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# Integrating Basic Skills Remediation in Career Technical Education

*A Community College Resource Guide*

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## Acknowledgements

Written by dedicated faculty in the Central Valley of California to support student learning and build a better California.

Edited by Donna Cooper and Janine Nkosi

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Thanks also to the following people who supported these efforts and provided technical assistance

Dr. Carole Goldsmith, West Hills College Coalinga  
Dr. Barbara Hioco, Central Valley Higher Ed Consortium  
Robert Pimental, C6 Project Director and West Hills Community College District  
Stephanie Robinson, C6 Health Redesign Team Lead and Fresno City College  
Nancy Hoff, C6 Health Redesign Team Lead and Fresno City College  
David Clark, Ag and Manufacturing Redesign Team Lead and Reedley College  
Karri Hammerstrom, Ag and Manufacturing Coordinator and Reedley College  
Jim Andersen, Merced College

We would also like to thank all the dedicated CTE faculty who allowed us into their classrooms to observe, make suggestions, and record their teaching. We appreciate your willingness to grow and change your thinking, practices and classrooms.

And finally, thank you to all the students who were willing to share their stories with us and reviewed our lessons and taught us more than we ever thought we could know about CTE.

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# PART I

## INTRODUCTION

### OER and the C6 Consortium

The [Central California Community Colleges Committed to Change](#) (C6) consortium was comprised of a subset of 10 community colleges in the Central San Joaquin Valley in California. The C6 Consortium started as a sub-regional collaborative consisting of two to three colleges working together on grant-funded workforce development projects. Over the past 8 years, all of the colleges in the C6 Consortium, as well as other colleges in the region, have worked together on various projects and represents a natural progression of substantial, on-going collaborative work.

### Workforce Initiative

The C6 Consortium developed an innovative approach and bold response to the Department of Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant. Our region was awarded a 20 million dollar Department of Labor TAACCCT award in 2011 that provided an unprecedented opportunity for our region to develop accelerated, intensive programs of study so students earn a degree or credential of value in a reasonable amount of time, enabling them to enter the workforce of critical industries with growing occupational demand in an accelerated timeframe. This project is grounded in Valley expertise and input from regional employers and county Workforce Investment Boards, which transformed the design, structure and delivery of education at 10 California Community Colleges. We believe that our experience and research-based project can be replicated as a state and national model.

### Single Structure Strategy

The C6 Consortium integrated current research to inform their work. Specifically they tapped into Complete College America's evidence-based research and best practices to develop eight elements that became the Single Structure Strategy for change and innovation. The eight elements for the Single Structure Strategy are:

- 1. Design an Integrated Program**
- 2. Cohort Enrollment**
- 3. Block Scheduling**
- 4. Compress Classroom Instruction**
- 5. Embed Remediation**
- 6. Increase Transparency, Accountability and Labor Market Relevance**
- 7. Deploy Transformative Technology**
- 8. Improve Student Support Services**

Each college had to implement all eight elements in their TAACCCT grant funded projects. In addition developing and providing open educational resources for faculty and students was a requirement of the project. This OER basic skills resource is one of several OERs produced through the C6 initiative.

## A Need for Faculty and Student Academic Resources

In [Divided We Fail](#), Moore and Shulock (2010) track more than a quarter of a million students, who entered the California Community College system in 2003-04, over a 6-year period and analyzed their progression and outcomes by major racial/ethnic populations.

Moore and Shulock found that greater numbers of Latino (69%) and Black (65%) students rely on community college as the gateway to higher education than White (60%) and Asian/Pacific Islander (42%). Of the more than 250,000 students tracked in the study, 70% had not graduated with a vocational certificate, associate degree or transferred to a 4-year college after 6 years.

Additionally, Black and Latino students were less likely to reach milestones and less likely to earn associate degrees, transfer to a 4-year college or complete their stated objectives, than their White and API counterparts. Moore and Shulock (2010) noted that only 20% of Latinos and 25% of Blacks had completed after 6 years compared to 37% of White students.

