

TEACHING for SUCCESS

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Learning Retention: How to Achieve Off-the-Chart Levels Using the Teach/Learn Instructional Strategy

by Jack H. Shrawder, Executive Director, Teaching For Success Faculty Success Center

Can you rank order the top six learning modes or teaching strategies in reverse order of each modes' effectiveness in producing knowledge retention?

After reading, *How the Brain Learns* by David A. Sousa, I'll bet you would be surprised to find out which strategy to use to increase learning retention by a huge margin.

And, if you've taught more than a few classes you know you don't need a book to know the answer.

Hands down the most effective learning mode is to teach. Retention jumps to an amazing 90 percent when

learners have a chance to teach what they have learned.

To make it easy for students to teach, have them form pairs. Now they can quickly and easily take turns playing either teacher or learner. After your students have experienced a few teaching exercises, you can pause at strategic points in your lesson presentation and say, "1s or 2s Teach!" Give them 45 seconds or so and then reverse the direction. Keep it crisp and your students will be highly engaged, energized, and will experience greater retention.

Plan to insert a 1.5 minute teach/learn exercise after you have

introduced and explained a segment of new knowledge. Teach/learn allows students to hear it, reteach it, and hear it again for maximum retention. Try it.

| Learning Mode | Percent Retained |
|---------------|------------------|
| Lecture | 5% |
| Multimedia | 20% |
| Demonstration | 30% |
| Discussion | 50% |
| Doing | 75% |
| Teaching | 90% Wow! |

Three Ways to Connect Your Students to Content

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by Dr. Martha Parrott, Associate Professor of Mathematics Program Chair, M.Ed. Mathematics Education Director, NSU Mathematics Clinic, Northeastern State University, Email: parrott@nsuok.edu

Whether face to face or online, lecture-driven courses leave much to be desired from a student's perspective.

However, classrooms can easily be transformed by encouraging subject-centered talk among students, establishing a climate of inquiry, planning for discovery and providing opportunities for students to make connections to content.

No one likes to listen all the time, so getting students involved is critical to creating a meaningful climate of learning.

Educational researchers have documented well the relationship between student participation and achievement (Cohen, 1994), so instructors must answer the call to design learning environments that support student engagement (Bransford, Brown, and Cocking, 2000).

The activities described here invite students to take ownership of their own learning through collaborative experiences. They can take as few as 10 minutes or could span the entire class session.

These activities can be used to introduce new material, to review objectives, or to take on a less traditional approach to guided practice. While they are a good fit for face-to-face classes, these activities can also be modified for online classes.

Activity #1, Peer Teaching

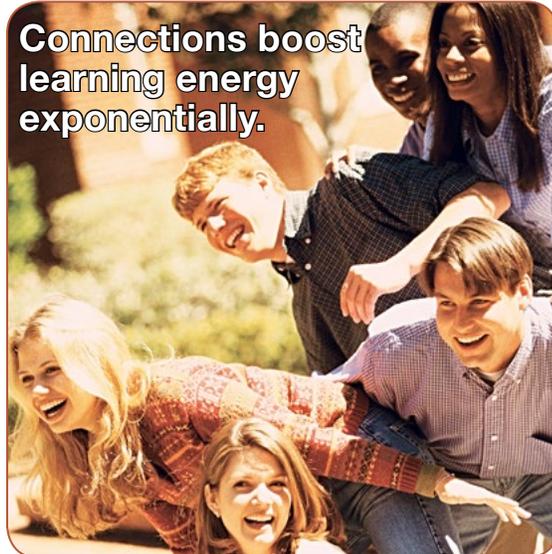
Duration:
15 to 45 minutes

Introduction

I have found this strategy to be very effective when introducing new material in my classes but I have also used it to enhance a review activity.

The success of this strategy depends on carefully selected examples that are sequenced intentionally to show how one skill becomes the foundation for the next. The example activity sheet described here is not to be distributed with a full list of example problems.

Examples are added one at a time, each of which extends in some way to the skill previously taught. Although I use this strategy to teach mathematics, the activity is generalizable to all content areas using online and face-to-face instruction.



Connections boost learning energy exponentially.

