Open Educational Resources (OER) in the K-12 Curriculum

Overcoming Obstacles to OER

- Organizational Capacity
- Resource Curation
- Coherence & Consistency
- Time & Money
- Planning & Evaluation
ABOUT THIS REPORT

This report was developed by the Friday Institute for Educational Innovation at North Carolina State University in collaboration with the North Carolina Department of Public Instruction.

The mission of the Friday Institute for Educational Innovation at the NC State University College of Education is to advance education through innovation in teaching, learning, and leadership. The Friday Institute conducts research, develops educational resources, provides professional development programs for educators, advocates to improve teaching and learning, and helps inform policy-making. The Friday Institute is in the process of developing the North Carolina Digital Learning Plan, which includes a comprehensive asset and needs assessment of how schools and districts in the state can transition to digital learning to improve student outcomes. The plan includes an emphasis on human capacity, which builds upon the Friday Institute’s extensive experience in providing and evaluating professional learning opportunities for state and district level leaders, principals, instructional coaches, and educators. http://fi.ncsu.edu/

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INTRODUCTION

Open Educational Resources (OER) -- instructional materials that are free to access, reuse, revise, remix, and redistribute -- have gained significant attention in recent years. In 2015, the U.S. Department of Education launched the #GoOpen campaign, which encourages the use of open educational resources in schools throughout the country. Twenty states and 114 school districts have committed to moving towards openly licensed educational resources. These state and district initiatives have clearly gained momentum. In a recent survey of K-12 Instructional Technology leaders, nearly 80% of respondents indicated that OER was a part of their district’s digital content strategy.1 While many schools and districts use OER to supplement purchased curricular materials, a growing number are moving towards OER as a replacement. The Babson Survey Research Group reported that 37% of districts surveyed considered adopting at least one full-course OER curriculum, and 16% reported already doing so.2

While potential cost-savings and curricular flexibility are likely key factors behind this trend, schools and districts need to be aware of, and prepared to address, the challenges they will encounter in leveraging these materials. This guide for school and district leaders summarizes the potential benefits of OER, describes challenges associated with transitioning to these resources, and suggests strategies to overcome these obstacles. To conclude, this guide provides a checklist of essential questions that school and district teams should consider when planning their OER initiative.

Potential Benefits

Beyond the appeal of low-to-no-cost instructional materials, OER offers other potential advantages over traditional resources. Students benefit from having access to relevant and high-quality curriculum materials, regardless of their location, socio-economic status, or school enrollment. Their teachers are able to modify and customize the curriculum to better meet their needs, interests, and learning preferences. School and district leaders are able to better align resources with local standards and initiatives, and to reallocate resources for teacher training and infrastructure needs. The following summary of OER benefits is adapted from the International Association for K-12 Online Learning OER guide for state and school leaders.4

• **Collaboration and Partnerships.** OER initiatives can provide a foundation for school, district, and state partnerships, as well as opportunities for collaborations between classrooms.

• **Knowledge Sharing and Access.** OER enables teachers to share their knowledge with their colleagues, and provides improved student access to quality material within and beyond the classroom.

• **Cost Savings and Efficiency.** OER can reduce money spent on reoccurring costs for textbooks or supplementary materials, while also saving time spent in securing permission for their use.

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What is OER?

Open Educational Resources are defined as technology-enabled, open provision of educational resources...made freely available over the Web or the Internet. Their principle use is by teachers and educational institutions to support course development, but they can also be used directly by students. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabuses, curricula, and teachers’ guides.3
• **Quality Improvements.** The ability to continuously update and evaluate OER can improve the quality of materials over time, ensuring that materials are always relevant, accurate, and effective.

• **Independence and Personalization.** The variety and accessibility of OER helps teachers address students’ individual needs and interests, and provides students opportunities to learn independently.