The [Academic Senate for California Community Colleges](#) (2007) stated that one consequence of the open enrollment, noncompetitive admission policy of community colleges is that 70 to 80% of first-time college students require developmental education in mathematics, English as a second language, and/or writing or reading courses. As noted in the [California Community College Student Success Task Force](#) (2012) report, the majority of students who require remedial coursework are first generation, low-income college students from historically underserved populations.



Photo of exit signs and people going in different directions illustrates the varied exit points students face in college.



Photo of man falling off ladder heading toward graduation (left), which illustrates challenges students experience, and climbing ladder (right) to illustrate importance of student support resources.

Researchers have presented various reasons that contribute to such problems found in higher education. Tinto's (1975) model of student attrition suggests that an individual's integration into a college's academic and social systems directly relates to student's continued enrollment at that college. A report by the [College Board Advocacy & Policy Center](#) (2011) on pathways and progress of male students of color revealed many pressures experienced by students including being the primary support for their families, raising children, difficulty associated with financial stability, negotiating social life, overcoming challenges at home and in the community, and dealing with stereotypes. The report underscores the need for educators to see students from a holistic perspective and identify support programs and strategies that bridge the experiences of student's life outside of the classroom with what takes place inside the classroom and institution.

## Building Bridges: CTE Pathways and Integrated Remediation

The C6 open education resources is intended to be a resource for faculty who teach career technical education courses (CTE) to integrate basic skills in reading, writing, and math; as well as study skills and peer learning support into their courses to increase student success. The collection of photos below illustrates the components that lead to student success in CTE (or any) academic programs, including CTE, foundational reading, writing, and math, and study skills. It's helpful for students, faculty, and staff to see how the various components fit together and lead to successful outcomes.



Collection of photos illustrating components for student success in CTE courses, including the CTE success wheel, stack of reading, writing, and math books, study skills and a baby motioning his hand with a fist signaling triumph.

## **Embedded Remediation**

Embedded remediation generally refers to the integration of reading, writing, and numeracy within the classroom content discipline or vocational pathway to accelerate students' progression and successful completion of college level courses (Baker, Hope & Karandjeff, 2009; Casey et al., 2006). Similar terms and practices for embedded remediation include integrated learning and contextualized teaching and learning (Baker, et al., 2009).

### **Models for Remediation**

There are several different models for providing remediation for CTE programs. The C6 Consortium Basic Skills Redesign Team took the position that embedded remediation meant that the additional support was a part of the course or pathway, not necessarily an additional class, and was required by the program. Several models were researched as examples and the C6 Consortium used parts of several of these models to redesign their pathways. Ultimately, the C6 Consortium college faculty found ways to embed remediation without adding time to completion and without adding significant costs to the colleges. This approach has allowed the programs to sustain the changes made to improve student outcomes. This OER book highlights and explains the changes and practices that the C6 Consortium faculty utilized in their redesign. However, the basics of their approach included utilizing collaboration between CTE faculty and basic skills faculty to develop new integrated lesson plans; peer learning support; required tutoring; online learning support; integration of Habits of Mind and Reading Apprenticeship; and new pedagogies such as the flipped classroom. There were other redesign elements such as cohort model, block scheduling, embedded counseling, and transformative technology that impacted student outcomes as well.

### **England: Literacy, Language and Numeracy (LLN) Skills Initiative**

This initiative was launched in England to embed Literacy, Language and Numeracy (LLN) skills in its vocational programs to meet the needs of underprepared students. In this model the vocational instructor developed a *Skills for Life* curriculum which included LLN skills for use within a specific career pathway. This became the foundation for the LLN skills embedded within the designated vocational or CTE course. The LLN Skills could be taught by either the vocational education instructor or a basic skills instructor who team-taught the courses (Casey et al., 2006).

## **Integrated Basic Education and Skills Training (I-BEST) model.**

In the state of Washington a statewide integration design that embeds a basic skills instructor into a CTE pathway was implemented. The CTE course is taught by both instructors and often includes support classes such as supplemental instruction.