No one likes to listen all the time, so getting students involved is critical to creating a meaningful climate of learning.

Paring with Blackboard

Online instructors may find Blackboard Collaborate as a meaningful way to implement this "Paring for Peer Teaching" activity suggestion. This Blackboard Tool, when used flexibly, can transform the online learning environment into a virtual classroom and empower students to interact not only with the content but also with each other.

Yet other Blackboard Tools like supervised chats (with partnerships determined by the instructor) have the potential for providing meaningful opportunities to implement these ideas.

The online instructor may wish to initiate time and date requirements so that students are communicating with each other daily, thus spreading out this activity over a week rather than during one single face-to-face class session as

| Instructor Example | Peer Teaching Example |
|---------------------------------|---------------------------------|
| Example #1: Solve and Graph: | Example #1: Solve and Graph: |
| $2x + 3 < 11$ | $3x - 4 < 8$ |

Notice that the Peer Teaching Example varies or extends the skill set slightly from the Instructor example.

described next. Daily summary feedback from the online instructor would be critical for the success of the activity and to establish the availability of and foundation for the next day's problem for peer teaching. For other ideas, visit the Blackboard website.

Now, here's what to do.

Step 1. Create a Plan

The instructor asks students to form pairs. Students can self-assign to pairs or the instructor can make choices about partnerships. A random and fun way to assign students to groups is to have each student in the class draw a card from a basket. Matching cards form the partnerships. I like to use names of mathematicians to form groups. For example, the two people who each draw "Fibonacci" become a peer teaching pair.

Step 2. Determine Roles

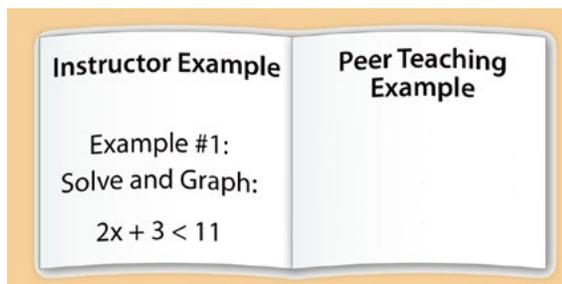
Next, determine who will be "Teacher #1" and "Teacher #2" in the partnership. For example, the student who has the first birthday in the calendar year will be "Teacher #1" and the student with the second birthday in the calendar year will be "Teacher #2."

Step 3. Create Activity Sheet

Ask students to take a blank note sheet and fold it in half vertically. At the top of the left vertical column, label "Instructor Example" and at the top of the right vertical column, label "Peer Teaching Examples."

Step 4. Present New Knowledge

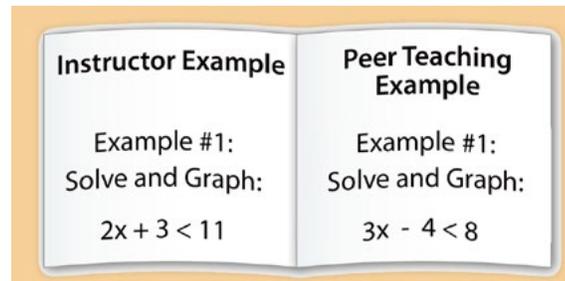
The instructor presents a new concept and asks students to note it on the left column of the note sheet. See the sample sheet below.



Step 5: Practice

Allow about 4 – 5 minutes for the next step in the process. Plan an example that parallels the one just taught and ask students to write it under the peer teaching column. Using the roles previously assigned, "Teacher #1" is to explain the concept to her partner. If "Teacher #1" struggles with the task, then the other partner can interject comments into the conversation. The instructor should be called upon

to assist only when neither person in the partnership can successfully complete the task. In so doing, more knowledge emerges from within the students as they become less dependent on the instructor. To conclude this phase, call upon one of the "teachers" to present the problem to the full group as a way of confirming accuracy for the entire class.



Step 6. Extend with More Examples

Return to the instructor left column for a second example for students to note. This example should extend in some way the previous skill.

