How Deeper Learning Can Create a New Vision for Teaching

MONICA R. MARTINEZ, PHD
DENNIS R. MCGRATH, PHD
ELIZABETH FOSTER

How Deeper Learning Can Create a New Vision for Teaching

Monica R. Martinez, PhD
Dennis R. McGrath, PhD
Elizabeth Foster

The National Commission on Teaching & America's Future (NCTAF) was founded in 1994 as a bipartisan effort to engage education policymakers and practitioners to address the entrenched national challenge of recruiting, developing, and retaining great teachers in order to ensure that all students have access to quality teaching in schools organized for success.

ConsultEd Strategists is an education consulting group for mission-driven organizations and philanthropists. We help foundations, direct service non-profits, and education agencies develop strategies to scale impact, realize organizational effectiveness, and accelerate learning.

Copyright © 2016 National Commission on Teaching and America's Future 1525 Wilson Boulevard Suite 705 Arlington, VA 22209
www.nctaf.org

INTRODUCTION

Imagine the opportunities that today's students will experience as they embark on their future lives and careers: unprecedented access to information, myriad new ways to express their creativity, effortless global connectivity, and academic choices and careers we can't yet envision. And while we know that too many schools are still preparing students the same way they did a hundred years ago, there are a growing number of schools that are moving toward a new vision for teaching and learning. This paper highlights examples of teachers, principals, and schools that have embraced a forward-thinking, student-centered approach to learning outcomes called deeper learning (and are members of the Deeper Learning Network) in order to provide students with the opportunities to develop the skills and competencies they will need to succeed in the future.

For fuller details about the teachers and schools in this paper, read *Deeper Learning: How Eight Innovative Public Schools are Transforming Education in the 21st Century* (2014) by Drs. Martinez and McGrath.

Settings that facilitate deeper learning student outcomes amplify the impact of what teachers do by organizing the learning environment around a set of thoughtful competencies. And it works. Recently a rigorous quantitative study conducted by The American Institutes for Research (AIR) found that attending Deeper Learning Network schools benefited students, regardless of their background, prior level of achievement, or whether they lived in an urban or suburban district as measured by the PISA-based tests for core content knowledge and problem solving skills; graduation rates, college enrollment rates to selective institutions, and higher levels of collaborative skills, academic engagement and motivation (Zeiser, Taylor, Rickles, Garet and Segeritz, 2014).[1]

The examples in this report, from schools across the country, provide a vision for how student learning and learning environments are shifting; and also describe a new vision for teaching, teachers' roles, and the conditions that need to be in place to enable deeper student learning. Many studies over the years have provided insight into the impact of great teachers on student achievement and learning, especially for poor students and students of color (Autor, D.H., Levy, F, and Murnane, R.J. 2003; Gordon, R, Kane, T.J, and Staiger, D.O. 2006; Hanushek, Eric A. 2011; Chetty, Raj, Friedman, John N., and Rockoff, Jonah E. 2013). This paper instead focuses on this shift in teachers' work and supports because of the critical role teaching plays in student learning.

1. The AIR study paired schools from the Hewlett Foundation Deeper Learning Network with a comparison group of schools serving similar students. All 20 high schools selected for the study were part of any of ten Deeper Learning Networks and had a mature and at least moderately well-implemented approach to promoting deeper learning.

What Is Deeper Learning?

Deeper learning is the term that refers to the competencies, knowledge, and skills that students must develop to succeed in the 21st century, and therefore what they should know and be able to do when they graduate from our public education system. According to the Hewlett Foundation definition (William and Flora Hewlett Foundation, 2013; Chow, 2010) students should be able to:

1. Master core academic content
2. Think critically and solve complex problems
3. Work collaboratively
4. Communicate effectively
5. Learn how to learn
6. Develop an academic mindset

Deeper learning competencies address three domains: cognitive, interpersonal, and intrapersonal (Pellegrino, Hilton, Herman, et al., 2012).