## **Tennessee**

Tennessee's 27 Technology Centers offer technical and occupational programs. The Technology Centers have a centralized and highly integrated framework that includes program structure; a competency-based, self-paced learning model; contextualized foundation skills; and supportive services. Their Technology Centers have a 70% successful completion rate (Hoops, 2010).

## **California**

In California, a number of demonstration projects were funded beginning in 2007 by the California Community College Chancellor's Office and were re-funded in 2011 based on their early success. These grants were designed to create Career Advancement Academies (CAA) to improve completion rates of students obtaining certificates in designated career pathways that would result in sustaining wage jobs. A key component of the CAA has been the integration of reading, writing, math and soft job skills within the technical field to accelerate student progress (Gash & Mack, 2010). Please go to the [Career Ladders](#) website for more information.

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### **Resources:**

1. Academic Senate for California Community Colleges. (2007). [Basic Skills As a Foundation for Student Success in California Community Colleges](#).
2. California Community College Task Force (2012). [Advancing Student Success in California Community Colleges: Recommendations of the California Community Colleges Student Success Task Force](#).
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4. CTL Primer <http://www.cccbsi.org/Websites/basicskills/Images/CTL.pdf>
5. Core Principles for Transforming Remedial Education: A Joint Statement <http://www.jff.org/sites/default/files/RemediationJointStatement-121312update.pdf>
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## PART II

### Effective Practices and Implementation

One of the most crucial pieces of information that instructors can obtain is whether or not their students comprehend what is being taught. The traditional approach of asking “Are there any questions?” periodically throughout a lecture and assuming that a silent response from students means they understand is problematic. Likewise, tossing out questions to students en masse with a handful of repeat responders shouting out one-word answers while the majority remain passive does not demonstrate that true learning has really taken place. Most likely, the quiet students who prefer to go unnoticed in class are the very ones that eventually contribute to a program’s attrition rate. Thus, *the goal is to hold all students accountable for their own learning both in class as well as out of class.*

This section of the text contains background, research, an overview and resources on evidence-based student academic support tools to assist faculty and students in the teaching and learning process. In addition to what’s included here, the authors provided links to websites where further information and resources can be found. The authors included information and tools on the following, [supplemental learning](#), [flipped classroom](#), [reading apprenticeship](#), [habits of mind](#), and [technology tools](#). Implementation suggestions are also provided.

#### Supplemental Learning (Peer Assisted Learning)

Academic support programs such as drop-in tutoring, Peer Assisted Study Sessions (PASS), Student Learning Assistance (SLA), and [Supplemental Instruction](#) (SI) have been cited in research as having a positive impact on student’s academic success. In particular, SI has been cited in much research as an effective practice for engaging students in the learning process and increasing student success. [Click here](#) to watch a short Youtube video created to answer frequently asked questions about Supplemental Instruction.



Medical students gathered around a dummy in a lab setting. This picture provides an example of how peer leaders can work with students in a lab setting.

## An Overview of Supplemental Instruction

Supplemental Instruction is a student learning enhancement program designed to **increase** the **academic performance** and **retention** rates of participants (Arendale, 2002). SI sessions are peer-facilitated study review sessions offered to students enrolled in historically difficult courses. The program operates on a volunteer basis and targets **high-risk courses** rather than targeting **at-risk students** (UMKC SI Manual, 2006). [Arendale \(2002\)](#) explains that this approach reduces the stigma attached to student support services because the course is the target rather than the student. [Click on this link](#) to watch a short video created by SI leaders at UC Riverside explaining the SI program.

SI is a **proactive** rather than **reactive** academic support program. It's introduced to the class in the first week of the semester and sessions begin the following week. On the first day of class, students are encouraged to attend SI sessions and to continue participation even when they are successful in the course. SI leaders attend class, which allows learning and study skills development to take place in the context of the curriculum. SI sessions are **designed to promote interaction among students**, which "leads to the formation of peer study groups and facilitates the mainstreaming of culturally diverse as well as disadvantaged students" (Martin et al., 1992, p. 5).