Concrete examples of these benefits can be found across the country. John Coe, a veteran science teacher from North Lake Middle School in Lake Stevens, Washington, said, “...we can edit down the sections of text quickly. We can create leveled readings [that] help solve some of the differences in reading levels … and give relevance to the text.” Since North Lake Middle School started using individualized OER, the scores of their 8th-grade students on state assessments have been 10% to 15% higher than those in neighboring districts. Teachers in the Putnam City Schools, in Oklahoma, use OER to write all curriculum content and align it to state standards. They create “textbooks” with interactive elements and local topics and content. It has added up to significant savings for the district.

**OER CHALLENGES & STRATEGIES**

Although OER offers many benefits to educators and students, leveraging this potential can prove challenging for schools and districts. As with any change to instruction or new initiative, districts will need to ensure they are ready for implementation. Districts that do not have the requisite resources, in terms of both material items and personnel, will struggle to implement OER. Resources need to be dedicated for training and support, and the process of procuring, vetting, managing, and evaluating OER can place a substantial burden on schools and districts and may require a dedicated team and/or financial commitments.

School and district leaders considering shifting to using OER should understand, and be prepared to address, five common challenges associated with the adoption and implementation of these materials:

1. **Organizational Capacity.** Schools and districts need to supply the requisite skills and resources as they assume roles and responsibilities traditionally addressed by publishers.

2. **Resource Curation.** Finding or developing high-quality instructional materials and making them accessible to educators is a complex and time-consuming task.

3. **Coherence & Consistency.** A curriculum consisting primarily of OER can easily become a patchwork collection of resources resulting in a disjointed learning experience.

4. **Time & Money.** Despite the resources themselves being free, there are several direct and indirect costs associated with their adoption.

5. **Planning & Evaluation.** In the absence of clearly defined goals and a plan for measuring progress, schools and districts will have a limited understanding of the impact of transitioning to OER.
1. Organizational Capacity

When a district buys a commercial academic product, accountability falls directly on the big textbook company. With OER, you really bring that responsibility in-house. It’s up to us to look at the materials and say, ‘This meets the needs of our kids, our teachers, our community.’

–David Hammond, Assistant Superintendent Bethel School District

Whether by design or by accident, many schools and districts have begun incorporating OER without carefully considering the required resources and training necessary to effectively integrate these materials. When shifting from vendor-based textbooks or materials to OER, they assume many of the responsibilities previously performed by publishers. As a result, schools and districts often lack or underestimate the necessary resources to initiate and sustain OER initiatives. School leaders must consider what materials they will need, whether the current level of staffing will be sufficient, and how to help teachers effectively use OER. Patrick Larkin, Assistant Superintendent of Learning for Burlington Public Schools (MA), cited a lack of dedicated time and capacity-building as contributing factors to an OER initiative that failed to gain traction.

To ensure the necessary capacity to effectively implement OER, schools and districts can:

1. **Assemble a team** with the requisite expertise to effectively leverage OER.
2. **Supply the infrastructure** necessary to deliver instruction.
3. **Provide training** to support open educational practices.

### Assemble a Team

Successfully transitioning to OER will require a dedicated team of educators with a wide range of skills. While the composition, size, and number of teams will vary depending on the scope of the initiative, schools and districts will need to identify educators with grade-level and content-area expertise to support the development, selection, and/or modification of resources. Staff with expertise in information management and copyright will be needed to help locate, organize, and share materials. Technical expertise may also be needed to identify or support systems used to store and deliver educational materials. In addition, school or district leaders will need to determine the scope and desired outcomes of the initiative, help coordinate efforts, and monitor and evaluate their impact on teaching and learning. The #GoOpen District Launch Packet provides a detailed example of staff roles, responsibilities, and compensation that the Coronado Unified School District has developed as part of their OER initiative.

Many schools and districts will want to take advantage of existing expertise, such as teachers experienced with OER who have honed their skills in finding, evaluating, and using resources. School librarians have training and experience in curating a collection of resources for instructional purposes and have a general understanding of the curriculum of the whole school. Technology directors and instructional technology facilitators can assist in acquiring resources that are compatible with the
district’s existing digital environment and that can be used on mobile devices. Schools and districts will need to consider, however, how they will address the cost of either hiring staff to perform these new responsibilities or provide existing staff with the time or compensation to do so.

