

# Understanding Open Educational Resources: Next Steps for Research



A Report on the Proceedings of a Meeting to  
Identify Key Opportunities and Challenges around the Creation and  
Use of Open Educational Resources (OER)

June 16-17, 2016

Arlington, VA

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This document reports on the proceedings of a meeting held in mid-June 2016, that brought together different groups within the community of education researchers and practitioners to discuss the opportunities and challenges they face in the development and use of open educational resources (OER). After a short description of the background context for the meeting and its organization, there is a section on the major topical areas of discussion and the associated research questions and infrastructure needs identified by the attendees. The paper concludes with a summary of potential next steps for the community. The Appendix includes the final meeting agenda and a list of participants.

## Background

In October 2015, the U.S. Department of Education (ED) launched its #GoOpen campaign to support states, school districts, and educators using openly licensed educational materials to transform teaching and learning. At an April 2016 briefing hosted by the White House Office of Science and Technology Policy, program staff from the National Science Foundation (NSF), the Institute for Museum and Library Services (IMLS), and the Department of Education (ED) recognized the opportunity presented by the launch, to study the use of OER “in situ.” An idea quickly emerged, to convene representatives of the #GoOpen districts and states, leading principal investigators (PIs) of projects funded by NSF, IMLS, and ED’s Institute for Education Sciences (IES), and other knowledgeable stakeholders and researchers. The convening would bring together practitioners and researchers with the goal of identifying priority areas for OER research including 1) how openly licensed educational resources affect the practices of teachers, librarians, and students; 2) how they influence learning; and 3) what successful learning outcomes look like, for whom, under what circumstances, and why. In addition, the convening would provide an opportunity to explore vital policy questions around issues of access and equity.

Following the April 2016 briefing, program staff from ED, IMLS, and NSF presented the idea for such a convening to their respective leadership teams, who quickly and enthusiastically endorsed the concept. The convening was held in mid-June to enable practitioners from #GoOpen districts and states to travel after the end of the academic school year. Because potential funding opportunities would occur in late Fall 2016, the timing also allowed for sufficient lead time for any research and development teams formed at the meeting to develop proposals for funding their work.

The organizers identified several target audiences that informed the list of potential invitees. This included leaders from #GoOpen districts and states and principal investigators from IMLS, NSF and ED research programs. NSF supported the costs of the meeting (principally travel and lodging for the attendees), handled all travel logistics, and provided space at their Arlington offices. Once “save the date” notices and formal invitations were sent out, meeting organizers crafted the agenda, identifying and sequencing its sessions, securing session leaders, and ensuring the dates were on the calendars of senior leaders at the three collaborating agencies so that they would be able to participate in a closing panel.

Thirty-five participants attended the meeting which was held at NSF on June 16-17. In addition, approximately a dozen staff from the three participating agencies attended as observers. The meeting was designed to enable discussion and interaction that would: 1) articulate key research questions, 2) identify research infrastructure needs, and 3) explore potential partnerships to pursue research and development projects. The meeting included a time to hear from program officers about potential ED, IMLS, and NSF funding opportunities. Immediate feedback during and after the meeting was that all participants appreciated the opportunity to work with people they would not normally engage with to exchange ideas, issues, and opportunities.<sup>1</sup>

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<sup>1</sup> For example, a new IMLS award that traces its origins to this meeting supports the Institute for the Study of Knowledge Management in Education, which is studying the role of school librarians in OER curation: (<https://www.imls.gov/sites/default/files/grants/lg-86-17-0035-17/proposals/lg-86-17-0035-17-full-proposal-documents.pdf>).

## Themes and Priorities

The meeting allowed ample time for attendees to explore mutual areas of interest and to identify common issues regarding the use of OER. Attendees honed in on six major themes: Professional Learning, Impact on Teaching, Impact on Learning, Policy and Procurement, Curation and Quality, and Accessibility. Small group discussions around each of these topics ensued.

### Professional Learning

This group examined the stages of OER use for professional learning and development. The relationship between OER and the educator's learning progression was identified as an area to be addressed, including both enablers and barriers to engagement. The conversation also encompassed professional learning in a broad context, including the impact on student outcomes, instructional practice, and community building.