- **Cognitive:** Students develop a strong academic foundation in subjects like reading, writing, math, and science. Most importantly, they understand disciplinary principles and concepts. As students master content, they are more able to transfer knowledge to other situations or tasks. Students will learn how to think critically. That is, they will have the ability to synthesize and analyze information; frame questions; and recognize patterns, trends, and relationships so they can identify and solve problems as well as assess or evaluate the effectiveness of the proposed solution(s).
- **Interpersonal:** Students learn how to work collaboratively to complete tasks, produce shared work, and understand and solve complex problems. They also learn how to effectively communicate complex concepts to others through a variety of modes of expression in a logical, useful, meaningful, and purposeful way. For students to do this, they must learn how to clearly organize their data, findings, and thoughts.
- **Intrapersonal:** Students learn how to monitor and direct their own learning, recognize what they know or do not know, recognize when and how they are confused, identify the obstacles or barriers to their success, and then determine and deploy strategies to address these challenges. In developing an academic mindset, students are able to see themselves as academically successful and therefore trust in their own competence and feel a strong sense of efficacy. As a result, students engage in positive and productive academic behaviors and persevere when they face difficulties.

Deeper learning competencies result in students' ability to use and apply what they have learned.

Taken together, the deeper learning competencies result in students' ability to use and apply what they have learned. This ability, known as knowledge transfer, is widely recognized as critical to succeeding at novel tasks or new contexts (Pellegrino, Hilton, Herman, et.al., 2012). Knowledge transfer ability is important for utilizing skills in non-school environments, communicating effectively, and applying content in new situations, such as future classrooms or jobs. In addition, students develop an academic mindset as well as metacognitive abilities and intrapersonal skills—they learn how to learn—and develop the ability to become lifelong learners.

Deeper learning competencies are what will help students succeed in a dynamic and uncertain world that places a premium on people who are flexible, creative, and innovative, and values those who communicate well and work effectively in teams. The nature of work is changing, with less demand for routine cognitive and manual tasks and more value placed on analytic, interpersonal and creative abilities (Autor, Levy and Murnane, 2003). Organizational structures are changing as well, with more emphasis on collaborative work and transferrable skills. A recent report by workforce economists emphasized the increasing need for individuals who can work

across networks of people, with greater efficiency and at an accelerated pace (Carnevale and Rose, 2015:12). Strategies that facilitate deeper learning for students will help prepare students to deal with the changes and fulfill the demand for higher-level skills and provide them with an ability to learn in the globally connected economy.

Teaching for Deeper Learning

Deeper Learning: How Eight Innovative Public Schools are Transforming Education in the 21st Century (2014) by Drs. Martinez and McGrath identifies six strategies and pedagogical practices common across the schools committed to deeper learning outcomes for students. Their analysis found that in order to prepare students for success in the 21st century, teachers must:

- Empower students as learners
- Contextualize knowledge so it is coherent
- Connect learning to real world experiences
- Extend learning beyond the school
- Inspire students by customizing learning experiences
- Purposefully incorporate technology to enhance (not automate) learning

Deeper learning leaves behind the "anemic texts, chalk and talk lectures, and fill-in-the-blanks workbooks of an earlier age" and moves teaching and learning toward an environment rich with opportunities "to understand and use complex materials, communicate incisively, plan and organize their own work, solve mathematical and scientific problems, create ideas and products, and use new technologies in all of these pursuits (*What Matters Most*, 1996:5)."

Empowering students as learners

Teachers who focus on deeper learning see their first responsibility as empowering students as learners. For this reason, they use pedagogical approaches that help students become self-directed and responsible learners rather than passive rule followers. The centerpiece of instruction is helping students develop an understanding of learning as a complex and ongoing process that entails seeking feedback, revising work and regularly reflecting on what one has produced, as well as on the choices and decisions made throughout the learning process. "Revision toward mastery" is therefore a main feature of the culture and the language used by teachers committed to deeper learning (Lenz, 2015). Teachers provide feedback, as well as opportunities for students to receive feedback from peers, reinforcing the idea that learning does not end with their first effort. Improving their work through rounds of feedback, revision and reflection encourages students to better understand the amount of effort required to produce high quality work.

Strategies that facilitate deeper learning for students will help prepare students to deal with the changes and fulfill the demand for higher-level skills and provide them with an ability to learn in the globally connected economy.