Step 7. Reverse Roles

Return to the right column and announce the second peer teaching example. Now, "Teacher #2" instructs the other partner following the same guidelines as described in step #5. Always make certain that closure is established for each segment of this activity by allowing time for the problem to be explained to the large group. These explanations ensure that all groups have accurate solutions with individual examples before proceeding to the next skill.

Step 8. Repeat

Repeat the instructor example and parallel peer teaching example as time allows for the activity. I like to have at least four examples in each column during a class period so that students have completed eight examples in all.

However, much can still be accomplished if time is limited and few examples can be presented.

Application Notes

When students explain their thinking to others, concepts are reinforced and students leave the class feeling empowered to practice skills independently. I use this strategy two or three times a semester, either as a way of introducing new material or reviewing prior objectives. In either case, students value the opportunity to learn when mistakes are allowed and easily corrected.

Success Quote

The faster you go, the more students you leave behind.
~William Glasser

Activity #2, Card Pairing

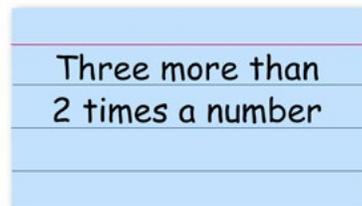
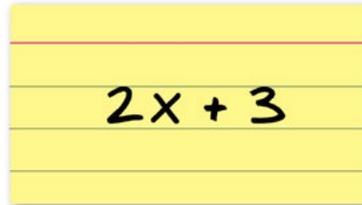
Duration:

Approximately 10 minutes.

Introduction:

This activity can be used with individual students but also lends itself well to groups of two to four. While I prefer to use this as an engaging way to review unit objectives, it may also be used to inquire about student prerequisite knowledge at the front of a new unit.

The steps below are generalizable to all content areas, whether using face-to-face or online formats. Online instructors may wish to implement this activity by creating a Blackboard Assignment. Create a PDF attachment of the two sets of cards made for the objective under review. Finally, students can individually upload an image taken of their solution display.



Step 1. Instructor Preparation

Instructor preparation for this activity is the key to success. Select 3 by 5 index cards in two different colors. I usually use yellow and blue.

Step 2. Create Yellow-Blue Card Matches

The goal of this activity is for students to match a yellow card with a blue companion card to visually connect the ideas. For example, an Intermediate Algebra teacher might write algebraic expressions in symbolic form on the yellow cards and the word phrases that link to the algebraic expression on the blue cards.

Create as many yellow-blue card matches per group as time will allow for the activity and the level of skill involved in completing the tasks. Duplicate these card pairing sets so you will have enough for the number of groups that are a best fit for your class.

Step 3. Implementation

Some of the most valuable time during a class hour is the time right at the beginning or right at the end. Interestingly this is often the most wasted time during the class hour. Distribute bags of yellow-blue cards, one per group, making sure that the yellow and blue cards are mixed well inside the bag. Provide instructions about how to determine a match. Next, invite students to find all card pairings.

Step 4. Closure

Collaborative learning is a powerful way to engage students and review concepts. As students position their yellow-blue card matches on their tables or desks, the instructor can easily check for understanding as she monitors the room. An extension of the activity would be for groups to rotate and check the solutions on display of adjacent groups.

Activity #3, The Top Ten List

Duration:

5 – 20 minutes.

Step 1. Instructor Preparation

This brief activity can be used to determine what students know about a topic before it is taught, or as a way of summarizing at the end of a unit. The steps are very simple and require little instructor preparation. However, the implications for

learning are very empowering especially when used at the beginning and end of the unit.

Top Ten List

Topic:

The Poetry of Plato

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Online instructors use the Blackboard Discussion Board as a way of implementing the activity. By requiring students to post a personal “Top Ten List” of ideas before being allowed to see other student posts, instructors ensure students share their own thinking and don’t duplicate the ideas of their peers. Another option is Blackboard Voice Board which gives students the opportunity to participate in a voiced-based, threaded discussion.

Step 2. Implementation

Provide students with a “Top Ten List” sheet as shown in the example on page four. Or, simply ask students to number lines from 1 to 10 on their paper. When making a sheet for class distribution, four “Top Ten Lists” can be efficiently printed per one sheet of paper. For an online class, the “Top Ten list” could be posted as a required assignment.