#### Research Questions:

1. What are the professional learning conditions in which the use of OER flourishes?
2. Which professional learning theories pertain to OER and learning progressions? (Literature Review)
3. What is the professional learning that occurs when educators engage in OER curation?
4. What sorts of policies/school culture need to be in place for the model to be deployed?
5. What is the value proposition to educators, librarians and museum professionals, and their institutions for supporting the use of OER?

To support the development of a professional learning model, this group proposed several research methods, including literature reviews, interviews, think aloud/think after approaches, focus groups, surveys, observation/ethnographic methods, and case studies (for model testing).

### Impact on Teaching

The group discussing teaching & learning was particularly interested in discovering the factors that drive educators to adopt the use of OER and the impacts it has on their classrooms. A large theme illustrated throughout the session was empowering teachers by giving them autonomy and ownership. Strategies to implement this included pre-service intervention that promotes awareness of OER, professional development, and collaboration with others.

#### Research Questions:

1. Are teachers' characteristics driving adoption?
2. What is the impact of using OER on teachers' psychological factors (e.g. perception, motivation)?
3. What is the impact on teaching across the continuum of OER usage?
4. What would draw a professional educator to use OER?
5. What are the demographics of OER adopters?

### Impact on Learning

This group was particularly interested in the measurement of impactful learning. The key questions involved standards, formative assessments, and other means of judging student learning from OER. Another area of discussion was how students might be engaged in the development of their own OER textbook to enhance their own learning of the subject, create more resources, and earn learn agency. Additionally, the group spent time discussing how teacher resources, specifically time, should be used in the production of OER versus time in the classroom.

### Research Questions:

1. What are the appropriate standards for OER (e.g. quality, format, granularity, etc.)?
2. What decisions about the models or phases of instruction do teachers have to make to adopt OER?
3. What is the role of formative assessment?
4. Should teacher evaluation be tied to student growth, and if so, how?
5. Are OER models for instruction the same as static models?

### Policy and Procurement

While developing the research questions for policy and procurement the conversation centered around sharing, compensation, and creating a sharing culture between the districts. The biggest question was how to support/regulate these components through policy without stifling innovation and creativity. This was also a basis of understanding the interactions between state and local government and who will have access to OER materials.

### Research Questions:

1. In places where legislation or policy that supports OER was adopted, what was the catalyst to support stakeholders in adoption?
2. What policies should/can support the use or creation of OER? Is regulation necessary for OER adoption?
3. How do we lessen the risk and uncertainty for teachers who participate in using or creating OER?
4. How do we develop policies that allow for a safe transition to OER-based curriculum reform, but also maintain for-profit relationships where needed?

### Curation and Quality

The discussion on curation and quality focused on exploratory research, emphasizing that expansion of the use of OER in the K-12 sector is dependent on defining the roles and practices for ecosystems of content curation. The group was particularly interested in what the #GoOpen districts are currently doing to evaluate quality and to curate content. Different aspects of interest for potential study include: the role teachers/students/librarians are taking on, cost dimensions, processes, and stakeholder perceptions. Another important focus of this discussion revolved around equity and how we can ensure districts with fewer economic resources and greater needs have access to high quality curated content and resources to curate content of local relevance.

### Research Questions:

1. What practices and roles are emerging to curate the content in a range of particular districts?
2. What kinds of roles can different groups (teachers, librarians, district and state level curriculum specialists, experts from area civic institutions like museums and public libraries) play as curators of OER and what potential effects could those have?
3. What digital infrastructure should be put in place (at a regional, state, or national level)?
4. How can we enable users to follow and trace the provenance of open educational resources?
5. What models are emerging for roles and practices for curating educational content for curricula in the #GoOpen districts?

### Accessibility

The group discussed access, accessibility and inequity in a broad context. Given that there are significant inequities in classroom resources and differential access to learning experiences and this has impact on student performance, it is critical to consider how the open education movement is interacting and affecting

issues around accessibility and equity. To this end, it is necessary to better understand how open educational resources can be developed and deployed with a core commitment and focus on both accessibility and equity.