For example, in the English class at Science Leadership Academy (SLA) in Philadelphia, Pennsylvania, Larissa Pahomov has her 10th grade English students use Wikispaces to create a poetry portfolio and to comment on and edit one another's writing. Peer feedback guides students as they go through multiple revisions of their poems, while each writer's response helps her partner learn to offer more useful criticism. By practicing a continual cycle of feedback, revision and reflection, sometimes deemed "the learning loop" by teachers, students internalize a coherent model of learning that they can apply throughout their school experience and in their lives and careers. Teachers provide multiple opportunities and strategies for students to reflect on their work in order

to better understand the connection between effort and outcomes. This can take place as a class or small group discussion, as part of an advisory (a small check-in and support group), or through a student's journal or blog. Student-led conferences, where students take an active role in reviewing their work and discussing their successes and challenges with both their teacher and parents, deepen the reflective process. Perhaps the most powerful strategy teachers employ to help students own their own work is the use of an end of year portfolio project where students document, present, and reflect on their best work to demonstrate that they are prepared to progress the next grade level or to graduate.

Contextualize knowledge so it is coherent

Teachers who work to achieve deeper learning student outcomes also contextualize knowledge so it is coherent as a way to help students acquire content knowledge. Teachers use guiding questions, common themes, and big ideas to provide a context for every assignment, classroom activity, and project. Teachers at the SLA, for example, use common themes for each grade level (such as Change in Self and Systems in the 11th grade) and then use conceptual questions (such as "What is the role of the individual in creating and sustaining change?") to help students explore the themes and key concepts in ways that facilitate the application of this knowledge to other situations or problems. At King Middle School in Portland, Maine, teachers use two guiding questions to link together a six-week unit for 8th grade students on sustainability: How do we capture and use nature's energy?" and "How can you change your energy consumption to improve the world?" The two questions are echoed in all of their classes in order to connect key ideas, relationships, issues, and skills across subjects. Students collect and analyze data in science and math classes; design and build generators in technology education class; develop research and writing skills in English; and write a land-use proposal in social studies. In addition, teachers often work together across multiple subjects to design integrated learning experiences to connect their otherwise separate subject-specific content.

As one Casco Bay High School senior said, "Before, I was a minimalist in school. I did just enough to get my passing grade and quit. Here it makes you want to do your best the first time, and if it isn't enough, the revision system helps you improve."

Connect learning to real issues and settings

Teachers who focus on developing deeper learning competencies connect learning to real issues and settings in order to make it more meaningful for students. Teachers ensure that there are frequent opportunities for students to experience workplace conditions and expectations and address real world challenges and problem solving by interacting with professionals and experts in relevant fields, taking on a professional role when doing a project, or by connecting historical events to current issues. For example, students at SLA learn by interacting with professionals and experts at the Franklin Institute, the premier science education institution in the Philadelphia area. Students can take mini-courses taught by museum or research staff ranging from medicine and immunology, to engineering and astronomy, to computer programming and product design.

Extend learning beyond the school

In addition to connecting to the "real" world, deeper learning-focused teachers find ways to extend learning beyond the school and construct powerful student learning experiences in a range of settings. As a result of long-term

Teaching Strategies that support deeper learning outcomes for students strongly align with the description of effective teaching and learning provided in NCTAF's *What Matters Most* report (1996):

We know that students learn best when new ideas are connected to what they already know and have experienced; when they are actively engaged in applying and testing their knowledge using real-world problems; when their learning is organized around clear, high goals with lots of practice in reaching them; and when they can use their own interests and strengths as springboards for learning (1996:6).

formal and informal relationships with local businesses, institutions, and community groups, the classroom walls drop away and the entire community becomes an annex of the school in which students have access to rich content, outside experts, additional resources, an authentic place and context for learning, and work based experiences. At Avalon School in Minneapolis, Minnesota, for example, students build a Mobile Community Garden as part of their art class and focus on the use of public art. At SLA, students interview citizens who just voted during a national election as part of a unit on suffrage and voting rights in their 11th grade government class, and juniors at Casco Bay High School, in Casco Bay, Maine, learn interviewing and documentary filmmaking skills from experts at an area graduate program that teaches writing, photography, and documentary storytelling. Teachers also extend learning beyond the school through independent projects and internships ranging from the National Park Services, an education think tank, major urban newspapers, and high tech companies.