First, the instructor should announce the daily topic. Examples include “The Poetry of Plato” or “Absolute Value.” Allow students 3 to 5 minutes to write down anything they know about the topic on their “Top Ten List.” Brief word phrases, illustrations, or complete thoughts area all acceptable.

Step 3. Call Time and Share Ideas

When time is called, students should be directed to share their “Top Ten List” of ideas with the large group. If time permits, the instructor may wish to encourage students to compare ideas with a partner before sharing with the large group.

Step 4. Present Key Ideas

What comes next is a brief class discussion with summary notes of key ideas presented on a classroom board (or Discussion Board for an online course). It’s during the whole group discussion that learning is accelerated. The questions the instructor asks to encourage student dialogue are critical.

Examples include:

- “Can you explain what you mean?”
- “Can you connect your idea to another one that has been already been shared?”
- “Do you see any relationships between or among ideas?”
- “How do you know?”
- “What assumptions are you making?”

Naturally, a climate of support established through specific praise and comments that value each student’s contribution is critical for maximizing the benefits of this activity.

Suggestions: When using this activity prior to instruction, the whole-group discussion enables the class to establish the existing framework of prior

knowledge, which becomes the springboard for future conversations. When used at the end of the unit, this activity generates a meaningful student-directed summative experience.

Step 5. Connect Off-target Responses

Even responses that at first seem off target can be used to create better learning.

One final suggestion is to require students to complete this activity prior to instruction and again at the end of instruction. Notice differences over time. The depth of acquired knowledge will be impressive.

Wrapping Up All Three Activities

These activities described here become powerful and engaging learning opportunities. Students are expected to explain their thinking and justify conclusions. This is a very different learning experience than mindlessly setting in pure lecture.

When students teach each other, they either understand the concept better or are able to clearly see what they don’t yet fully understand. In course-centered dialogue learning, they more easily perceive relationships between and among ideas.

These activities encourage valuable and meaningful subject-centered thinking and conversation. Whether you use an engaging peer-teaching strategy, a card-pairing activity, or a deep-thinking list of ideas, students will ask more “why” and “how” questions. And, perhaps most importantly, they will make solid, lasting connections to the content.

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Service Learning: Viable and Valuable Learning

by Dr. Martha Parrott, Associate Professor of Mathematics Program Chair, M.Ed. Mathematics Education Director, NSU Mathematics Clinic, Northeastern State University, Email: parrott@nsuok.edu

Service learning is an opportunity for students to engage in experiences that will support meaningful connections between what they are learning in the classroom and how that learning impacts not only their lives but also those in their communities.

As explained in a later article in this issue, “What You Need to Know about K-12 Common Core Standards,” p.

10, we find the K-12 Common Core State Standard initiative in part calls for deeper learning to be made relevant to the lives of students. Service learning is a good answer to this call. The Common Core initiative is also a gentle reminder for higher education faculty to make sure we are doing what we can to deepen learning for our students.

Experience has shown that Service Learning experiences do indeed support learning at a much deeper level and provide the personal and community relevance students need.

Service learning defined

Service learning is an instructional strategy with historical roots dating back to 1903. The National Service Learning Clearinghouse, also known as America’s most comprehensive service learning clearinghouse, provides this definition, “Service-Learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities.”

When using this strategy in the classroom, learning becomes more meaningful and enriching because students engage in hands-on learning through service. Opportunities are made available for connecting classroom learning to the community, thereby encouraging community and classroom partnerships.

Furco and Root (2010) summarize the value of service learning. Some of these benefits include:



Students experience academic success and build deep-level professional skills by becoming active participants in their own learning.

- Improved academic achievement
- Improved student engagement in school and learning
- Increased civic responsibility and citizenship
- Enhanced personal and social skills

But, service learning is not just volunteerism. It is not just another curriculum “add-on” or extracurricular activity.

Rather, service learning is an intentional act to enhance learning by matching curriculum objectives to service so that both the learner and the community benefit.

The academic component of service learning sets this strategy apart from volunteerism.

In other words, the course objective becomes the springboard for service. Should this alignment between service and academic outcomes not exist, an act of service cannot be described as service learning.

