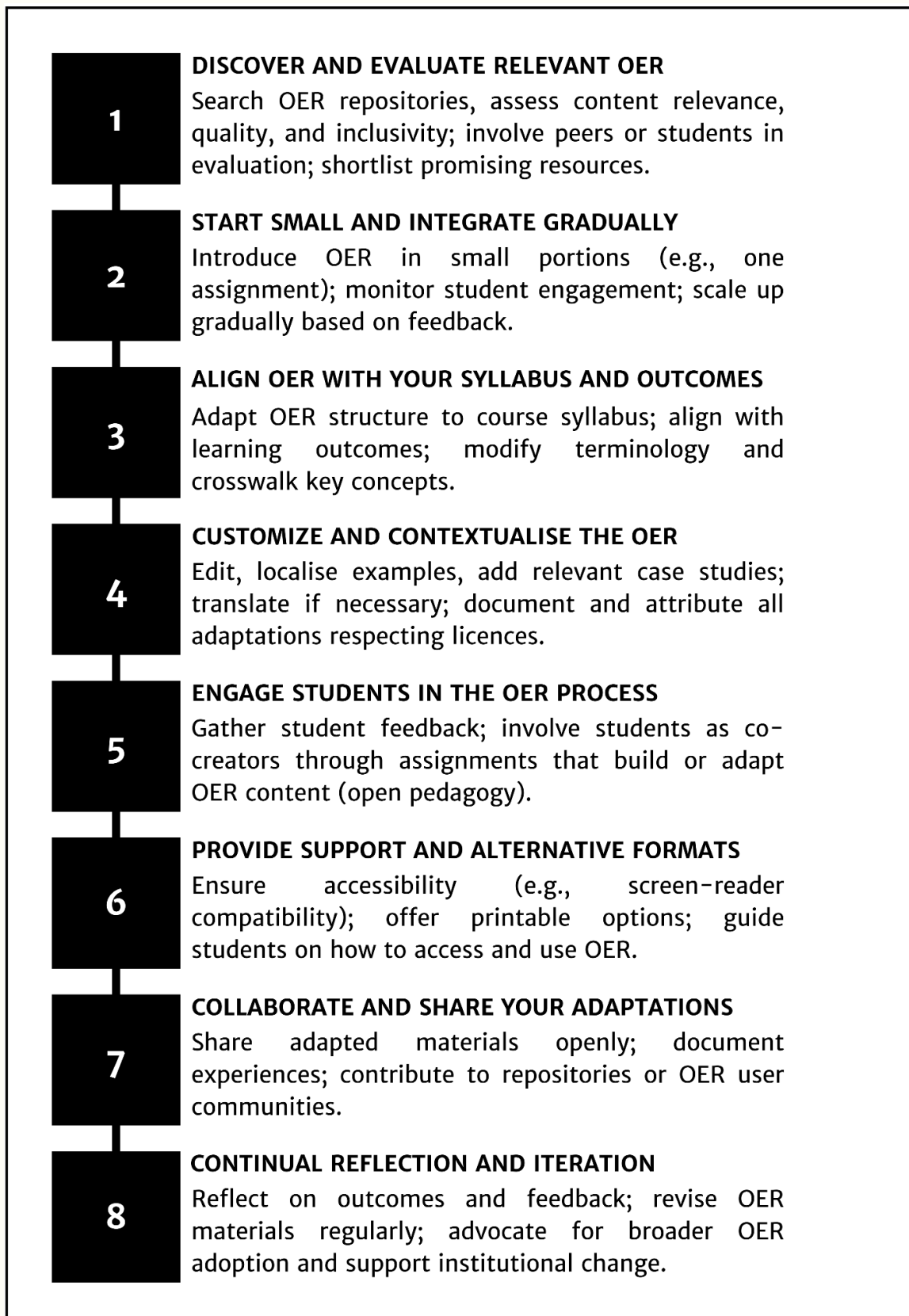**Figure 2.** OER implementation: challenges and proposed solutions

RESISTANCE & MISCONCEPTIONS

Key Issues: Myths about open licensing and quality; attachment to commercial materials; fear of losing control or academic credit.

Solutions: Offer training on IP and open licences; normalize OER through policy; share success stories; promote open pedagogy; align OER with institutional missions; ensure all OERs are visibly credited.