Inspire students by customizing learning experiences

Teachers who focus on deeper learning inspire students by customizing learning experiences. Teachers are intentional in establishing strong relationships with students for the purpose of finding what will ignite their interest to pursue their own learning. As Gary Allen, a physicist from General Electric who volunteers at MC² STEM High School in Cleveland, Ohio said, "Each kid has to have their fuse lit for that rocket to take off. You can get them out on the launching pad, but if you don't light that fuse, they're not going to go."

Teachers use independent projects to both customize learning and provide inspiration for all of their students. For instance, Kevin Ward, a teacher at Avalon School drew from a powerful resource—an alumnus—to develop a personalized senior project that helped a student stay motivated and succeed academically. Calling on the student's keen interest in military history, he introduced him to the father of an Avalon graduate who designed geological survey maps and worked with the student to create a series of maps of the Battle of Gettysburg. The teacher described the student's project as the best work he had ever done. For the student, making maps made him feel as if all the historical information he had read was coming to life and for this reason, he not only maintained his motivation throughout his senior year but also excelled and decided to major in history when he was admitted to and enrolled at Northwestern University.

Use technology in service of learning

Teachers who focus on developing deeper learning competencies use technology in service of learning. Teachers purposefully incorporate technology to enhance, rather than automate learning; regularly employ technology tools to support student learning and to engage students in their own education; and shift their role away from being the sole gatekeeper to knowledge. For example, Joshua Block, a SLA 11th grade humanities teacher, uses technology to deepen student learning by helping students select and evaluate relevant information from a variety of sources while doing a project on the Spanish explorer, Hernán Cortés and his conquest of the Aztec Empire in Mexico. Students download material from the Internet and visit websites where they can access primary documents, then work in groups using Google Docs to share and organize their research. Students demonstrate their mastery of research skills and their ability to weigh evidence and understand multiple perspectives by writing online blogs. Teachers use technology to construct inquiry, seek out and vet all types of research, facilitate collaboration, perfect presentations, and make reflection relevant using video lectures and podcasts by experts from across the world. The opportunities seem limitless when technology is used in service of developing deeper learning competencies.

Deeper Learning and New Roles for Teachers

For teaching to shift to facilitate powerful learning experiences like the ones described above—where students are empowered and inspired and learning is contextualized, connected to real life, wired, and extended beyond school—the role of the teacher has to change to that of learning strategist. For a teacher to be a learning strategist, he or she must fluidly shift among a range of roles, including learning designer; facilitator; networker; and an advisor who coaches, counsels, mentors, and tutors depending on what is most needed to promote student learning. *Deeper Learning: How Eight Innovative Public Schools are Transforming Education in the 21st Century* (2014) highlighted many of these new roles and opportunities. For example, the teachers on the 8th grade teaching team at King Middle School all acted as learning designers when they created an integrated curriculum focused on sustainability that spanned four topics over six weeks and was aligned to all the subject area standards. Each year the team reviews the project to find ways to make it even more relevant to their students' experiences and add new resources and activities.

Deeper learning leaves behind the "anemic texts, chalk and talk lectures, and fill-in-the-blanks workbooks of an earlier age" and moves teaching and learning toward an environment rich with opportunities "to understand and use complex materials, communicate incisively, plan and organize their own work, solve mathematical and scientific problems, create ideas and products, and use new technologies in all of these pursuits."

NCTAF's *What Matters Most* report, 1996:5

Teachers who have embraced the learning designer role are adapting learning experiences by backward mapping from specific outcomes to design complex and connected curricula that offer students frequent opportunities to do meaningful work and the opportunity to explore big ideas and essential questions (Wiggins and McTighe, 2005). This exploration approach also allows students to bring in their own personal experiences and background knowledge as they develop and enhance projects.

Teachers at King Middle School designed "The Four Freedoms" expedition for 8th-graders to explore the meaning of key freedoms Americans have. The expedition begins with Franklin D. Roosevelt's 1941 State of the Union speech in which he articulates American values worth fighting for should the nation go to war—the freedom of speech and worship, and the freedom from want and fear. Using the guiding questions: "How do ideas of freedom change over time" and "How do some freedoms conflict with others?" students trace how the perception of these freedoms has evolved over time by studying a variety of legal cases, case studies, newspaper and magazine articles, videos, and a famous series of Norman Rockwell paintings while engaging in discussions, debates, and writing assignments. Teachers build in opportunities for students to develop their own views by contrasting historic legal cases with more recent cases such as the high school student who was punished for violating the school code of conduct because she refused to stand and recite the pledge of allegiance as she objected to the phrase "one nation under God."