Its reciprocal nature

One critical factor of service learning is the notion that it is reciprocal. Specifically, both college students and their community partners must benefit from the interaction.

Community service implies that we are doing something for the community. However, service learning implies that we are doing something with the community, thus emphasizing its reciprocal nature.

Often, the benefits to the community partner are easily identified. But our students must also benefit in order to justify the use of this instructional strategy.

First, we hope that students will experience academic enhancement by becoming active participants in their own learning. Additionally, students should experience enhancement of their social, interpersonal and problem-solving skills.

And, service learning provides opportunities for students to experience diversity and to gain an appreciation for the differences that they will encounter while taking part in this process.

The PARC model

To properly implement service learning and to establish the reciprocal nature of this process, Learn and Service America (National Commission on

Service Learning, 2003) suggests the PARC model:

- Planning
- Action
- Reflection
- Celebration.

Planning

First, guide instruction related to the curriculum objectives, which will be aligned with service, and contact a local community organization or school and plan for a mutual opportunity. The amount of time you can allocate for the project is definitely a critical consideration. At first, you may only be able to allocate one class period a semester.

Perhaps later on, you can incorporate three or more class periods. Next, engage your students in the planning by encouraging them to coordinate some of the necessary details. Student ownership of the project will definitely maximize its effectiveness.

Remember, it is important to thoroughly prepare not only the students but also the community partner. The project will only be as good as the preparation.

Action

After finalizing the details, it is time to participate in the project. One obstacle you might encounter during the action phase is the restriction of a 50-minute class period. A possible solution might be inviting your community partner, if appropriate, to your campus during the action phase.

Many community partners have funds and transportation available to them. Also, during the action phase, encourage students to make observations about the experience. These observations will be the basis for the upcoming reflection phase.

Reflection

The process of reflecting on the service opportunity by students and the instructor is perhaps one of the most critical and valuable components in the process. Reflection, which can occur at the end of a short-term project or can be on-going during a semester-long project, affords the opportunity to maximize academic gains and invites students to explore and analyze the often-complex issues that are associated with service.

The act of reflecting can lead to positive gains in student self-esteem, to the development of students as lifelong learners, and to an increased sense of student empowerment.

Suggestions for reflection activities include:

- Journal writing,
- Artistic expression,
- Group discussions.

Celebration

When the activity is complete, both partners should plan a time to celebrate their academic and service accomplishments. Celebrations can range from the simple to the more elaborate. If your community partner were elementary students, for example, you might invite them to your campus for a tour and conclude with an ice cream party.

Grant money is available for instructor use for service learning projects, and a portion of these monies might be allocated for the concluding celebration.

Note that in 2008, RMC Research published a revised statement of the core components by adding a prerequisite “investigation” phase. This newer version labeled “IPARDC,” includes these five core components: investigation of the problem, planning and preparation, action, reflection, and finally demonstration/celebration.

Practical examples

Now that I have outlined the implementation process, some practical examples of how service learning can be utilized as an instructional strategy may be helpful as you create opportunities for students in your own content area. See Rahima Wade (1997) who provides examples and suggestions for establishing quality service learning programs:

History

Students of history might visit an assisted-living facility for the aged and record oral histories from the residents.

The valuable history recorded in textbooks will take on a more valuable meaning to students who have learned from the personal experiences of others.

The aged participant will benefit from the interaction with youth, and students will benefit from the historical experiences of the interviewee.

Psychology/Education

Students of psychology or teacher education might volunteer with a local Special Olympics chapter. For example, students might assist Special Olympians during their Summer or Winter Games or even during a one-time local bowling event.

Students will have the opportunity to reinforce textbook knowledge by offering appropriate instruction and encouragement to participants. Special Olympians will achieve their dreams through sports training and competition.

Mathematics

A class of developmental mathematics students, after studying concepts of probability, might invite a nearby elementary class to their college campus for a probability carnival or game day. The college students will extend their probability knowledge by

creating learning games and by offering instruction to the young participants. Not only will academic skills be strengthened, but also, and perhaps more importantly for the developmental math student, self-esteem will be enhanced as the college student becomes an academic role model. Elementary students will be introduced not only to probability concepts but also may benefit from an introduction to the collegiate environment.