Supply the Infrastructure

In the absence of publisher textbooks, student workbooks, and hands-on materials typically supplied by publishers, schools and districts will be responsible for supplying the raw material necessary to deliver instruction. For OER that relies heavily on technology, such as video tutorials or adaptive assessments, schools and districts will need to provide devices and equipment that will enable teachers and students to access them. Leaders will also need to determine network requirements and what changes should be made to provide reliable internet access for the various open resources that teachers and students will be using.

Leaders should consider what other tools and materials teachers and students will need to implement OER effectively. Some resources may require extensive printing, such as leveled readers or practice worksheets. There may also be content-specific equipment needs, classroom projection or casting needs, or additional adaptive technology needs for students with disabilities. As will be described in the next section, schools and districts may also need to provide a central, online repository for easy access to curated resources.

Provide Training

Effectively using OER will require specific training in the practices that are key to successful OER implementation. Although most teachers have used digital content in their instruction, not all teachers are ready for the transition, or understand how to use OER effectively. Educators, at all levels, need support with open educational practices to build their sophistication with accessing, revising, remixing, and reusing OER.

The time invested in professional development and collaboration will pay off for schools. Research conducted by the Institute for the Study of Knowledge Management in Education found that collaboration among teachers working to create and use OER led to increases in teachers’ confidence, creativity, and innovation. Open resources have also been found to lead to improvements in existing collaborative practices and to increased sharing of techniques and materials.12

During the 2017-18 school year, Wake County Public School System in North Carolina decided to phase in OER curricula for math and language arts in select grades. Recognizing the need to engage teachers in ongoing professional learning focused on the new materials, Wake County provided training days throughout the year, created online communities to share ideas, and assembled instructional leadership teams in each school. In total, Wake County invested more than $1.5 million on professional learning related to the implementation of the OER curricula in the first year. Brian Kingsley, assistant superintendent for academics, noted that OER enabled the district to invest its money in teachers rather than textbooks.13

For teachers who have no familiarity with open educational practices, the challenge is both how to find appropriate resources and how to begin to use them. One framework to help teachers understand OER and open educational practices is “the 5Rs:”
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- **retain** open resources;
- **reuse** content in a variety of ways;
- **revise** content to meet students’ needs;
- **remix** the content with other material;
- **redistribute** the content to share their work with others.

Teachers must be able to modify and mix open resources without compromising the content. This is OER-enabled pedagogy, which David Wiley defines as, “the set of teaching and learning practices only possible or practical when you have permission to engage in the 5R activities.” Teachers will need ongoing training and time to collaborate and experiment in order to fully understand and implement open educational practices.\(^\text{14}\)

**2. Curation of High-Quality Resources**

[The explosion of available content… is both a blessing, as it reduces the likelihood of needing to develop new content, and a curse, as it demands higher level skills in information searching, selection, adaptation, and evaluation… The primary responsibility for finding the right materials to use, and for using them to support effective education, still resides with the institutions and educators offering the education.]

—Neil Butcher, A Basic Guide to OER

Schools and districts transitioning to OER will face three broad issues when it comes to procuring these resources: discovery, quality, and sustainability. The challenge of finding high-quality instructional resources amid the plethora of content available online can be both time-consuming and frustrating. In an Education Week article titled Flood of Open Educational Resources Challenge Educators, Michelle Molar compared this problem to finding a needle in a haystack. In higher education, where OER adoption has happened at a quicker pace, the top three barriers to OER adoption cited by faculty involved resource discovery and evaluation of quality.\(^\text{16}\) In addition to finding high-quality resources, schools and districts also face the issue of ensuring these resources will remain available each school year.

To address the issues of discovery, quality, and sustained access to OER materials, districts can:

1. **Search smarter** by leveraging teacher-curated materials and specialized OER websites.
2. **Assure Quality** using freely available review tools and resources.
3. **Preserve Access** to resources by maintaining or using an online repository.
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Search Smarter

One serious challenge schools and districts will face is locating relevant, high-quality resources. Fortunately, teachers in any given school or district are likely already using OER. Beginning by asking teachers what open resources they already use will help districts accomplish several tasks at once: they will identify the resources and repositories that teachers are already familiar with; they will begin to assemble a picture of the district’s OER gaps; they will identify potential teacher leaders who could be enlisted to assist with other OER tasks, and; they will develop a sense of how teachers have selected items and whether they have assessed their quality.

