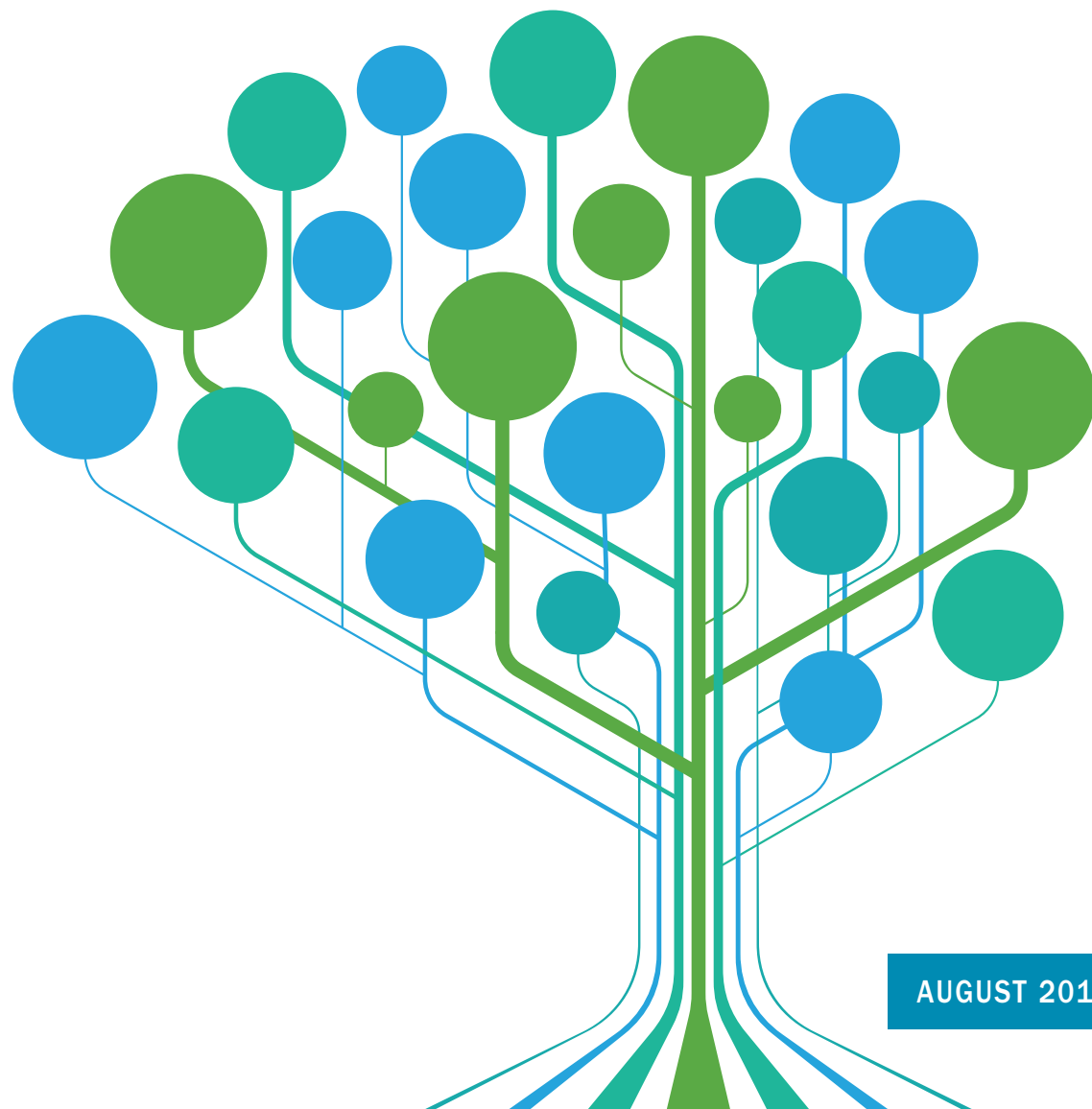


**EDUCATION POLICY** Center

at American Institutes for Research ■

# DEEPER LEARNING

Improving Student Outcomes  
for College, Career, and Civic Life



AUGUST 2015

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### **ACKNOWLEDGMENTS**

The authors gratefully acknowledge the support of Sara Wraight (AIR), Jen O'Day (AIR), Mette Huberman (AIR), and Jim Pellegrino (Learning Sciences Research Institute, University of Illinois at Chicago) for their review and contributions to the brief.