STRUCTURAL INEQUALITIES AND THE 'OPEN DIVIDE'

Key Issues: OER creation is often dominated by privileged actors; lack of funding, time, support for marginalised educators; open divide replicates academic inequity.

Solutions: Incentivise OER creation institutionally; create funding schemes and mentorship for underrepresented groups; form regional OER hubs and global networks (e.g., UNESCO OER Coalition).

LANGUAGE AND CULTURAL BARRIERS

Key Issues: OERs are often in English and culturally biased; local knowledge and pedagogy underrepresented; translation/adaptation burdens are unevenly distributed.

Solutions: Support multilingual OERs and culturally responsive adaptation; fund community translations; value indigenous and local knowledges; use inclusive pedagogical formats.

QUALITY ASSURANCE AND EDUCATOR RELUCTANCE

Key Issues: Scepticism about OER quality and pedagogical soundness; lack of familiarity with evaluation; limited peer review structures.

Solutions: Implement peer-review for OER; train educators on OER evaluation; promote remixable and adaptable tools; highlight successful use cases and community improvements.

SUSTAINABILITY AND MAINTENANCE

Key Issues: Lack of long-term plans or funding for updates and upkeep; reliance on individual champions leads to resource decay or loss.

Solutions: Adopt collaborative maintenance models; institutionalise updates; use version control and redundancy; involve students in updates; archive broadly.

3.4 How Educators Can Adopt and Adapt OERs

Successfully adopting and adapting OERs requires more than simply replacing traditional materials with free alternatives. It is a strategic and pedagogical process involving critical evaluation, thoughtful integration, and intentional customisation to ensure that resources meet the diverse needs of learners while aligning with course objectives. Educators must engage in iterative practices, as each stage of adopting and adapting OER materials—such as discovering existing resources, integrating and customising content, seeking student engagement, establishing accessibility support, and reflection—builds upon the others, reinforcing the openness, equity, and sustainability that undergird the open education movement.

This participatory and justice-oriented approach echoes critical pedagogical traditions, notably Paulo Freire's (1970) vision of education as a collaborative and emancipatory act. When thoughtfully implemented, OER adoption is more than cost-effective or efficient; it is transformative. It can reshape the educational experience by democratising knowledge production and dissemination. The following figure provides an overview of best practices for educators seeking to adopt and adapt OERs. These practices are adaptable across disciplines and educational levels, offering a flexible yet structured roadmap toward more open, inclusive, and contextually relevant teaching.

Figure 3. Best practices and strategies for OER adoption and adaptation

1 — **DISCOVER AND EVALUATE RELEVANT OER**
Search OER repositories, assess content relevance, quality, and inclusivity; involve peers or students in evaluation; shortlist promising resources.

2 — **START SMALL AND INTEGRATE GRADUALLY**
Introduce OER in small portions (e.g., one assignment); monitor student engagement; scale up gradually based on feedback.

3 — **ALIGN OER WITH YOUR SYLLABUS AND OUTCOMES**
Adapt OER structure to course syllabus; align with learning outcomes; modify terminology and crosswalk key concepts.

4 — **CUSTOMIZE AND CONTEXTUALISE THE OER**
Edit, localise examples, add relevant case studies; translate if necessary; document and attribute all adaptations respecting licences.

5 — **ENGAGE STUDENTS IN THE OER PROCESS**
Gather student feedback; involve students as co-creators through assignments that build or adapt OER content (open pedagogy).

6 — **PROVIDE SUPPORT AND ALTERNATIVE FORMATS**
Ensure accessibility (e.g., screen-reader compatibility); offer printable options; guide students on how to access and use OER.

7 — **COLLABORATE AND SHARE YOUR ADAPTATIONS**
Share adapted materials openly; document experiences; contribute to repositories or OER user communities.

8 — **CONTINUAL REFLECTION AND ITERATION**
Reflect on outcomes and feedback; revise OER materials regularly; advocate for broader OER adoption and support institutional change.

4. Case Studies

In this section, we present three OER case studies based on work associated with FORRT, an organisation that is a community-driven model for open education in open science.

1st Case Study: POST-Edu Modules (Participatory Open Science Education)

This case study is a dynamic example of OER creation in action, aligned strongly with participatory and inclusive design.