Any content area

Providing tutorial services is an exceptional service opportunity, and this project can take on a variety of forms. Since we know that students learn more when they teach others, the reciprocity of this service learning project is obvious. Examples of tutorial projects include students in upper division courses offering routine or even one-time tutoring services for lower division or developmental courses.

Final thoughts

Service learning provides opportunities to connect college students with the community by aligning curriculum objectives with service. It represents a blending of academic and service goals, a component not found in volunteerism.

As you consider service learning, imagine all that is possible. If this is your first introduction to service learning, start small. Involve only one class and a small community partner. Consider a two-week experience rather than a semester-long experience. Plan and prepare carefully. Establish student ownership very early in the service learning process. Assess your progress frequently and encourage students to continuously reflect on their experiences.

For more information visit the National Service-Learning Clearinghouse.

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Will You Make the Difference?

by Jack H. Shrawder, Executive Director,
Teaching For Success, Faculty Success Center.

Course and program low completion rates is a major problem confronting higher education. The Community College Survey of Student Engagement provides some insights into the question of what factors influence student retention.



Improving course retention is possible when instructors understand more about their students needs. According to the students interviewed, they are most impressed with instructors who are willing to walk the extra mile for their students.

They respond to instructors who are positive and supportive, who function as colleagues and don't project a better-than-you teaching persona, and who are willing to be compassionate mentors as students are learning a new subject.

Students respect teachers who go the extra mile for students to succeed, care about the students' personal lives and are easily accessible for help, either on campus or online. Students like teachers whose doors are always open to them.

Students tend to stay in classes when they become more involved with the college through tutoring, academic advising, student groups and special support programs to find jobs and help with students' needs to stay in school. Find out what services and organizations are active at your college or university. You never know when a spur-of-the-moment referral to one of these services or student organizations will be the key to prevent a student from leaving your class or entire program.

A third factor keeping students in programs is teaching them practical, real-world skills in addition to theoretical knowledge. Students prefer a variety of learning activities and approaches as opposed to straight lecture-style courses.

In a nutshell, students highly value an instructor's personal interest in their learning and much prefer instructors who, quite simply put, care about them, and honor their time and effort.

Why not make a goal to increase the retention in your class this term? Is it possible? Everything can be done better; let your desire for improvement inspire you to make the difference for your students.



Constructivism: Implications for Teaching

by Dr. Martha Parrott, Associate Professor of Mathematics Program Chair, M.Ed. Mathematics Education Director, NSU Mathematics Clinic, Northeastern State University, Email: parrott@nsuok.edu

While certainly not a new idea, constructivism is an intriguing theory about the nature of knowledge and learning. It's receiving increased attention as more instructors search for more meaningful and effective ways to guide student learning.

What is Constructivism?

Currently being applied to teaching at all levels of learning and across content boundaries, constructivists like Piaget, and others, believe that students best learn when given the opportunity to construct knowledge from within themselves by interacting with their environment.

This approach emphasizes active learning, and the focuses on thinking development. Constructivism posits new knowledge and is built on the foundation of previous experiences. Students learn best by encountering ideas, acting on them, manipulating them, and then discussing how these ideas influence their thinking.

How Is Constructivism Different?

Those of us who were asked as learners to memorize mathematical or scientific procedures without meaning, or who were expected to parrot data as bits of information are probably products of the more traditional, transmission model of learning and teaching.

Constructivism offers a distinct contrast when compared to the traditional model that so frequently characterizes classrooms today. The traditional model focuses on teacher- and textbook-driven classrooms. Here students are expected to passively absorb information from the instructor who is viewed as the fount of knowledge.

Neither student autonomy nor independent thinking is nurtured. Seeking the benefits of independent thinking and development is enough reason to shift away from the transmission model and move toward a student-centered approach like constructivism.

What are the Implications?

When translating constructivist theory into practical teaching formats, it's important to note that constructivism tells us much more about good learning than perfect teaching.