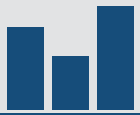
# DEEPER LEARNING

## Improving Student Outcomes for College, Career, and Civic Life



### THE ISSUE

To prepare for the demands of postsecondary education and the workforce, students need to master content and build skills that allow them to collaborate with others, and then apply that knowledge to new situations. Students will be able to access a wider range of opportunities in college, career, and civic life if they possess the necessary skills to work with others and critically analyze and address new challenges.



### THE RESEARCH

Deeper learning combines a deeper understanding of core academic content, the ability to apply that understanding to new situations, and a range of competencies related to human interaction and self-management. A [recent study](#) by American Institutes for Research (AIR) found that students in high schools that were part of networks associated with the William and Flora Hewlett Foundation's Deeper Learning Community of Practice<sup>1</sup> performed better than similar students in comparison schools on a range of measures. These included test scores, measures of interpersonal and intrapersonal skills, on-time high school graduation rates, and college enrollment rates.



### THE OPTIONS

Given the promising results of this study and other efforts to bring deeper learning to scale, states should consider instituting strategies to increase opportunities for all of their students to develop deeper learning competencies. Policymakers can support deeper learning through a range of policy options, including building teacher capacity, promoting innovation and personalization, and enabling greater flexibility at the local level.

<sup>1</sup> The study focused on strategies implemented in 19 moderate- to high-implementing high schools across 10 school networks participating in the William and Flora Hewlett Foundation's Deeper Learning Community of Practice.

“Deeper learning” refers to the combination of a deeper understanding of core academic content, the ability to apply that understanding to novel problems and situations, and the development of a range of competencies, including people skills and self-management.

The world that today’s high school graduates enter is demanding, and expectations around the knowledge and skills students need to succeed in the workforce and postsecondary

education are increasing across fields. Researchers have projected that by 2020, 65 percent of all U.S. jobs will require at least some college coursework (Carnevale, Smith, & Strohl, 2014). High school graduates must also be prepared to navigate a workplace in which technology is rapidly transforming both how individuals collaborate and the tools they use to do their work.

As the current generation of students—tomorrow’s voters and leaders—enter adulthood, they will face many complex global, social, and environmental issues. To fully engage in civic life, students need to be equipped to analyze and discuss pressing issues and develop solutions to these problems.



## THE ISSUE

# Building Competencies for Success in Education and the Workforce

Despite growing workplace demands and expectations, an insufficient number of American students are graduating from high school with the content knowledge and analytical skills needed to be fully ready for postsecondary education, the workforce, and civic life in the 21st Century.

Although those born after 1980 in the United States have more education than previous generations, they have weaker skills in literacy, numeracy, and problem solving in technology-rich environments compared to international peers (Goodman, Sands, & Coley, 2015). They are also less able to apply their knowledge to new situations, as demonstrated by U.S. performance on the Programme for International Student Assessment (PISA)—an assessment given to 15 year olds around the world. In 2012, the United States performed below average on the PISA and scored below 29 nations and educational systems (Alliance for Excellent Education, 2011; National Center for Educational Statistics, 2014). Many American students are also insufficiently prepared for college-level coursework: In 2013, 43 percent of students taking the SAT failed to meet the college-ready benchmark (College Board, 2014).

As important as it is to deepen students’ academic knowledge and skills, success in today’s world demands more. Students also need to be able to communicate their ideas to a variety of audiences, work with others to solve problems, think creatively, and manage their own learning (Autor, Levy, & Murnane, 2003; National Research Council, 2008; Carnevale & Desrochers, 2003). Deeper learning is one approach to assist students in meeting these new expectations and demands.

## Defining Deeper Learning

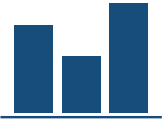
“Deeper learning” refers to the combination of a deeper understanding of core academic content, the ability to apply that understanding to novel problems and situations, and the development of a range of competencies, including people skills and self-management. The William and Flora Hewlett Foundation has identified deeper learning as “a set of competencies students must master in order to develop a keen understanding of academic content and apply their knowledge to problems in the classroom and on the job” (Hewlett Foundation, 2013). (See the box below for more information.)