#### Research Questions:

1. What should be understood as the basic conceptual elements of accessibility in OER?
2. What policies/initiatives are needed to stimulate the ecosystems of OER providers to produce more personalized/linguistic options?
3. How can we support teachers' abilities to provide students in their classrooms with equitable OER-based learning opportunities?
4. What are the unique characteristics of OER that can facilitate equitable learning experiences for all and how can they be used?
5. What are the optimal conditions needed to ensure OER is fully accessible from the beginning, and that accessibility is not tacked on as an afterthought?

## Going Forward

The areas of interest and research identified and articulated by participants in the workshop suggest the need for continued work and partnerships in these areas. In some cases, it was clear that there are specific research and implementation projects that would be the logical next step. In many others, it was clear that the next steps would be additional convenings, workshops or summits to focus more specifically in these areas.

Representatives from each of the funding agencies noted that many of these areas of activity could potentially be supported by many of their ongoing funding programs. For projects that are anchored or connected in the work of museums and libraries, IMLS funding opportunities for the [National Leadership Grants Program for Libraries](#) or the [National Leadership Grants Program for Museums](#) and the [Laura Bush 21st Century Librarian Program](#) are likely particularly relevant. Each of these programs can support planning projects, forums and research and implementation projects.

Several programs at NSF could be appropriate for research, development, and/or implementation efforts that advance the broader OER agenda and the questions identified in the thematic areas described above.

The [EHR Core Research \(ECR\)](#) program provides funding in critical research areas that are essential, broad, and enduring. ECR proposals are expected to help synthesize, build and/or expand research foundations in several focal areas: STEM learning, STEM learning environments, STEM workforce development, and broadening participation in STEM, all of which have the potential to be informed by work that is seen through an OER lens.

Full Proposal Deadline Dates: Second Thursday in September (see the ECR home page at [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=504924](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504924))

The [Discovery Research PreK-12 \(DRK-12\)](#) program seeks to significantly enhance the learning and teaching of science, technology, engineering and mathematics (STEM) by PreK-12 students and teachers, through research and development of STEM education innovations and approaches. Projects in the DRK-12 program build on fundamental research in STEM education and prior research and development efforts that provide theoretical and empirical justification for the proposed work. The program invites proposals that address

immediate challenges that are facing PreK-12 STEM education, as well as those that anticipate radically different structures and functions of PreK-12 teaching and learning, including those informed by the use of OER approaches.

Full Proposal Deadline Dates: New solicitation published (see the DRK-12 home page at [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=500047](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500047))

The [Improving Undergraduate STEM Education \(IUSE: EHR\)](#) program invites proposals that address immediate challenges and opportunities that are facing undergraduate STEM education, as well as those that anticipate new structures (e.g. organizational changes, new methods for certification or credentialing, course re-conception, cyberlearning, etc.) and/or new functions of the undergraduate learning and teaching enterprise. The program recognizes and respects the variety of discipline-specific challenges and opportunities facing STEM faculty members as they strive to incorporate results from educational research into classroom practice and work with education research colleagues and social science learning scholars to advance understanding of effective teaching and learning. Similar to the above programs, projects that explore the use of OER and the impact of that use on student learning or institutional change are welcome.

Full Proposal Deadline Dates: New solicitation published (see the IUSE: EHR home page at [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505082](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505082)).

The Institute of Education Sciences manages several grant programs under the National Center for Education Research (NCER) and the National Center for Special Education Research (NCSER). These programs are outlined in Table 1 below.

**Table 1. IES Research Grant Programs**

NCER	NCSER
Education Research	Special Education Research
Research & Development Centers	Special Education Research Training Program Postdoctoral Training Early Career
Pre- and Postdoctoral Research Training	Research & Development Centers
Researcher & Policymaker Training Program in the Education Sciences	
Evaluation of State & Local Education Programs & Policies	
Statistical and Research Methodology in Education	
Researcher-Practitioner Partnerships in Education Research	
Small Business Innovation Research	
Research Networks Focused on Critical Problems of Education Policy and Practice	

The [Researcher-Practitioner Partnerships in Education Research](#) program was highlighted as a particularly relevant program for furthering the OER research priorities identified during the convening. This program supports partnerships composed of research institutions and state or local education agencies that have identified an education issue or problem of high priority for the education agency that has important implications for improving student education outcomes. These partnerships are to carry out initial research on that education issue and develop a plan for future research on it.