While technical standards and metadata initiatives have improved results from search engines like Google, finding high-quality, standards-aligned resources using this approach can still be a time-consuming process. There are a growing number of specialized OER repositories and platforms, however, that provide searchable collections of open resources to facilitate this process. Content from these sites may include full courses, units, lessons, activities, or discrete items such as reference materials or informational videos. Features, such as search engines and filters, also help narrow down content by curriculum standard, grade level, and subject area. Some states that are part of the #GoOpen initiative have developed statewide repositories for openly licensed resources. While many of these sites are free, some OER providers, such as iCurio, layer on additional features that require a paid subscription. Below are some recommended OER providers:

- **OER Commons** provides tools for educators to develop, search, and evaluate over 50,000 resources, including: curated collections such as interactive mini-lessons and simulations; open textbooks, and; K-12 Lesson Plans, worksheets, and activities.

- **Teacher Advisor with Watson** provides access to lesson plans, activities, and instructional strategies vetted by organizations such as EngageNY, UnboundEd, and the North Carolina Dept. of Public Instruction.

- **Amazon Inspire** provides educators a place to discover, manage, evaluate, and share educational resources contributed by teachers, schools, districts, and third-party publishers.

Assure Quality

Educators know that there is some variability in the quality of published textbooks. Teachers may need to supplement with additional activities, for example, or modify materials to meet local requirements. This added layer of quality assurance is especially critical when transitioning to OER. Even resources that have been “vetted” by OER providers can vary greatly in quality and alignment with the local curriculum. When developing, selecting, or modifying OER for classroom use, schools and districts should have a common language and set of criteria for defining their quality.
There are numerous tools available to assist with this quality review, and staff members from the Friday Institute and the North Carolina Department of Public Instruction have developed the Quality Review Tools for Digital Learning Resources. This document provides a checklist and rubric to help schools and districts evaluate supplemental digital learning resources such as educational games, simulations, activities, or lesson plans. The checklist and rubric may also serve as an initial screening tool for more comprehensive materials such as multi-lesson units, e-textbooks, or online courses. The checklist and rubrics address four key quality domains – instruction, content, technology, and design. When used in combination with Selecting Digital Education Content: A Guide for North Carolina Schools and Districts, these tools provide districts with the means to evaluate OER and other digital materials.

This is just one tool for evaluating open educational resources, and there are many more available. Nesbit’s (2015) Learning Object Review Instrument (LORI) and Achieve’s Rubrics for Evaluating OER Objects are both excellent resources. Subject-specific rubrics such as Achieve’s EQuIP Rubrics for math, ELA, and science are also recommended when reviewing more comprehensive materials, such as multi-week instructional units or full-course materials. Districts will need to decide for themselves how to evaluate the quality of the open resources they use. As with the OER items themselves, some districts may want to select multiple tools, or combine parts of tools to meet the needs of their unique contexts.

**Preserve Access**

Once teachers have found appropriate open resources and have vetted them for quality, the school and district will need a central location to store them to ensure their availability to all teachers. There are several options available to districts for this purpose, and selecting the best one requires consideration of several factors. Districts and schools that have the necessary resources, in terms of technology and in terms of staff members, may want to create their own OER repository, or link their resources to their learning management system (LMS). Canvas, a popular LMS used widely in K-12, includes access to Canvas Commons, a learning object repository that enables educators to find, import, and share resources with the public or within their school or district.

Other districts may elect to use an open repository that already exists to store their collection. Several OER repositories allow users to contribute their items to the collection they host. In this case, of course, districts are relying on the repository they select to remain active and usable for their teachers. Finally, schools may decide to use an OER directory, a searchable site that maintains links to open resources but does not host the items, themselves. Again, this puts districts in the position of being dependent on the site to ensure the links are active and usable.
3. Coherence & Consistency

In increasingly, supporters of open resources are recognizing the need to make connections across topics… the importance of what happened the day before, and what’s going to happen tomorrow. The alternative is a random delivery of lessons, which is probably not the best approach for kids.