**DEEPER LEARNING COMPETENCIES** | Drawing on interviews with experts and a research review, the Hewlett Foundation identified six interconnected dimensions of deeper learning. When combined with the domains identified by the NRC, these provide a useful framework for better understanding deeper learning.

### Competencies Associated With Deeper Learning

Cognitive Domain	<b>Deep content knowledge:</b> Students build a strong foundation in academic content areas and draw on their knowledge to complete new tasks.
	<b>Critical thinking and complex problem solving:</b> Students think analytically and creatively to evaluate information and design solutions to complex problems.
Interpersonal Domain	<b>Collaboration:</b> Students learn to work in teams to achieve shared goals.
	<b>Communication:</b> Students clearly organize their data, findings, and thoughts in written and verbal communication.
Intrapersonal Domain	<b>Understanding how to learn:</b> Students monitor and direct their own learning.
	<b>Academic mindsets:</b> Students develop positive attitudes and beliefs about their identities as learners and their academic abilities.

The NRC recently reviewed deeper learning theory and research. It defined deeper learning as “the process through which an individual becomes capable of taking what was learned in one situation and applying it to new situations (i.e., transfer).” According to the NRC, the deeper learning process produces competencies that include both content mastery and the ability to apply that knowledge to answer questions and solve problems.



As indicated in the box on the previous page, the NRC grouped the competencies into three domains: the cognitive domain, the interpersonal domain, and the intrapersonal domain (National Research Council, 2012).

## THE RESEARCH

### Study Overview

In 2014, researchers at AIR completed a [three-year study](#), funded by the William and Flora Hewlett Foundation, to examine how a set of schools in networks associated with the foundation’s Deeper Learning Community of Practice provided opportunities for deeper learning, as well as the impacts these opportunities had on students from diverse backgrounds. The study sought to determine whether students attending high schools that implemented deeper learning approaches at a moderate or high level actually experienced greater opportunities for deeper learning and stronger outcomes than students in comparison schools. The study focused on 19 high schools in 10 school networks participating in the William and Flora Hewlett Foundation’s Deeper Learning Community of Practice (see box below). The researchers compared the outcomes of students in this sample of network schools with the outcomes of students from comparison high schools outside these networks.

#### SCHOOL NETWORKS PARTICIPATING IN THE HEWLETT FOUNDATION’S DEEPER LEARNING COMMUNITY OF PRACTICE

The network schools in this study share an explicit, schoolwide focus on deeper learning as a goal for students. The schools use a variety of approaches to promote deeper learning but share a number of common strategies.

**Asia Society** – <http://asiasociety.org/international-studies-schools-network>

**Big Picture Learning** – <http://www.bigpicture.org/>

**ConnectEd** – <http://www.connectedcalifornia.org/>

**EdVisions Schools** – <http://www.edvisions.com/>

**Envision Schools** – <http://www.envisionschools.org/>

**Expeditionary Learning** – <http://elschools.org/>

**High Tech High** – <http://www.hightechhigh.org/>

**Internationals Network for Public Schools** – <http://internationalsnps.org/>

**New Tech Network** – <http://www.newtechnetwork.org/>

**New Visions for Public Schools** – <http://www.newvisions.org/>

## Deeper Learning Strategies and Structures

Although approaches to promoting deeper learning varied by network and school, researchers identified a number of common strategies, including:

- ▶ **Project-based learning.** Project-based learning is designed to help students connect what they learn in school to real-world problems through short- or long-term projects. Students also have the opportunity to develop communication and collaboration skills through this work. Specific approaches to project-based learning differed among the deeper learning network schools.
- ▶ **Collaborative group work.** Many schools assigned students roles within group projects, which focused on learning academic content and developing teamwork skills.
- ▶ **Assessment.** Many schools also used longer-term assessments to evaluate student work, such as portfolios or exhibitions, which demonstrate student learning throughout a semester or exhibitions of student work.
- ▶ **Internships.** Most high schools in the study had an internship program, which allowed students to gain real-world experiences.
- ▶ **Structures that support deeper learning.** Many of the network schools had established advisory classes, in which an advisor would regularly meet with a group of students to provide academic and social support. Some schools also implemented flexible schedules that allowed for fieldwork and block schedules, providing students with more time to engage in in-depth work.

Students who attended the network schools in the study reported having greater opportunities to engage in deeper learning activities than students in the comparison schools. The researchers found that deeper learning opportunities were provided to a diverse group of students, including those from low-income families and English language learners.