Teachers use debate to provide focus for the students' research and the opportunity to demonstrate orally their ability to synthesize and analyze information and present information. Students have the opportunity to blog about the cases they study as a way to demonstrate their understanding of the issues involved. As the final product of the expedition, students express their personal experiences and reflections on the idea of freedom in a freedom collage and write a five-paragraph essay where they reflect on both Normal Rockwell's paintings and their collage. The project culminates with the students publically displaying their collages and writings at the Maine College of Art.

NEW ROLES FOR TEACHERS CREATED BY DEEPER LEARNING

- learning strategist
- learning designer
- facilitator
- networker
- coach, counselor, or mentor

Teachers committed to deeper learning also have a clear vision of their role as facilitator that shapes how they design learning and informs their pedagogical approach. They see their role, as one teacher described as, "getting out of the way—to not be the gatekeeper of information but the gateway to knowledge." Or as one student said, "The teacher doesn't have to be the source of all the knowledge." Teachers no longer need to be the sole source of information given the access to information that technology provides, so it makes sense for teachers to shift to a knowledge facilitator (rather than deliverer) role. For example, when Tyler Fister at Impact Academy in Hayward, California had students give feedback to one another on pieces of art work, he provided a structure and guiding questions to ensure that their feedback was helpful, then stepped back to let the peer-to-peer discussions ensue. In another example, Larissa Pahomov monitored the students' poetry Wikispaces to identify how she could be most helpful to each student, and also identified some strategies for peers to be helpful to each other. In one pair, one student was stalled in his writing, so she urged his partner to be less harsh in his feedback and to try instead to play the role of a "critical friend." Larissa's use of technology maximized her opportunity to facilitate learning and limited the students' dependence on her as a teacher, allowing her to shift responsibility for learning to the students as she selectively intervened. As one teacher said, "My job is to fade into

the background in a classroom. If I have planned well, the setup is good, and the directions are clear on some independent or group activity, the students can do it."

Teachers who focus on deeper learning student outcomes also take on the role of networker as they regularly engage people in the community to enhance their teaching, enrich their curricula and projects, and provide students with access to a wide range of knowledge. Whenever students begin a new project at SLA, the first questions teachers ask are: "What is the best way for you to get the answers you need? Will you do an Internet search, library research, contact an expert, or interview someone in the community?" Teachers guide the students to recognize what they are trying to learn and the best way to pursue their inquiry. As networkers, teachers connect students with local and sometimes even national experts who can help students deepen their understanding of content knowledge and its application in a variety of fields.

"We will not hire a teacher who only knows his or her content. We need them to know how to network or at least want to network for our students. This is one of the most important roles we have here as teachers."

Carrie Bakken, teacher and Co-Director at Avalon

Carrie Bakken, teacher and co-director at Avalon School, describes the role of networker as someone able to, "know who is around and always keep their eyes peeled for what other people can contribute." Because of this vision for a teacher as networker, coupled with Avalon's strong advisory system where every student is known well, Kevin Ward was able to "light the fuse" of his unmotivated senior by connecting him to another student's father who made maps. Teachers like Kevin and others profiled in *Deeper Learning: How Eight Innovative Public Schools are Transforming Education in the 21st Century* (2014) who have fully incorporated networking into their role, work hard to ensure there are significant community resources and experts to draw upon to give students real world experiences throughout their project in order to deepen students' learning experiences. Furthermore, incorporating external experts into the school projects allows students to learn how to cultivate their own networks for learning.

While teachers serve as networkers to support students academically, they also become involved in interpersonal issues as well, becoming a coach, counselor, or mentor offering advice, encouragement, support, and guidance when most needed. It may be as simple as encouraging students to work together, giving praise, or making suggestions about personal issues. Jeff McClelland, former Principal of MC^2, wants his teachers to be able to balance both social and academic support saying, "I look for teachers who are experts in their content and who are compassionate and understanding of teenagers. Kids have to be able to access content at a high level. So you can't love kids and not know your content. At the same time, you can't love your content and dislike kids." Teachers committed to deeper learning continuously transition between academic coach, advisor, counselor, and mentor roles because they have embraced a strategic and flexible approach to student learning and believe that students need to be educated in a holistic way if they are to develop into self-directed learners who have an academic mindset.

