# Customizing STEM Instruction with Educational Digital Libraries

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## Abstract

The Curriculum Customization Service (CCS) is a web-based tool that allows middle and high school teachers to customize instruction in Science, Technology, Engineering, and Mathematics (STEM) by incorporating interactive digital teaching and learning resources drawn from educational digital libraries into their lesson plans and student learning activities. The CCS is currently being used in six school districts in Colorado, Nevada, and Utah, and it supports drawing resources from both open repositories and publisher materials. The CCS also allows teachers to share the materials that they create and the resources that they select with other teachers within their school district.

## Poster Proposal

Customizing instruction to meet the specific needs of diverse learners can significantly improve learning outcomes, particularly for under-achieving students. The Curriculum Customization Service (CCS) is designed to help teachers in the process of purposeful planning: the complex task of selecting educational resources and customizing lesson plans to meet the learning goals of their students. The CCS takes a learning-goal-centric approach to help teachers make conceptually coherent customizations to the curriculum.

Within the web-based CCS interface, when a teacher selects a key concept, he or she is presented with a set of curricular components that support that concept, including a selection of interactive resources drawn from educational digital libraries. The teacher can then select resources that best match their needs from a set of hand curated Top Picks, as well as from algorithmically selected sets of Images/Visuals, Animations, and Inquiry with Data (activities involving scientific data). These interactive resources are all chosen by the CCS to complement the course textbook and to support a wide range of customizations. Once a teacher has selected a set of resources, he or she can annotate them, incorporate them into a more formal lesson plan, and upload that plan to the CCS, where it can be optionally shared with other teachers within the school district.

The CCS currently supports middle school and high school Earth science, middle school physical science, and, beginning this fall, high school algebra. It draws curated digital resources from three open educational digital libraries: DLESE (<http://dlese.org>), comPADRE (<http://compadre.org>), and NSDL (<http://nsdl.org>), as well as publisher materials from It's About Time and Kendall/Hunt. The CCS was initially piloted in the Denver Public School system, and it is now in use in six school districts in Colorado, Nevada, and Utah.

The Curriculum Customization Service is a proven tool that supports the use and reuse of educational resources from open repositories to improve educational outcomes for students in Earth sciences, physical science, and mathematics.