## Does SI Really Work?

Supplemental Instruction is an effective method for increasing student success, as measured by final course grade, in a variety of college courses (Blanc et al., 1983; Congos & Schoeps, 1993; Kochenour, Jolley, Kaup, Patrick, Roach, & Wenzler, 1997), including arts and sciences (Blanc et al., 1983) first-year calculus (Fayowski & MacMillan, 2008), and physical and social sciences (Kochenour et al., 1997). Course grades improve as a result of SI participation, with more A and B final grades and fewer D, F, and W final course grades than in similar courses where the program was not used (Blanc et al., 1983; Congos & Schoeps, 1993; Fayowski & MacMillan, 2008;

Kochenour et al., 1997). Students who attend SI earn higher mean final course grades and have higher rates of retention, than non-SI attendees within the same course (Blanc et al., 1983; Congos & Schoeps, 1993; Fayowski & MacMillan, 2008; Kochenour et al., 1997). Academic support programs provide students with an opportunity to make meaningful connections between course content and their lived experiences.

## **The SI Model**

According to the UMKC Supervisor Manual (2006), although the SI model can be adapted to reflect the individual needs and differences of each campus there are certain elements of the model, which must be present to ensure the integrity of the program:

### **SI Sessions Are Peer Facilitated**

The ideal SI Leader is a student who has recently taken the class and received an A as the final course grade. The SI Coordinator, Faculty member, and Academic Department Head approve all SI Leaders. The SI Leader neither re-lectures nor introduces new material; instead, the SI Leader's primary responsibilities are to organize and add structure to the SI study sessions. The primary function of the SI Leader is to facilitate discussion among SI participants and model successful learning strategies at key moments in the SI sessions.



CTE students working together in a lab. One student models the steps that need to be complete while the others watch, then each student takes a turn completing the tasks.

### **The SI Leader Serves as a Model Student**

The SI Leader functions as a "model student" of the discipline rather than an authoritative figure. SI Leaders help students formulate and answer their own questions. This process helps students develop a more sophisticated way of learning while maintaining the focus on content mastery.

### **SI Sessions Integrate Content and Learning Skills**

The SI sessions integrate the review of lecture notes, textbook readings, and outside supplemental readings with appropriate modeling of learning strategies. "How to learn" is embedded into SI sessions along with "what to learn." Through practice and mastery of effective learning strategies, students can adopt and transfer these strategies to other courses and content areas. Collaborative learning strategies are used in SI sessions as a means of creating a more active learning environment for student participants.

### **The SI Leader Attends the Targeted Class**

When the SI Leader attends all lectures, s/he is knowledgeable about what is occurring in the class lectures and has the opportunity to model “good student” behavior in the course. The SI Leader's presence in the classroom also serves to market the SI program to students.

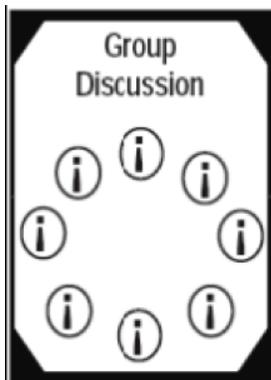
### **The SI Leader Receives Training**

The SI Leader receives one or more days of training prior to the beginning of the term. In-service training continues throughout the academic term. These training sessions include specific learning theories and strategies.

### **Regularly Scheduled Sessions**

SI is in place from the beginning of the academic term. There is a minimum of three sessions offered each week, and the number may increase depending on the student demand or specific issues related to the course. Students attend SI sessions on a voluntary basis.

### **Collaborative Learning Techniques**

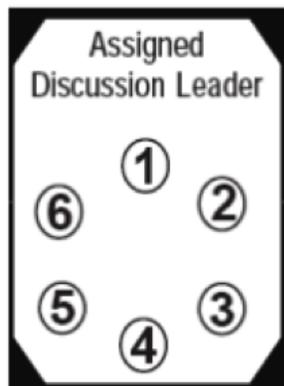


#### **Group Discussion**

Group Discussion is a general unstructured discussion of an issue or topic by the group. Individual members are free to contribute or not contribute.