Conditions that Enable and Support Teaching for Deeper Learning

Teachers—including those who successfully focus on deeper learning outcomes for students—work within a complex system of colleagues, school leaders, and district

Teachers committed to deeper learning continuously transition between academic coach, advisor, counselor, and mentor roles because they have embraced a strategic and flexible approach to student learning and believe that students need to be educated in a holistic way if they are to develop into self-directed learners who have an academic mindset.

and state policies, often in somewhat traditional or transitional settings. Therefore it is important for educators to recognize that there are key conditions that support deeper learning outcomes and strategies, and that these conditions are sequential and rely on and build upon one another.

The cornerstone condition is a school-wide culture that focuses on learning and promotes the belief that everyone is collectively responsible for student outcomes. These are two different concepts, and both are critically important.

Establish a learning culture

First, a learning culture must be established that values the need to learn, as well as students' need to learn how to learn, to become self-directed, and to develop an academic mindset. This culture is established or signaled most commonly through the creation of a clear and visible set of core values that are then reflected in the design of the school, the way in which students are introduced to and oriented to the school, what is assessed, and the consistent language used across the school, including what is posted on the walls. An understanding and reflection of these core values can be seen in everything from the language that teachers and students use to talk about learning to the way the school interacts with the community. For instance, teachers at SLA establish and reinforce their core values and expectations of how students will learn by consistently using five terms—inquiry, research, collaboration, presentation and reflection. The core values are also part of how each curricular unit is designed by teachers, and part of a common grading rubric students use to demonstrate how they employ the core values in their work.

In another example, Casco Bay High School uses "HOW" or "habits of work" to communicate the values and dispositions students need for learning. "HOW" represents expectations for students to: Be Accountable, Work Ethically, Build Community, Work Collaboratively, Persevere, Pursue, and Do Your Personal Best. Teachers use a school wide rubric called "Classroom Habits of Work (HOW)" to assess the degree to which students integrate the school's core values into their activities. Shoring up the learning culture at Casco Bay, opportunities are designed for students to reflect on their work at the end of a project or curricular unit or at key quarterly or end of the year school-wide events. For instance, at the end of the freshman year, Casco Bay High School students make a presentation to their advisory "Crew" as part of "Freshman Finales." To help the freshmen prepare for the oral presentation to their peers, the humanities teachers have the students write their responses to three questions: "Who am I?" "How am I doing?" "What are my plans for the future?" For the first question, students write about a passion they have. To address the question, "How am I doing", the students write an overview of the work they have done over the year noting where they excelled and where they were challenged. Finally, the students have to write about what they see themselves doing after high school.

Create shared responsibility for student learning

The corresponding condition in support of teaching for deeper learning is a culture in which everyone is collectively responsible for student learning. This culture has to be purposefully established for students and teachers alike, and is most commonly developed by building relationships that ensure students are known well by both adults and peers, and that there are regular and systemic opportunities for frequent conversations among teachers, students, peers, and other adults. For instance, advisories at Avalon School start with a "check in"—any kind of question that will help the teacher and the group get a sense of how a student is feeling so that they can then ensure the student has the support he or she needs. The check-in is useful in developing a sense of community and shared purpose, and team-building activities are often done through the advisory to strengthen peer relationships.

Establish a culture of trust and professionalism

Furthermore, it is important to establish a culture of trust and professionalism as a condition that supports deeper learning. The shift in culture is critical to making sure teachers feel supported and empowered to take on new roles, and to ensure that daily work and interactions are aligned to the deeper learning mission. Trust empowers individuals to be their best selves and creates a sense of shared accountability between and among the staff. Shared accountability can encourage greater feelings of trust among teachers and between teachers and principals. Principals who trust teachers and treat them as professionals may also invite teachers to share in the leadership of the school with them, meaning teachers have substantial influence on school-based decisions, especially around issues of teaching and learning. Teachers feel more comfortable wearing multiple hats—formally and informally assuming roles such as grade-team coordinator, teacher mentor, teacher leader, and coach. In this new paradigm, teachers also often take on responsibilities many principals save for themselves, such as hiring staff, creating school schedules, developing partnerships with off-campus organizations or businesses, and even dealing with funders. In a culture of trust and professionalism, principals value their teachers' vast experiences and wealth of knowledge and want them to be active participants in the construction and tailoring of professional development. Because teachers design their own professional development, they are very engaged and work productively with their colleagues to ensure that professional

Deeper Learning addresses a challenge identified by NCTAF in 1996: many school reform initiatives (especially those of the 1980s and 1990s) focus on school management, or scripted curriculum and instructional materials, but not on supporting the capacity of teachers to ensure all of their students develop the knowledge and skills they need to succeed.