## WHAT DOES DEEPER LEARNING LOOK LIKE?

Deeper learning can take various forms. Consider these examples.

**Coal Mining in West Virginia.** As part of a year-long focus on the impact students could have on the world, juniors at a deeper learning network school conducted an in-depth case study of a West Virginia coal mining disaster. Students explored the incident's implications before beginning a study on the United States' dependence on fossil fuels. After completing background research on a topic related to energy use, students developed a white paper and presentation, which were shared with local experts. To complement the energy focus, students also studied West Virginia history, the Great Depression, and related literature and music (e.g., bluegrass). The project included a trip to coal country in West Virginia, where students interviewed local residents. Following the trip, students created multimedia oral histories of their interviewees and shared the compilation at a local gallery.

**Media Saves the Beach.** At another school, students completed a “Media Saves the Beach” project after the state eliminated some funding for water testing. Students worked with two external organizations to learn how to do basic water testing, identify the best local locations for water testing, and test for four indicator bacteria. After completing the tests, students generated “non-fiction products,” such as articles published in local newspapers, articles published on the collaborators' websites, and documentary videos.

**Flexible Learning Opportunities.** A deeper learning network school that served students who had dropped out of traditional schools provided flexible learning opportunities for students who preferred to work independently or could not attend class regularly. To earn credits, students could take traditional courses, complete individual projects, or engage in online learning opportunities.

For more examples, view this video by the Alliance for Excellent Education: What Does Deeper Learning Look Like? <https://www.youtube.com/watch?v=6kRpQAocWWs>

## Study Results: Promising Student Outcomes in Deeper Learning Schools

The AIR study suggests that a focus on deeper learning produces a number of positive learning outcomes for students, regardless of their backgrounds. Students who attended deeper learning network schools attained better educational outcomes than students in non-network comparison schools across several indicators.

- ▶ **Better academic outcomes.** Students in the deeper learning network schools scored higher on the OECD PISA-Based Test for Schools (PBTS)—which assesses core content knowledge and complex problem-solving skills—than similar students in



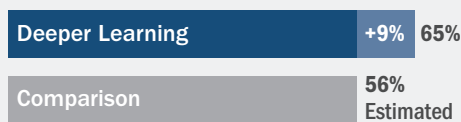
non-network high schools. Students in network schools also scored higher on state English language arts (ELA) and mathematics tests.

- ▶ **Stronger interpersonal and intrapersonal skills.** Students in deeper learning network schools had higher self-reported levels of collaborative skills, academic engagement, motivation to learn, and self-efficacy. There were no significant differences between network and non-network students on reported creative thinking, perseverance, sense of control, or self-management.
- ▶ **Higher on-time graduation rates.** Students in deeper learning network schools were more likely to graduate from high school on time (within four years of beginning Grade 9) than similar students in non-network schools. The graduation rate among students attending deeper learning network schools was an estimated 9 percentage points higher than the graduation rate among similar students in comparison high schools (see graphic below).
- ▶ **Higher enrollment in four-year colleges.** Students in deeper learning network and non-network high schools had similar rates of enrollment at postsecondary institutions. However, students from deeper learning network schools were more likely to enroll in four-year institutions and selective institutions.

These results indicate that deeper learning has the potential to benefit a range of students, not only high achievers.

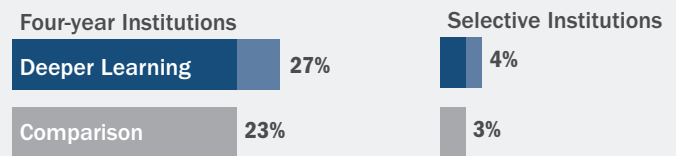
Most important, these positive outcomes held true for all students, regardless of their background or prior level of achievement. Attending a deeper learning network school produced similar benefits for both students who entered high school at a lower level of academic achievement and those who entered with higher levels of achievement. Indeed, the study found evidence that the effects of attending a deeper learning network school on postsecondary enrollment were stronger for students who entered with low achievement than for those who entered with high achievement. These results indicate that deeper learning has the potential to benefit a range of students, not only high achievers.