Hints:

- This is the most common form of collaborative learning. It is also the form that requires the most skill to use successfully.
- Ideally, everyone is actively involved in the discussion and the discussion topic is of equal interest to all group members.
- When group discussion is successful, it is difficult to determine if there is a discussion leader.

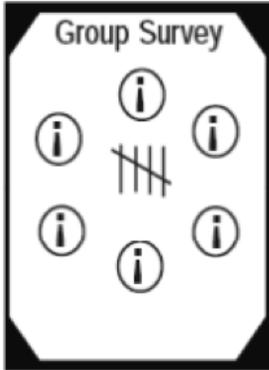


#### **Assigned Discussion Leader**

One person in the group is asked to present on a topic or review material for the group and then lead the discussion for the group. This person should not be the regular group leader.

Hints:

- When assigning a discussion topic to individual members of the group, you may need to be prepared to allow a little time for the person leading the discussion to prepare for the discussion.
- This technique works best when everyone or nearly everyone in the group is given an assignment to be the “expert” on.

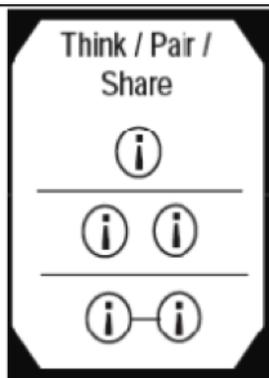


### Group Survey

Each group member is surveyed to discover their position on an issue, problem or topic. This process ensures that each member of the group is allowed to offer or state their point of view.

Hint:

- A survey works best when opinions or views are briefly stated. Be sure to keep track of the results of the survey.

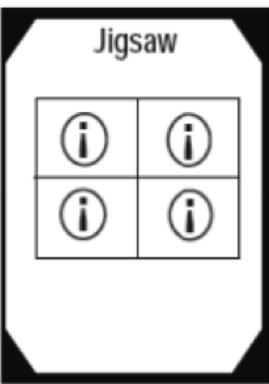


### Think/Pair/Share

Group members think about a question/topic individually, then share their thoughts with a partner. Then, the large group summarizes what was shared in pairs.

Hints:

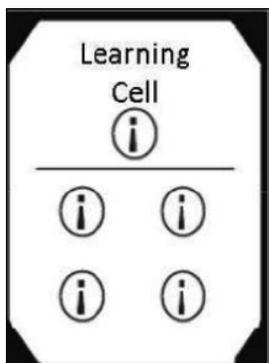
- The goal is to allow participants time to think BEFORE they discuss.
- Give participants a specific amount of time (30 seconds, 5 minutes, etc.) for the “think” portion.



In Jigsaw, group members are broken into smaller groups. Each small group works on some aspect of the same problem, question, or issue. They then share their part of the puzzle with the large group.

Hints:

- Jigsaws, when used properly, make the group as a whole dependent upon all of the subgroups. Each group has a piece of the puzzle.
- When using a Jigsaw, make sure you carefully define the limits of what each group will contribute to the topic that is being explored.



### Learning Cell

Students develop questions individually, then quiz each other based on these questions. A facilitator can compile all questions for future use as practice quizzes/exams.

Hint:

- Encourage students to create quiz questions based on notes, books, and other resources.
- Encourage a variety of questions (based on Bloom’s taxonomy) for deeper understanding.

## Role of the Instructor

Faculty members play a critical role to ensure the success of the peer study sessions. Faculty members make SI leader recommendations to the SI supervisor. Instructors suggest students to be leaders if they exhibit content competency and good interpersonal communication skills. Faculty members and leaders are encouraged to meet weekly to discuss concerns and share ideas. Instructors who are actively involved in the SI program will assist or offer suggestions to SI leaders when creating session handouts, practice quizzes and other resources. Martin, Arendale and Associates (1992) stress that, “faculty cooperation is an essential ingredient of the SI model” (p. 7).