The POST-Edu initiative provides an OER example of co-creation and capacity-building that encapsulates many themes of this chapter. The initiative is creating OER modules to help educators teach open science, and it does so through a positive, inclusive, and participatory design process (https://forrt.org/teaching_os).

Project Overview: POST-Edu (Promoting Open Science Teaching) is funded by a national research council (NWO, Netherlands). The primary output is three self-paced training modules for educators: (1) a positive module focusing on how to frame open science teaching in an encouraging, benefit-driven way; (2) a participatory module focusing on engaging students in the process; and (3) an inclusive module focusing on diversity and inclusion in open science education. These modules will be openly published as an online toolkit, functioning as an OER for educators.

Participatory Design Events: POST-Edu models participatory co-design (i.e., designed in collaboration with end-users from the beginning). In Phase 1 (mid-2024), the team organised three launch events (virtual workshops), inviting educators from various universities to share their experiences, needs, and wishes regarding teaching open science. Qualitative data were collected through guided discussions and brainstorming with educators to directly inform module content, ensuring it addresses real-world scenarios. Such an approach is reminiscent of Freirean pedagogical circles (Freire, 1970), where the teachers collectively reflect and generate knowledge about their practice. These events also help build a community of practice before the modules are released—participants are listed as contributors in the final output and likely feel invested in the outcome.

Content Development with Evidence Base: In Phase 2 (late 2024–2025), the POST-Edu team is developing the modules in close collaboration with educators who were invited to participate in the project either as members of the Development Teams (i.e., developing content) or Focus Teams (i.e., providing feedback to Development Teams). They are drawing on FORRT's clusters (https://forrt.org/clusters/) and resources, meaning the content will be grounded in a comprehensive literature base. Each module is created with interactive pedagogy in mind—including self-reflection prompts (e.g., 'Is my course syllabus diverse?'), exercises and examples of how the topics could be incorporated into teaching/mentoring.

Planned Open Dissemination: Once developed and tested by educators in Phase 3, the modules will be released openly as an online toolkit. Importantly, because these modules themselves are OERs, a teacher in Brazil could take a module, translate it, and adapt

examples to local science contexts—enabling localisation. The project's funding and structure ensure that materials will be free and encourage adaptation. By providing structured training for educators, POST-Edu addresses a meta-level of OER usage, since to teach open science, one should use open materials.

Challenges and Anticipation: The POST-Edu team is mindful of challenges such as varying baseline knowledge. Hence, modules may need different entry points or a modular design to cater to different levels. Motivating busy faculty to engage with another training is also challenging. To that end, framing modules as short, benefit-oriented, and directly applicable is key.

Though still in progress, POST-Edu exemplifies the forward-looking approach to OERs: fostering an open education ecosystem through community-building and focusing on educators as learners and agents of change.

2nd Case Study: OpenLearn Course on Open Research

This case study underscores the viability of an individual scholar leading a high-impact OER in open science, and the importance of institutional support (platforms such as OpenLearn) in amplifying such efforts.

'Open Research for Researchers' is an 8-week course designed to comprehensively introduce Open Research practices for learners of all backgrounds and career stages. It is free to anyone, anywhere in the world: bit.ly/ORforResearchers.

Background and Development: The course was created by Dr Priya Silverstein, an early-career researcher deeply engaged in open science education, after they were approached by the Open University (OU), which hosts the OpenLearn platform. All online courses created through OpenLearn are obligatorily OERs, meaning they can be accessed for free by anyone with an internet connection. They can also be downloaded for offline archiving and dissemination. Initial drafts of the course drew on existing OERs—including some from FORRT—along with Priya's own expertise. Following this, pilot reviews were conducted by OU researchers and a broader group of interdisciplinary staff, followed by iterative revisions, before being published on the OpenLearn platform. Following user feedback, additional updates were iterated.

Accessibility and Format: The OpenLearn platform supports a variety of media, and the 'Open Research for Researchers' course takes advantage of this by including written text, short videos, and quizzes. All materials are provided in an accessible manner—transcripts for videos, alt-text for images, and mobile-friendly content—to ensure learners with disabilities or low bandwidth are not excluded. An 'interactive decision-making tree' allows learners to explore scenarios about opening their research. The entire course takes around 8 hours of self-paced learning. Learners can enrol for free and earn a certificate of completion, incentivising participation.