### ON-TIME HIGH SCHOOL GRADUATION



Students in deeper learning network schools were more likely to graduate from high school on time (within four years of entering Grade 9) than were students from comparison schools. The graduation rate among network school students was estimated to be about 9 percentage points higher than the graduation rate among similar students in comparison schools.\*

### COLLEGE ENROLLMENT



Students in deeper learning network schools and comparison schools had similar overall rates of enrollment in postsecondary institutions. However, students who attended deeper learning network schools were more likely to enroll in four-year institutions (27 percent compared with 23 percent) and in selective institutions (4 percent compared with 3 percent).

\* These graduation rates may appear lower than typically reported graduation rates because students who transferred to another district prior to graduation were classified as non-graduates. According to the California state and New York City data systems, published graduation rates for schools in this study ranged from 48 percent to 100 percent, with an average graduation rate of approximately 77 percent.



## THE OPTIONS

### Expand Opportunities for Deeper Learning

Policymakers interested in expanding opportunities for deeper learning can learn from work underway in several states. In this section, we highlight current state policy efforts that build teacher capacity, support innovation and personalization, and expand flexibility.

1. **State activities to build teacher capacity.** To effectively implement deeper learning strategies, teachers need appropriate preparation, training, and ongoing support (Alliance for Excellent Education, 2011). For example, they may need specialized training to master new types of instructional strategies, such as project-based learning strategies and personalized student learning experiences (Cator, Schneider, & Vander Ark, 2014). States are taking a variety of approaches to building educator capacity, including providing credentials or endorsements to educators who master skills related to deeper learning competencies.

- In Wisconsin, The Institute @ CESA #1—a division of the Cooperative Educational Service Agency (CESA) #1—offers state teachers the opportunity to earn a personalized learning endorsement. Through the training program, teachers work with an experienced educator to become proficient in using learning progressions, designing proficiency-based learning frameworks, and curating course content in support of personalized learning.
- Digital Promise, a nonprofit organization focused on accelerating the use of technology in learning, is currently creating 40 “micro-credentials” that are mapped to the six deeper learning competencies. Teachers will be able to earn these individual credentials by submitting artifacts of work—such as classroom videos, student work, or project plans—as evidence that they are successfully implementing strategies to develop a specific deeper learning competency (Digital Promise, 2015).

## THE INNOVATION LAB NETWORK

The Council of Chief State School Officers (CCSSO) has launched an Innovation Lab Network (ILN) to support a group of 12 states<sup>2</sup> in developing student-centered approaches to learning.

The ILN has developed a framework to guide states that are refocusing state systems to support innovation and student-centered learning environments. The ILN Policy and Implementation Logic Model includes five critical steps states can take to prepare every student for college, career, and citizenship:

1. Define and systematize college and career readiness in a way that is consistent with deeper learning.
2. Enable personalized learning and prepare the educator workforce so that all students can succeed.
3. Establish balanced assessment systems to meaningfully measure college and career readiness.
4. Anchor accountability in college and career readiness.
5. Develop seamless pathways to college and career.

<sup>2</sup> Current Innovation Lab Network states include California, Colorado, Iowa, Kentucky, Maine, New Hampshire, Ohio, Oregon, Vermont, Virginia, West Virginia, and Wisconsin.

2. **State activities to support innovation and personalization.** The AIR study found that many deeper learning network schools implemented personalized learning environments adapted to align with students' needs and interests. Today, states are working to personalize students' learning experiences by focusing on technology and blended learning, increasing flexibility in the delivery of education services, and other strategies.

- Tennessee's Department of Education houses an Office of Personalized Learning, which works with school districts to support the use of virtual, distance, and blended learning models. The office's new Innovative Educator Network brings together 50 high-performing educators and librarians over a year to discuss and implement personalized learning strategies. Participants meet with leading experts to discuss and observe emerging trends in personalized learning, design and implement personalized learning models, and share these practices statewide with other educators (Chuong & Mead, 2014).

- In 2008, the Colorado legislature passed the Innovation Schools Act to give schools and districts more flexibility around the delivery of educational services, personnel decisions, and budgeting. The state’s public schools can apply to the local school board to become an innovation school, or groups of public schools in a district may apply to operate as innovation schools within a zone. The Colorado Department of Education suggests that seeking innovation status could be an option for schools and districts that wish to further customize the learning experience to meet students’ needs (Colorado Department of Education, 2013).