## Five Ways Faculty Can Support Peer Leaders

1. **Recommend and select potential Leaders.** Recommendations should be based on prior academic performance, dependability, and interpersonal communication skills. It’s important to keep in mind that the peer leader is responsible for creating a safe and comfortable environment for students to collaborate so the “right” personality is key.
2. **Provide Leaders with relevant materials.** Meet with peer leader prior to the start of the semester and give him/her a copy of the syllabus, course text, relevant handouts, workbooks, old homework or study guides etc.
3. **Allow the peer leader to make a brief presentation to the class** during the first week of the semester (or as soon as hired). It’s best to allow the peer leader to make the introduction at the beginning of class so that they have student’s attention.
4. **Encourage students to attend sessions.** Offer students extra credit to attend sessions this will incentivize participation. If extra credit is not feasible for your class then providing the SI leader with old study guides, quizzes, copies of the textbook and/or workbooks can also incentivize session attendance. Several CTE programs have restructured their program to allow for mandatory participation in SI sessions. CTE students attend sessions before, after or in between classes. Sessions are shorter to allow for integration into CTE programs.
5. **Provide opportunities in class for the Leader to announce the study sessions.** At various times throughout the semester it’s helpful for SI leaders to make announcements reminding students about study sessions and sharing information about session activities. When the instructor calls on the leader in class or lab or asks the peer leader to model a lesson this increases visibility and can increase credibility of the leader too.

## **Role of the Peer Leader**

The peer leader is typically a student who has passed the class with an A or B grade and has taken the class with the instructor for which she/he will provide peer academic support. In CTE courses, often times the peer leader is a student who is also enrolled in the program and/or class for which the student is the peer leader. In such cases, CTE faculty have developed a few methods for selecting leaders, including:

1. recruiting students who test in the 10% in their assessment or placement tests;
2. recruiting students after they the first exam. Again, recruit from the top 10% of the exam results;
3. for multi-semester or multi-year programs students who successfully completed semester one or year one are embedded into the program to help first year students. Essentially, year two students are peer leaders for year one students.
4. Community members who worked in the CTE field and are retired and/or injured could volunteer as mentors.

Review this [short video](#) to see peer leaders in the [Radiologic Technology \(RAD Tech\) program positioning lab at Fresno City College](#) facilitate peer study sessions. The peer leaders in this video were second year students in the two year program. They were selected by the faculty to be a peer leader and earned hours toward their clinical rotations for facilitating their tutoring sessions.

## **How to Utilize Peer Leaders in CTE Courses**

Peer leaders can support CTE students by offering support in the classroom, shop and/or lab, organizing study sessions and exam review sessions, providing guidance, and serving as mentors. Part four of the OER book contains sample lessons for faculty, peer leaders, and students to see how traditional peer study strategies can be contextualized for use in CTE courses.

As with most academic support programs and services, the implementation of a peer study program will need to be adapted to fit the needs of the students at your campus and specific program. Key considerations include, the length of the program, delivery method of core material (i.e. lecture, lab, clinical), location of class (i.e. on campus, off campus, lab, shop or traditional classroom), and schedule of classes (i.e. block schedule).

The table on the next page provides a snapshot of the similarities and differences between the traditional SI model, as implemented in the colleges who participated in the C6 consortium, and how CTE faculty and tutorial center coordinators modified SI to meet the needs of CTE students.