While acknowledging that constructivism is not a teaching method, it has implications for what to do in the



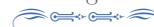
Shift the instructional focus away from a pure "teacher telling" approach...

classroom. First and foremost, with constructivism the role of instructor is to structure appropriate learning experiences. The goal is to encourage learners to actively construct knowledge, discover, explore, and connect concepts rather than merely memorize facts and replicate procedures. Instructors who adopt constructivism will also ask thoughtful, open-ended questions to stimulate independent thinking.

Constructivist teachers value communication in the classroom so that students become aware of multiple perspectives to the same problem. Using constructivism principles, faculty can:

- **Shift** the instructional focus away from a pure "teacher telling" approach giving students the opportunity to explore and inquire without first knowing the instructor's perspective. (Pure, directive teaching actually prevents students from constructing knowledge and making their own connections in learning.)
- **Blend** Socratic questioning during instruction with a variety of strategies such as field experiences, discovery learning, modeling, or cooperative learning.
- **Maintain** learner commitment with a focus on conceptual understanding and not mere rote, memorization of procedures and facts.
- **Inquire** about student prior knowledge and experience to serve as the foundation for developing learning opportunities.

When teacher behaviors reflect the constructivist's philosophy about how students learn, knowledge will no longer be merely transmitted from instructor to learner. Students will actively engage in thoughtful inquiry. They will explore the why and how of the concepts. Finally, it's perhaps the potential for nurturing life-long, independent learners and thinkers that offers the most compelling argument to change teaching directions.



What You Need to Know about K-12 Common Core Standards

by Dr. Martha Parrott, Associate Professor of Mathematics Program Chair, M.Ed. Mathematics Education Director, NSU Mathematics Clinic, Northeastern State University, Email: parrott@nsuok.edu

We hear about it in the news, read about it in newspapers and magazines, and hear educators, politicians, students, and families talk about Common Core State Standards (CCSS).

So what are Common Core State Standards and how does this K-12 educational initiative impact those of us who teach at colleges and universities?

This overview uses a question-and-answer format to make the connection between CCSS and higher education. Website links and reference information are added for a more in-depth look at CCSS and they are cited within and at the end of this article.

1. What is the Common Core State Standard (CCSS) initiative all about?

The Common Core (2010) initiative is a state-led effort to develop a common set of college and career readiness standards in English language arts and mathematics that:

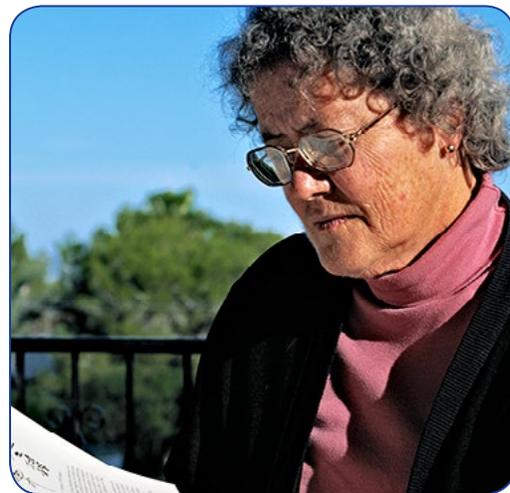
- Align with college and workplace expectations
- Include rigorous content and applications of knowledge
- Are based on evidence and/or research
- Build upon strengths and lessons of current state standards
- Are informed by the standards of other top performing nations and our most rigorous states
- Add increased focus and coherence of objectives so that duplication and gaps in learning are minimized should a student transition from one school district or state to another
- Are written for kindergarten through 12th grade students

Note: At this time, other content areas will be assessed through the literacy strand.

2. Who developed the Common Core State Standards (2010)?

The Council of Chief State School Officers [CCSSO] and the National Governor's Association [NGA] led the initiative that 48 states supported.

Numerous educators, content experts, researchers, national organizations, representatives from the states as well as community groups were consulted. Public feedback was also incorporated into the CCSS development process.



CCSS is about bringing focus, rigor, and coherence to the curriculum to eliminate duplication and gaps.

3. Which states have adopted Common Core State Standards (2010)?

The vast majority of states have adopted CCSS. The only states not yet embracing these standards include Alaska, Nebraska, Texas, and Virginia. Note that Minnesota has adopted only the literacy standards and not the mathematics standards.