– Brian Pick, DC Public School’s Chief of Teaching and Learning

OER can vary greatly in both form and function. A resource may consist of a semester-long course, a multi-week unit, a short lesson or activity, or even a discrete piece of informational content. OER can also vary greatly in appearance, structure and underlying philosophy. For example, OER assembled by a school or district may differ in how navigational elements are presented on a web page; the format and sequence of elements in a lesson plan; or their use of instructional methods such as direct-instruction and inquiry-based learning. Assembling a curriculum from a collection of diverse resources can lead to a disjointed student experience that negatively impacts learning. Recognizing this problem, The National Council of Teachers of Mathematics (NCTM) has argued that emphasis on a coherent curriculum “is even more important in the age of open education resources because it is the curriculum that establishes the learning goals in a coherent progression and helps teachers to see and understand the multiple pathways that students take through the progression.”

To help maintain curricular coherence, schools and districts can:

- Create collections of supplementary resources consistent with existing curricular materials.
- Adopt or Assemble packages to replace all or part of the curriculum.
- Establish processes and procedures to support consistency of use.

Create Collections

Open resources represent a significant shift in how teachers operate. Some schools and districts have recognized that this shift in instructional practice will take time to implement and expand beyond initial pilots. As a result, they taken a more gradual approach to adopting OER. Many schools and districts ease into their OER transition by maintaining purchased materials as their primary curriculum and supplementing with OER. This approach can help maintain the coherence of the core curriculum, while addressing gaps where local standards are poorly covered and provide alternate materials for remediation and extended learning opportunities.

One approach for maintaining coherence and consistency in the use of supplementary OER is to curate a collection of approved resources organized by local curricular standards identified as high priority. In addition to meeting quality criteria identified by the school or district, these materials are selected or modified to best complement the existing curriculum. These materials should span a range of functions to support flexibility in their use, such as short videos to help reinforce concepts, engaging activities to practice skills, and high-quality lesson and assessment materials.
Adopt or Assemble Packages

For districts looking to replace curricular materials either as a whole or in large sequences, the path of least resistance is to adopt OER materials that have been specifically designed to cover units or a full-course of instruction. OER developers and providers such as Open-Up Resources offer free comprehensive materials for middle-school math developed by Illustrative Mathematics, as well as an English Language Arts curriculum by EL Education. Providers such as these often offer paid services, such as professional development and consulting, to support effective implementation of the curriculum.

Alternately, as schools and districts build both their capacity for curating content and their collection of high-quality resources from which to draw, they may consider the next logical step of developing a package of carefully sequenced and adapted materials as a replacement to their commercial products. While this approach offers the highest degree of customization to meet the specific needs of a school or district, curriculum design is a time-consuming and complex task that is often neglected in educator preparation programs. Schools and districts will need to determine if they have the capacity to put together a curriculum from varied OER that is as cohesive and as effective as the program they are trying to replace.

Establish Policies and Procedure

Many teachers find and use their own OER materials without adhering to any kind of organized school or district plan. This can result in multiple, separate collections of OER materials that only the teachers who use them even know exist. In this way, the curriculum can become splintered with some teachers of a specific course using materials that other teachers of that course do not use. Similarly, the curriculum can become repetitive with teachers in one grade level using the exact same resources that teachers in the next grade level use.

OER policies and procedures should include how resources will be identified for potential adoption, quality review processes, how recommended uses will be established, and the resource evaluation process. The method of sharing new resources with teachers should also be considered, and district technology leaders would be helpful in deciding how to present the resources and recommendations within the district’s digital environment.

Once districts have information on the resources teachers are already using, they can use it to develop procedures and processes for selecting and using OER. Districts that are able to designate...
staff members responsible for aligning resources with particular parts of units, or within pacing
guides, will be at an advantage when it comes to aligning resources with curriculum. Unfortunately,
not all districts are able to have staff members dedicated to maintaining and aligning their OER
collection. Some districts will need to train their teachers to take on that responsibility.