What Matters Most: Teaching for America's Future, 1996:5

development is growth-driven, collectively constructed, context specific, and embedded in the school.

Preserve time for teachers to collaborate

These shifts in culture and roles require settings that foster deeper learning outcomes and establish and respect time for teachers to collaborate. During this collaboration time, teachers can draw upon each other's expertise to design or revise meaningful learning experiences for students; address problems impacting the classroom and the school at large; and strategize how to improve their individual practice and student learning. Structured opportunities to work together can take the form of teacher-directed and school-embedded professional development by peers or third party providers and the district on how to use specific pedagogical approaches. They can focus on feedback from classroom observations from instructional coaches or teaching peers on one another's teaching practices. Teachers can also use their structured time together to identify and share the technology tools, apps, or resources they have found to assess students for mastery of content and critical thinking as well as other skills and personalize instruction to meet the unique learning needs of each student.

At High Tech High in San Diego the focus of teachers' planning time together varies depending on need. Eleventh grade English teacher Colleen Green shares an example of what teachers can do when regularly working together: "We work in teams and as a whole staff. Teachers share scaffolding resources with each other or will present a lesson, a project, or a task to one another and get feedback through a protocol that teachers use. When teachers meet by subject, they will also share resources they have developed that align to the course maps they each have that articulate the curriculum for the course of the year." Teachers can also use these opportunities to work together to provide feedback on one another's curricular units and pedagogical practices, and strategize ways to improve their individual practice. Teachers can use common planning time to promote student learning, jointly examining student work to identify trends in their acquisition, mastery, and application of knowledge and skills.

The Future of Teaching

Teachers, such as the ones highlighted in this paper, have changed the way they teach so that their practice results in deeper learning for their students. Teachers who share this vision of enhanced learning outcomes understand that their role has to change from the traditional conception of a teacher, to that of a learning partner and facilitator, able to truly engage and empower students in their own learning. Key to realizing this vision of deeper learning is the ability for teachers to be flexible and strategic about teaching and learning. As learning strategists, these teachers move flexibly between roles and adapt different approaches and techniques based on their students' learning needs and goals. Teaching in this responsive, student-centered way is the future of teaching.

These important shifts in student learning, teaching roles, and the conditions that support great teaching and learning are beginning to take hold in schools across the country. Several research studies as well as the profiles in *Deeper Learning: How Eight Innovative Public Schools are Transforming Education in the 21st Century* (2014) highlight successes across a number of contexts and settings. There are already more than 500 schools in 10 formal Deeper Learning Networks—as well as many other schools that share the same philosophy—that are adding to the momentum. In addition, deeper learning outcomes align with and support other efforts such as 21st century skills and personalized learning, and can be key to successfully implementing college and career ready standards. A focus on deeper learning outcomes for students can act as a North Star for schools eager to guide and support teachers and school leaders' professional learning and growth in ways that lead to student success.

RECOMMENDATIONS

We offer the following recommendations to develop the school culture and conditions necessary to support teachers working toward deeper learning student outcomes:

Spread the word

Many teachers are already setting deeper learning goals for their students, even if they don't define it by that name. Celebrate great practice! Teachers can also tap into case studies and planning guides to make connections between what they are already doing that facilitates deeper learning and new ideas for how to expand their efforts. Leaders need to learn more too, at every level of the education system, and need to be encouraged to visit schools that embrace a vision for deeper learning for their students to better understand how to support teachers' efforts.

Mirror what we want for students

Just as students need opportunities to develop as curious learners, work collaboratively, and connect with community resources and issues; teachers need the same. Principals should support opportunities for teachers to learn collaboratively with their colleagues and provide ongoing, job-embedded professional learning for educators that deepens their understanding and practice of teaching for deeper learning.