4. Why do we have a CCSS (2010) initiative?

Upon closer look at educational outcomes from higher performing nations, we see consistent agreement within these nations about what should be taught at each grade level, one key to their success. We see curriculum with greater focus and depth of study when compared to our nation.

The American educational system is described as “a mile wide and an inch deep,” implying that we have historically covered a multitude of topics at each grade level but with little depth and lack of application between and among ideas.

CCSS is about bringing focus, rigor, and coherence to the curriculum so that content can be explored in greater depth and duplication and gaps are minimized. Given below are reasons why the CCSS have been created and adopted by most states.

- **Consistency:** Before this initiative, every state had its own set of academic standards with different expectations of performance.
- **Equity:** Common standards can help create more equal access to an excellent education.
- **Competition:** All students must be prepared to compete not only with their American peers but also with students from around the world.

- **Clarity:** Clear and coherent standards will help students (and parents and teachers) understand what is expected of them.
- **Collaboration:** Common Standards create a foundation for districts and states to work collaboratively.

5. How will CCSS (2010) change what happens in K-12 classrooms?

Common Core State Standards not only focus on what students will learn but how they should explore that content in order to maximize learning. So, CCSS is changing how teachers teach and how students will access course content. CCSS is a call for deeper learning and active student engagement. One thing is for certain, students will not be able to meet the rigorous demands of CCSS if they remain in classrooms driven by lecture and without opportunities to use and apply the content they are expected to know.

CCSS is changing how students will be assessed. Gone are the days when students will show what they know through multiple-choice or true/false tests. In this new era of CCSS, students will be expected to explain their thinking in writing. While these assessments will be administered by computer, the format will be open-ended and even include drag-and-drop options for young children who must show reading comprehension by ordering the events from a story.

With regard to English language arts, one CCSS change is connected to the type of material students read. CCSS suggests an increased focus on the use of informational texts across all grade levels. The emphasis on informational texts increases as students move from elementary school through to high school.

With regard to mathematics, the focus is less on memorization of rules and procedures and more on deeper, conceptual understanding of mathematical ideas and thinking. While there is still a role in these new standards for quick recall of certain mathematical facts, CCSS calls for a move away from learning by lecture, memorization, and procedures. It favors instruction that supports mathematical connections, modeling, multiple representations, reasoning, and problem solving.

6. How will CCSS (2010) change what happens in higher education classrooms?

In the future, students will begin your course with a collection of prerequisite skills framed by more rigorous content and application of knowledge. You will see students who are better thinkers, better problem solvers, and better able to reason.

To prepare for this day, we must accept that lecture doesn't work well. In the new era of CCSS, students will come to your course benefiting from deeper learning and active student engagement. Therefore, they won't learn in a college environment driven solely by lecture and the lack of an intense level of student engagement.

Students will come to your course accustomed to explaining their thinking. You will need to keep asking them the "why" and "how" questions. You must be ready to pose queries that call for students to defend their ideas, become more convicted in conclusions, and able to make changes in their perspectives. A central faculty task will be to seek out ways to encourage the critical thinking that CCSS is all about.

Whether through learning experiences or assessment tasks, be ready to build on the rigorous, focused, and coherent framework of CCSS. Unless we intentionally plan to build on these CCSS strengths in higher education, its benefits may diminish over time. As higher education instructors, our job is to ensure students build on their academic work and flourish in the college or university classroom.

7. What questions should higher education faculty ask of themselves?

- Am I engaging students in the learning process or attempting to unload knowledge on them through lecture.
- What am I doing to make content relevant to students so they will be prepared to compete with their national and international peers?
- What can I do to encourage my students to think critically?
- How do I plan opportunities for my students to think, reason, and justify?
- Am I designing assessments that ask students to explain their thinking and to vindicate their answers?

8. Where can I learn more?

Visit CoreStandards.org for a comprehensive perspective. Next, examine not only your own state's CCSS implementation process but also look to states like Massachusetts, New York, North Carolina, Ohio, and Washington to get started.

References:

National Governors Association Center for Best Practices and Council of Chief State School Officers. (2010). *Common core state standards*. Washington D.C.: Author.