4. Time & Money

Open Educational Resources are ‘free like a puppy.’ … even free resources come with
a cost.

–Emily Schwartz, Analyst, Educational Transformation

At face value, OER seems to be a way to cut costs on things like textbooks and consumable materials
like student workbooks. However, as the previous sections suggest, there are a number of costs
associated with transitioning to OER. These costs are linked to the work of selecting, vetting, and
curating OER for schools, as well as training teachers and administrators in the proficient use of OER.
Districts that do not already have enough digital devices will also see costs associated with either
the purchase, maintenance, and replacement of technology and devices, or costs associated with
acquiring physical materials needed to deliver instruction, such as extensive printing. In an effort to
replace the commercial K-5 math curriculum, the Bethel School District in Washington State spent
$268,000 of its $200 million budget on new materials associated with transitioning to open resources
during the first year. While the district anticipated long-term cost savings by replacing additional
commercial products, the recurring cost of supporting the OER K-5 math materials was still estimated
to be $150,000 annually.

To help mitigate the costs associated with transitioning to OER, districts can:

• **Leverage in-house expertise** to support curation and training.

• **Reallocate resources** to provide the time and compensation for staff.

• **Secure continuous funding** to sustain the initiative and efforts.

Leverage In-house Expertise

School leaders often can identify teachers who, if they had the necessary time, would do an excellent
job of curating open resources for certain subjects and grade levels. District leaders may want to take
advantage of this knowledge and work with school leaders to create processes for identifying a cadre
of teachers who would be given technology sabbaticals on a rotating basis. During their time away
from the classroom, these teachers would work on finding appropriate resources for their designated
subjects and grade levels and aligning them to the curriculum. They could also be used to provide
professional development to their colleagues on how to use the resources with their students.

As mentioned earlier, there are several ways districts can use in-house expertise to advance the
move to OER. Asking in-house experts to assist in developing and curating the OER collection for a
particular subject and grade level, as the Tullahoma City Schools did, is useful for districts that are
phasing in the use of OER. This approach also has the advantage of creating a district network of support for teachers and in creating a coherent curriculum. Districts may also want to take advantage of the training and expertise of their school librarians in curating their OER collection. Librarians would also be good resources for training on copyright compliance.

## Reallocate Resources

Educators are extremely busy people and time is their most precious resource. If districts will be requiring them to curate resources or provide support, leaders will need to find ways to create the time for these added responsibilities. One way to do this is to reallocate funding for technology sabbaticals where teachers take a short a leave of absence during the school year to support OER efforts. While appropriate instructional services such as substitute teachers will need to be employed while these teachers are absent, this can still save districts money compared to funding summer workshops or hiring new staff.

Districts have time built into their calendars each year for professional development. Leaders who want to move to OER can reallocate that time to train teachers in OER, open educational practices, how to assess the quality of OER, recommended uses of individual resources, etc. Additionally, many districts set aside time for vertical subject-area team meetings, grade-level team meetings, and interdisciplinary meetings. Leaders may want to set aside some time in these meetings to continue to train teachers in OER use or to support the curation and vetting of resources. Using existing professional development time and free professional development works best when a district is taking a gradual approach to using OER in instruction. Districts that want to speed up the shift should consider how they could provide intensive professional development to staff before the shift and ongoing professional development thereafter.

Schools and districts may find that there is a limit to what can be accomplished by existing staff, regardless of the time and compensation that can be provided. To fund a new position related to OER, however, leaders would need to think in terms of a long-term reallocation rather than a short-term solution. The position that they create for someone to lead the move to OER may eventually become the position to maintain and sustain OER use in the schools. Some districts will also find that they will need more than one new position to truly make the shift to OER. There are many kinds of support that teachers and schools will need, and very few individuals have the skill set that could address all of those needs.