Begin early

Learning how to teach for deeper learning student outcomes should begin in teacher preparation, before new teachers enter the profession. We can turn the tide by starting early to help future educators develop the skills they need to teach for deeper learning, such as through courses and clinical experiences that encourage facilitating collaboration and reflection. Schools of education should partner with schools and districts already engaged in deeper learning so that future teachers experience firsthand the skills they will utilize in their own future classrooms.

Adapt and reorient existing structures

Policy makers and school leaders should rethink existing structures and norms to encourage and incentivize teaching for deeper learning. Existing policies around time and planning, assessment of student progress, and professional learning communities are just a few of the structures that can be revisited and used more effectively. For instance, creative scheduling can allow for collaborative planning time among teachers in order to maximize cross-disciplinary learning; professional learning communities can shift away from administrative functions to focus on teachers working collaboratively toward students' deeper learning goals.

BIBLIOGRAPHY

Autor, D.H., Levy, F, and Murnane, R.J. 2003. "The Skill Content of Recent Technical Change: An Empirical Exploration. Quarterly Journal of Economics 118 (4): 1279-1333.

Carnavale, Anthony P. and Rose, Stephen J. 2015. "The Economy Goes to College: The Hidden Promise of Higher Education in the Post-Industrial Service Economy." Washington, D.C.: Georgetown University Center on Education and the Workforce.

Chetty, Raj, Friedman, John N., and Rockoff, Jonah E. 2013. "Measuring the Impacts of Teachers KK: Teacher Value-Added and Student Outcomes in Adulthood." 2013. NBER Working Paper no. 19424 Cambridge, MA: National Bureau of Economic Research.

Chow, Barbara. 2010. "The Quest for 'Deeper Learning'." October 06, Education Week.

Ewell, Peter. 1997. *Organizing for learning: A point of entry*. Draft prepared for discussion at the 1997 AAHE Summer Academy at Snowbird. National Center for Higher Education Management Systems (NCHEMS).

Gallup Organization. 2013. Gallop Student Poll. Washington, D.C.: Gallup.

Gordon, R, Kane, T.J, and Staiger, D.O. 2006. "Identifying Effective Teachers Using Performance on the Job." Hamilton Project Discussion Paper 2006-01. April. Washington D.C.: Brookings Institution.

Hanushek, Eric A. 2011. "Valuing Teachers: How Much is a Good Teacher Worth?" Education Next 11 (3) Summer pp. 40-46.

Huberman, Mette, Bitter, Catherine, Anthony, Jennifer, and O'Day, Jennifer. 2014. Report 1. Findings from the Study of Deeper Learning. *Strategies, Structures, and Cultures in Deeper Learning Network High Schools*. Washington, D.C.: American Institutes for Research.

Lenz, Bob. , Wells, Justin, Kingstone, Sally. 2015. Transforming Schools Using Project Based Learning, Performance Assessment and Common Core Standards. San Francisco, CA: Jossey-Bass.

Martinez, Monica and McGrath, Dennis. 2014. *Deeper Learning: How Eight Innovative Public Schools Are Transforming Education in the Twenty-First Century*. New York: New Press.

National Commission on Teaching and America's Future. 1996. *What Matters Most: Teaching for America's Future*. Washington, D.C.: NCTAF.

OECD. 2013. *Teaching and Learning International Survey*. Talis. February. Paris: OECD.

Pahomov, Larissa. 2014. *Authentic Learning in the Digital Age: Engaging Students Through Inquiry*. Alexandria, Virginia: ASCD.

Pellegrino, James, Hilton, Margaret, Herman, Joan, et.al. 2012. *Education for Life and Work: Developing Transferrable Knowledge and Skills in the 21st Century*. Washington, D.C.: National Research Council.

Wiggins, Grant and McTighe, Jay. 2005. *Understanding By Design*. 2nd edition.

William and Flora Hewlett Foundation. 2013. "What is Deeper Learning?"

Zeiser, Kristina, Taylor, James, Rickles, Jordan, Garet, Michael S., and Segeritz, Michael. 2014. Report 3. Findings from the Study of Deeper Learning. Evidence of Deeper Learning Outcomes. Washington, D.C.: American Institutes for Research.