Community and Reach: The course content is openly licensed, allowing for adaptation. Existing on a well-known platform ensures sustainability and visibility—the OU maintains

the site, reducing the maintenance burden for Priya (or other researchers), who can be contracted to edit as needed.

Challenges: As Priya was the sole course author, they felt they could not always capture diverse perspectives. The interdisciplinary feedback stage was useful, with researchers, librarians, and research support staff providing a wide variety of perspectives. However, Priya was responsible for deciding how to integrate any contradictory feedback, and the interdisciplinary group was relatively homogenous.

Although OpenLearn offers the opportunity to provide feedback, there is no current plan for continuously updating the course. However, due to its CC-BY licence, FORRT can transfer and adapt the course content into different formats.

3rd Case Study: FORRT Glossary Project

This case study exemplifies how a focused, collaborative OER can effectively democratise knowledge in the open science education space.

The FORRT Glossary https://forrt.org/glossary/ is a concrete example of a community-driven OER that addresses a specific need: making the language of open science comprehensible and accessible. The Glossary contains definitions of terms related to open scholarship, from 'confirmatory research' to 'preprint' to 'data warehouse', all written in approachable language and with scholarly references.

Genesis of the Glossary: The idea for the Glossary emerged from the realisation that students and faculty new to open research often feel overwhelmed by the jargon and proliferation of initiatives. Two key papers (Crüwell et al., 2019; Kathawalla et al., 2021) highlighted the need for digestible introductions to open science topics. In response, FORRT set out to compile a glossary. The development was highly collaborative: contributors were invited to draft entries on terms within their expertise, using a shared template to ensure consistency. The Glossary team had an editorial process—drafts were reviewed by others for clarity and accuracy, simultaneously reinforcing community learning.

Design for Inclusivity and Clarity: Glossary definitions are friendly to novices, avoiding overly technical language. For instance, instead of saying 'HARKing: Hypothesising After Results are Known,' the Glossary entry unpacks why HARKing is problematic and contrasts it with preregistration, in plain terms. Where relevant, the entries note where controversies or multiple definitions exist. Consequently, the Glossary does not claim absolute authority but serves as a guide—aligning with an open pedagogy stance of inviting questioning. The multilingual aspect (with German and Arabic translations available) greatly extends inclusivity and champions linguistic diversity and social justice (Piller, 2016).

Accessibility and Medium: The Glossary is freely available on the FORRT website. It is organised alphabetically and cross-referenced internally to encourage exploration. The entire English Glossary is also downloadable as a PDF and CSV, supporting sustainability and reusability. The content has a CC-BY-SA-NC licence and can be adapted.

Utility and Impact: The FORRT Glossary has become a widely used reference. Some have integrated it into their learning management systems so that hovering over a term shows the definition. Outside formal education, the Glossary is helpful for anyone navigating open science. By increasing access to discipline-specific language, this OER helps broaden participation. The community aspect also continues: the Glossary is dynamically updated as new terms emerge, as an open, community-maintained resource.

Reflections: The FORRT Glossary project underscores how an OER can target micro-level needs (definitions) that have macro impacts (building a shared language). It shows that not all OERs have to be large textbooks. In critical pedagogy, the Glossary helps decolonise language by making the scientific elite's often exclusive language accessible to those historically excluded, including students from non-Western backgrounds and/or less privileged institutions.

5. Conclusion

OERs are more than just cost-free teaching tools—they are powerful instruments for fostering equity, epistemic justice, and participatory knowledge creation in education. Grounded in the principles of accessibility, inclusivity, collaboration, sustainability, and social justice, OERs can transform curricula, decentralise authority in knowledge production, and amplify and elevate voices traditionally excluded. Developing high-quality, inclusive OERs requires intentional planning, iterative refinement, and active community engagement. By embedding critical pedagogical values and prioritising openness - not just in licence, but in process- educators can contribute to a more equitable and just educational landscape. Ultimately, the creation and adoption of OERs is not merely a technical undertaking; it is a political and ethical commitment to reimagining education as a shared, inclusive, and liberatory practice.

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