The experiences of the Williamsfield Community Unit School District in Illinois were highlighted in the most recent update to the National Education Technology Plan. District leaders recognized the need to build teacher capacity with digital content, so they dedicated time and resources for professional development to help teachers understand how to build, maintain, and use a cache of quality open content... With the money previously allotted for textbooks, the district also purchased low-cost, cloud- based laptop computers. In addition, leadership allocated federal Rural Education Achievement Program and Title II funding to procure devices and upgrade connectivity infrastructure...” The teachers are using collaborative cloud-based storage to house their repository of content. The approach has spread beyond their initial focus on mathematics instruction into other subjects as well, setting a tone and track for the district’s growing STEM initiative.21
Secure Continuous Funding

Leaders will need to help their boards of education and local governments understand the need for funding associated with the move to OER. Providing regular updates on the district’s progress with OER, demonstrating open educational practices, and recommending reading regarding OER are good first steps, but they will not be enough. Schools will need to engage in an ongoing, big-picture dialog with those who hold the purse strings, as well as with the community at large. Sharing a long-term vision of teaching and learning, that includes use of OER and all that entails, will require the development of a communication plan.

Many district leaders have also actively sought out grants from state agencies, non-profit organizations, and foundations. For many districts, these funds have become vital to their ability to provide digital learning opportunities, particularly with regard to the purchase of devices. Although grant funds are traditionally not as reliable in funding personnel as state and federal funds for schools, they can often be used for professional development, equipment purchases, and temporary positions. When districts are in the early stages of moving to OER, grant funds can be ideal for paying for these temporary or one-time expenses. For the ongoing expenses, however, districts should rely on state or federal funds.

Most school districts already engage regularly with various community groups, businesses, and local government organizations. Leaders will need to: develop a targeted, organized, timely plan to educate these groups about the change to OER and why it is happening, explain the various costs, both initial and ongoing, associated with OER; and request additional funds for specific purposes. Simultaneously, leaders will want to make their voices heard at the state level, so that policies and funding can be developed in support of their OER needs.

5. Planning & Evaluation

As schools continue to invest heavily in education technology, there is a pressing need to generate evidence about the effectiveness of these investments.

—U.S. Department of Education, National Educational Technology Plan

An often neglected but critical aspect of OER initiatives is a systematic plan for their evaluation. Effective evaluations can range from informal approaches carried out by knowledgeable and experienced district staff, to more formal applications of research methods by external evaluators or researchers. A well-planned evaluation can help schools and districts plan and make decisions, gather evidence about efficacy, and build an understanding of the conditions that support or impede its impact. In practice, your evaluation will likely combine both formative and summative elements, as decisions are needed during the selection and integration of digital content to improve implementation, and again when its adoption has stabilized to judge whether to abandon, continue, or expand its use.
To help evaluate the success of an OER initiative, schools and districts can:

- **Take inventory** of assets and needs prior to the OER initiative.
- **Monitor use** by teachers and students to understand what is, and is not, working.
- **Assess impact** to determine whether to modify, expand, or discontinue initiative.

### Take Inventory

A robust evaluation can inform important decisions and next steps before, during, and after implementation of a new initiative. During the planning phases of OER adoption, it is important to have clear consensus among stakeholders about the educational problems OER is trying to address, as well identifying why OER is better than existing or competing solutions. In addition, schools need to consider whether OER is a good fit, both from a cultural perspective as well as a logistical one. Specifically, compatibility with values and beliefs of staff members and availability of resources needed to effectively deliver the proposed solution should be assessed prior to adoption.

A needs assessment is a common evaluation approach used by educational organizations during planning phases of technology adoption or program implementation and can help schools and districts address the points above. The [School Technology Needs Assessment (STNA)](https://example.com/stna) is a tool commonly used by schools and districts across North Carolina. The STNA was designed to help evaluators and practitioners systematically collect data to identify their assets and needs related to organizational conditions, professional development, and current use of technology to support teaching and learning.

### Monitor Implementation

Evaluation data collected during the implementation process can help stakeholders make informed decisions about what changes may be needed to better leverage the program, as well as whether to continue or expand the initiative. Specifically, a process or monitoring component to the evaluation can help schools and districts better understand how the OER is being used by educators, identify issues with implementation that may have been overlooked during the planning phases, and determine whether the program should be continued or expanded.

