

# District Spotlight: Broken Arrow Public Schools

In 2014, Rebecca Morales, the science instructional specialist at Broken Arrow Public Schools (BAPS) in Oklahoma, discovered OER when she came across the Utah Open Textbook Project, a series of openly licensed textbooks developed through a partnership among the Utah State Board of Education, the Hewlett Foundation, the CK-12 Foundation and Brigham Young University's David O. McKay School of Education (Open Education Group, 2012). Morales believed that science teachers at BAPS could similarly benefit from using cost-effective openly licensed learning materials.

Morales' suggestion to use OER in BAPS to reduce the district's financial burdens was at first met with skepticism from district leaders, who raised concerns regarding the quality of the learning materials. Teachers also wondered whether they had the necessary qualifications or the time to properly curate their own learning materials. Given these initial concerns, BAPS leaders took a cautious approach to OER implementation, opting to integrate the new learning materials into digital textbooks for a few biology and physical sciences courses in grades six through nine. According to OET's #GoOpen Story Engine, "supporters of OER [at BAPS] ... promised that if quality was in danger of being compromised by pursuing ... OER, they wouldn't undertake the new approach" (OET, 2017). Therefore, this pilot initiative in BAPS' science courses was under immense pressure to demonstrate both quality and sustainability.

## A System for Teacher Collaboration

BAPS leaders began their preparation by developing an organized system for teacher collaboration. Instructional specialists led this effort by recruiting appropriate personnel onto implementation teams, training them on the use of open licenses, facilitating discussions about content selection, and coordinating the necessary logistics, such as reserving work spaces or ensuring substitute coverage for teachers. Implementation teams, each staffed with six teachers, were charged with unpacking the state standards

to determine the instructional scope and sequence for a given content and grade level, curating OER that matched their needs, and ultimately delivering openly licensed digital textbooks. Implementation teams established a peer-review process to ensure that the curated learning materials were aligned with state standards and invited external content experts from across the state (e.g. instructional specialists from other districts) to oversee their work.

In order for this collaborative system to maintain its consistency, instructional specialists ensured that all implementation teams agreed upon several key measures. They chose to curate from the CK-12 Foundation's free online library, which contains various openly licensed learning materials, from full textbooks to supplemental simulations and games. They also chose G Suite for Education, an integrated collection of cloud-based applications such as Google Drive, Google Calendar and Google Groups, which many BAPS teachers were already familiar with, as their online collaboration platform and OER repository. Finally, implementation teams decided on a common format for each chapter within the digital textbooks. The image below is an example of a page within such a chapter, comprised of clearly identified standards, relevant textual information, interactive media and diagnostic prompts, all of which can be altered as individual classroom teachers see fit (BAPS, 2016).

## Building Participatory Classrooms

Classroom teachers using these OER-integrated digital textbooks observed a significant shift in their instructional practice. Before using OER, science courses at BAPS were vulnerable to traditional, one-sided discussions, where a teacher would directly lecture to the students. After implementing OER, however, teachers observed that classrooms became much more participatory. They received feedback from the class to incorporate learning materials into chapters that students found interesting. For example, life sciences teachers increased student engagement with

### 2.1 Phases of Matter

*By the end of this reading...*

**MS-PS1-4** Students will develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

Standards are identified and openly communicated to students.

## OER Features



This photo represents solid, liquid, and gaseous water. Where is the gaseous water in the picture?

Diagnostic prompts to pre-assess students' understanding are embedded.

#### Introduction

**States of matter** are the different forms in which matter can exist. Look at the figure above. It represents water in three states: solid (iceberg), liquid (ocean water), and gas (water vapor in the air). In all three states, water is still water. It has the same chemical makeup and the same chemical properties. That's because the state of matter is a physical property.

How do solids, liquids, and gases differ? Their properties are compared in the figure below and described below. You can also watch the following video about the three states at this URL: <https://www.youtube.com/watch?v=-KvoVzukHo>

Interactive features placed to support reading text.

*Graphic provided by Rebecca Morales, science instructional specialist at Broken Arrow Public Schools*

microbiology topics by altering textbook content to reference underlying commonalities between a football team and the internal components of a cell. Earth science teachers enhanced their discussions by incorporating themes from local current events, such as a 2015 rockslide that closed down a portion of Interstate 35, which runs through Oklahoma. Mark Officer, BAPS' former executive director of secondary administration, also observed aspects of this classroom transformation, saying, "In comparison to standard text-based materials, student engagement improved with use of customized and locally tailored material" (OET, 2017).

### Outcomes of OER Implementation

Since its inception in 2014, the BAPS OER initiative has successfully grown to cover 41 courses across several subject areas, including history, math, science and English language arts. More than 200 teachers now participate in the curation process to develop OER-integrated textbooks. In 2016, the OER initiative gained additional momentum from the state as Oklahoma joined the #GoOpen Campaign. Education leaders at the Oklahoma State Department of Education committed to, among other points, create a statewide technology strategy that emphasizes the role of OER, invest in a statewide OER repository,

and share learning and professional development resources with other states (OSDE, 2016). Because of their success, BAPS serves as a #GoOpen Ambassador District to mentor 23 school districts in Oklahoma as each develops its respective plans to use OER.

District leaders also keep their community engaged in the OER initiative. On their website, BAPS leaders provide parents and guardians with a brief description of OER and how their students can take full advantage of the openly licensed digital textbooks. Students can directly download the digital textbooks from the same webpage, print them and annotate as they would like (BAPS, 2018). Finally, BAPS leaders inform parents and guardians about OER through a video shown during the district's open house events (BAPS, 2015).

In 2016, several Oklahoma school districts, including BAPS, faced a large budget cut (OET, 2017) due to uncertain state and federal funding (Eneff et al., 2017). Because BAPS had saved \$1.3 million through the transition from proprietary textbooks to OER, the district could partially offset some consequences of this financial constraint (BAPS, 2017). According to Mark Officer, these savings were used to purchase a range of instructional materials that the district oth-

erwise could not have afforded. While it is certainly encouraging that district leaders could mitigate the worst effects of the budget cut by tapping into these savings, BAPS teachers could not reap the benefits of OER adoption to the same degree as teachers in the other two districts profiled. Clearly, state and federal funding levels have a significant impact on a school district's ability to fully leverage the spending flexibilities it gains through OER adoption (e.g. additional teacher compensation and professional development opportunities).

Officer states that OER initiatives cannot be sustained unless such systemic issues are addressed first. In the #GoOpen Story Engine, he remarked, "If strong organizational processes are in place and districts invest resources to train teachers and set up consistent quality control processes, the results of [using OER] are powerful" (OET, 2017).

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