3. **State activities to expand flexibility.** Many strategies that support deeper learning—including project-based learning and real-world experiences, such as internships—also benefit from flexible arrangements for assessments and classroom time. The personalized, project-based approach to deeper learning has implications for the types of measures and tools that can be used to assess student learning. The AIR study found that schools in the deeper learning network used a range of strategies to measure student learning, including portfolios of student learning over time. States implementing deeper learning strategies may want to consider alternative assessments that allow students to demonstrate content mastery in other ways.

Traditionally, many states and districts have awarded course credit to students based on credit hours and time spent in the classroom. Several states have since offered districts flexibility in awarding course credit based on proficiency through “seat time” waivers or revised state rules. New Hampshire, for example, has replaced “seat time” requirements with competency-based credits for all secondary schools, and in 2012, Maine passed legislation to require proficiency-based high school diplomas, beginning with the graduating class of 2018.

Iowa, an Innovation Lab Network member state, is developing new, competency-based pathways for students. In 2012, state legislators passed a bill allowing districts to award competency-based credits towards graduation without the need for a waiver from the state. The following year, the legislature directed the Iowa Department of Education to identify districts that could serve as models across the state, and appropriated \$100,000 to be given in grants to participating districts and schools to support implementation of competency-based education (CBE) models. A group of 10 school districts is now working through the Iowa CBE Collaborative to develop and implement competency-based educational pathways. District teams meet monthly to design and discuss implementation strategies and develop tools to share lessons learned with other districts in the state (Iowa Department of Education, 2013).

## Before You Start: Implementation Considerations

Policymakers may face challenges in supporting local deeper learning practices and will want to bear in mind the following considerations:

1. **Technology and infrastructure needs.** States looking to implement deeper learning strategies should consider that there may be additional infrastructure and technology costs. A recent report on the role of technology in deeper learning suggests that the most effective technology-based instructional strategies use blended or hybrid learning approaches (combining in-person and computer-based learning), and provide authentic simulations where students can apply new skills and knowledge (Dede, 2014). State leaders may also want to consider districts' and schools' capacity to use these new tools. Before implementing a blended learning initiative, West Virginia conducted a needs assessment to consider district capacity for a system of digital learning, as well as school capacity to implement digital learning strategies (Alliance for Excellent Education, 2014).
2. **Stakeholder buy-in.** As with many education reforms, the sustainability and ultimate impact of deeper learning strategies depend on stakeholder buy-in. State leaders will need to engage districts, schools, and community partners to build an understanding of the goals, strategies, and benefits of implementing new deeper learning initiatives. State leaders will also need to consider how policies that encourage deeper learning strategies can support and align with current state initiatives.
3. **Equity.** State leaders will need to ensure that new deeper learning opportunities are available to a diverse range of students, not simply those in high-performing districts or schools. AIR's study found that deeper learning yielded benefits both for students who entered high school at a lower level of achievement and for those who began high school at a higher level of achievement. States looking to expand access to deeper learning opportunities should bear in mind that implementing deeper learning may require large changes in how content is taught, how teachers collaborate, and even how schools are organized. These changes may be especially challenging for under-resourced schools, and state leaders will want to consider the types of professional development and support these schools will need in order to ensure students get the full benefits of deeper learning (Darling-Hammond & Noguera, 2014).

4. **Evaluation and improvement.** Finally, state leaders should build into these policies the support needed for ongoing formative and summative evaluation. Deeper learning is a relatively recent movement, and the current knowledge base on the impact of state-level policies on students' deeper learning opportunities is limited. It will therefore be important for states to collect data on the implementation and outcomes of deeper learning opportunities in order to monitor progress and build an understanding of the implications of these outcomes.

Despite these implementation challenges, the results of AIR's study and current state work suggest that deeper learning holds promise as a strategy to enhance student learning and preparation for life after graduation.

## Want more information about the AIR study on deeper learning?

- ▶ The Shape of Deeper Learning: Strategies, Structures, and Cultures in Deeper Learning Network High Schools  
(<http://www.air.org/resource/shape-deeper-learning-strategies-structures-and-cultures-deeper-learning-network-high>)
- ▶ Providing Opportunities for Deeper Learning  
(<http://www.air.org/resource/providing-opportunities-deeper-learning>)
- ▶ Evidence of Deeper Learning Outcomes  
(<http://www.air.org/resource/evidence-deeper-learning-outcomes>)

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