A basic but important consideration prior to making a definite judgment about the effectiveness of the program is having a solid understanding of how it is being used by educators. For example, OER may be frequently used by educators, but in such a way that its impact is likely to be limited. Classroom observations and surveys can be helpful in monitoring and adjusting a program, while informal conversations with teachers and students can provide additional insights into what is and is not working. In addition, learning analytics collected by software can provide valuable information regarding how educators and students are making use of adopted digital content. Vendors such as [Lea(R)n Platform](https://example.com/leaf) offer comprehensive dashboards delivering real-time usage analytics of what online tools teachers and students are using, how much and how often.

### Assess Impact

Ultimately, schools and districts will want to determine if an adopted digital content solution is positively impacting teachers and students. A critical step in judging the merit of a program is
to reflect back on the problem this digital content solution was designed to address and to set measurable short-term and long-term outcomes that will help determine how the implementation is progressing. In many cases these desired outcomes may be to reduce costs or to see gains in academic achievement as measured through student assessments. However, a common mistake made when evaluating technology products or programs is judging them against outcomes they were never designed to, or even likely to, produce. Therefore, it is important to consider additional or alternative outcomes such as gains in instructional efficiency or improvements in student motivation that are unlikely to be captured by standardized tests and traditional assessment formats.

Once the broader goals and measurable objectives and outcomes have been defined, you will need to determine the best way to measure these outcomes. Ideally, data may be available through existing sources such as administrative data, student test scores, teacher observations, or even learning management systems. However, you will likely need to rely on additional formal and informal measures to form a more complete picture of OER’s impact.

CONCLUSION AND CONSIDERATIONS

Transitioning to OER has the potential to reduce costs, personalize instruction, and build internal capacity for supporting open educational practices. To realize the potential of OER, however, this paper has described several key challenges that need to be addressed and has proposed strategies schools and districts can use to address these issues. Putting together a successful plan for implementing OER will require several steps and a team of stakeholders. School and district leaders should consider the following questions when developing this plan:

1. Organizational Capacity

- **Assemble a Team**: Which staff members have the skills and expertise to best support the initiative? Are additional staff needed? What will be their roles and responsibilities?
- **Supply the Infrastructure**: What material resources (e.g. technology, printing supplies, equipment) will you need to implement OER?
- **Provide Training**: What training and support is needed? What relevant professional development currently exists? How will you provide the necessary training and support?

2. Curation of High-Quality Resources

- **Search Smarter**: What curricular areas are you trying to address? What OER is currently being used by teachers? What OER repositories and sites best meet your needs?
- **Assure Quality**: How will OER be assessed for quality? What resources or tools will you use?
- **Preserve Access**: Where and how will educators access curated OER? What processes will be in place for adding, evaluating, updating, and removing resources?
3. Coherence & Consistency

- **Curate Collections**: How can OER best complement the existing curriculum? What curricular standards are priorities?
- **Assemble or Adopt Packages**: Should we develop or adopt packaged OER? How will resources be modified and sequenced to maintain a coherent and consistent learning experience?
- **Develop Processes and Procedures**: What policies and procedures should be put in place? How will your school or district allow for teacher flexibility while supporting consistency of use?

4. Time & Money

- **Leverage existing resources**: How can existing staff and resources be used to support the initiative? What current professional development can support OER efforts?
- **Reallocate and funding**: How will you provide the necessary time and compensation to support staff?
- **Secure continuous funding**: How will you communicate with local school boards and state agencies about maintaining funding? What alternate funding sources may exist?

5. Planning & Evaluation

- **Develop a plan**: What issues are you trying to address through your OER initiative? How will you define success?
- **Monitor Implementation**: In what ways, and to what extent, is OER actually being used by teachers? What factors may be supporting or impeding use? What changes are needed?
- **Assess impact**: How will you “measure” success? What data is currently available and what additional data might be needed?
REFERENCES