Another program, the [Evaluation of State and Local Education Programs and Policies](#) topic supports the evaluation of fully-developed programs and policies implemented by state and local education agencies to determine whether they produce a beneficial impact on student education outcomes relative to a counterfactual when they are implemented under routine conditions in authentic education settings. These evaluations are to determine both the overall impact of the programs/policies and the impact across a variety of conditions. The Institute supports the evaluation of programs and policies that substantially modify or differ from existing practices.

Finally, the [Low-Cost, Short Duration Evaluation of Education Interventions](#) grant program is designed to support rigorous evaluations of education interventions that state or local education agencies expect to produce meaningful improvements in student education outcomes within a short period (for example, within a single semester or academic year). The evaluations are to be conducted for \$250,000 or less and completed within two years and carried out by research institutions and state or local education agencies working together as partners. The evaluations will use randomized controlled trials or regression discontinuity designs to determine the impact of interventions on student education outcomes, and will rely on administrative data or other sources of secondary data to provide measures of these student outcomes. State and/or local education agencies cover the costs of interventions and their implementation and evaluation results are to be disseminated throughout the education agency and to the public before the end of the grant.

Information on upcoming funding opportunities and timelines can be found at: <http://ies.ed.gov/funding/>.

# Appendices

## Appendix A - OER Research Convening Agenda

### DAY 1

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8:30 - 9:00	Arrival, Sign In, Networking, Coffee
9:00 - 9:30	Welcome & Opening Remarks
9:45 - 10:15	Setting the Stage
10:15 – 10:45	Insights from the Field
11:00 – 12:00	Generating Topics and Issues for Exploration
12:00 – 12:30	Federal Funding Opportunities
12:30 – 1:30	Lunch
1:30 – 2:00	Identifying Key Areas for Further Discussion
2:15 – 2:45	Formulating Key Research Questions
3:15 - 4:55	Design Challenge: Studying the Impact of OER on K-12 Education
4:55 - 5:00	Closing

### DAY 2

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8:30 - 9:00	Arrival, Sign in, Networking, Coffee
9:00 - 9:45	Alignment with Agency Priorities and Potential for Impact
9:45 - 10:30	Researcher Reflections: Promising topics and Partnerships
10:45 - 12:00	Debrief and Closing Remarks

## Appendix B - Participant List

Curt	Mould	Sun Prairie School District
Dan	Lawson	Tulahoma City Schools
Matthew	Miller	Mentor School District
Jeanette	Westfall	Liberty Public Schools
Dr. Peter	Leida	Colonial Public Schools
Mark	Stout	Howard County Public Schools
Bob	Boyd	Kettle Moraine School District
Angelique	Nedved	Lawrence Public Schools
Dr. Erin	English	Vista Unified School District
Sylvia	Norton	American Association of School Librarians
James	Liou	William Penn Foundation
Doug	Levin	EdTech Strategies
Cynthia	Jimes	ISKME
Marcia	Mardis	Florida State University
Amanda	Cadran	LearnTrials
T. Jared	Robinson	Michigan Department of Education
Steve	Schneider	WestED
Danny	Stanhope	LearnTrials
Robby	Robson	Eduworks, Corp.
Tammy	Sumner	University of Colorado
Mimi	Recker	Utah State University
Dave	McArthur	Independent Consultant
Steve	Uzzo	New York Hall of Science
Cathy	Casserly	Carnegie Foundation for the Advancement of Teaching
Rebecca	Griffiths	SRI

John	Ristvey	UCAR
Angela	Baker	Georgia Department of Education
Alan	Griffin	Utah Department of Education
Shawn	Gross	University of San Diego
Nicole	Allen	SPARC
Meredith	Jacobs	CC US
Paula	Gangopadhyay	IMLS
Kathryn	Matthew	IMLS
Marvin	Carr	IMLS
Trevor	Owens	IMLS
Maura	Marx	IMLS
Andrew	Marcinek	ED
Sara	Trettin	ED
Kristina	Peters	ED
Joseph	South	ED
James	Collins	ED
Isaiah	Kmrar	ED
Kathy	Lin	ED
James	Harnett	ED
Elizabeth	Albro	ED
Eamonn	Kelly	NSF
Beth	Russell	NSF
Lee	Zia	NSF
Emily	Sheehan	NSF
Nancy	Weiss	White House Office of Science and Technology Policy