## SI to CTE Peer Study Model Comparison

Core Components	SI Model	CTE Model
<b>Recruitment</b>	Faculty recruits students who are expected to pass their class with an “A” or “B” and refers them to the tutorial center. Referrals are usually made prior to the end of the semester.	Since programs tend to be short-term, faculty recruits leader prior to start of semester (based on assessment scores and/or interactions during orientation, or seeks out students excelling in the program in first few weeks.
<b>Level of Support</b>	Peer leader holds sessions for students enrolled in multiple sections of same course taught by faculty (e.g. all SOC 1A students in multiple sections).	Peer leader holds sessions for students enrolled in each CTE section/course separately (e.g. each section has separate sessions).
<b>Facilitator</b>	Former student who passed the class with an “A” or “B” final grade.	Former student who passed with “A” or “B” grade, current student who is excelling in the program or earned high marks on placement test, retired and/or injured professional in the field, recent graduate while searching for employment (will keep learning fresh)
<b>Session Attendance</b>	Voluntary	Voluntary or mandatory part of CTE program
<b>Session Planning</b>	Session plans prepared in advance, provided to tutorial coordinator	Session plans prepared in advance, provided to tutorial coordinator and/or faculty
<b>Session Length</b>	Typically three, 50 minute sessions per week	Varies depending on availability of students. Sessions can be 20 minutes between classes, 20-30 minutes before or after class, or 50 minutes before or after class. Session typically take place daily or Monday through Thursday
<b>Training</b>	Orientation prior to holding sessions & ongoing (typically 3-4 training sessions per semester).	Orientation prior to holding sessions & ongoing (typically 3-4 training sessions per semester). It’s important for the SI coordinator to attend CTE class and labs to figure out how best to incorporate SI techniques.

Regardless of program structure, faculty and staff who embedded peer leaders into their CTE courses or programs stated that training for peer leaders should be required (Cooper, 2014). In addition to training offered within the campus tutorial center, the tutorial center coordinator, CTE faculty and peer leaders should collaborate to hold CTE specific trainings to contextualize peer study sessions to fit CTE student’s needs. It is

highly recommended that the tutorial center coordinator audit several lectures and labs to gain a clear picture of the CTE curriculum and pedagogy. This will help the tutorial center coordinator adapt traditional study session strategies to fit the needs of students in CTE programs. Simply sitting down with CTE students and asking them how they study for their classes can provide a great deal of insight about where traditional academic support services can be utilized and where services need to be modified.

In our initial conversation with students in CTE programs, we found that students believed traditional academic support strategies would not work in CTE classes (i.e. flashcards, pair/share, small group discussion etc.). However, after talking with students and asking them how they study course material, we found that many traditional approaches to studying were being utilized. For example, at Reedley College students shared that they meet before and after class to work in small groups to review the lab lesson for that week (e.g. valve adjustment). Students shared that they gathered around a workstation (i.e. engine) and took turns adjusting the valves (i.e. small group activity). While one student conducts the valve adjustment, the other students watch to see if the adjustment is done properly offering positive reinforcement and guidance where needed. Section IV of the C6 book shows the study session outline illustrating this example.

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# The Flipped Classroom

## What is a “flipped classroom”?

Simply put, it is changing the focus of the classroom from lecture, content-delivery, instructor-focused hours into activity, content-application, student-focused hours. It asks students to apply or engage with content they’ve been exposed to before (usually as homework, such as a pre-recorded lecture), “flipping” the focus of a more traditional classroom.

## [Things You Should Know About...Flipped Classrooms](#)

### Why flip the classroom?

Flipping the classroom can provide an alternative pathway for instruction and learning, shifting the focus onto students to discuss issues, solve problems, practice exercises or tasks, and more--all in the environment of the classroom, where students can support and teach each other and the instructor can guide students through the practice of the content.

The positive results for flipping the class can include greater student engagement, increased class success rates, and fewer disciplinary problems. Knewton, in their infographic “[The Flipped Classroom: Turning Traditional Education on Its Head](#),” briefly demonstrates how it works and the great results Clintondale High School has enjoyed.

As well, Dan Berrett discusses the potential benefits of a flipped classroom in “[How ‘Flipping’ the Classroom Can Improve the Traditional Lecture](#),” from the Chronicle of Higher Education.

### How to flip your classroom.

First, start small. Flipping a class may take, at first, a substantial effort, and trying to flip your *whole* semester may be a daunting task. It may be more manageable and more encouraging to identify 2-3 content areas that you want more student engagement and active learning. Once you’ve identified, those content areas, do the following:

1. Record your lecture (or find a video lecture online or important reading) for students to view **before** class. Be sure to provide important questions or focus for the students to consider as they watch this pre-recorded lecture and for the students to be prepared to discuss in class.

2. Replace your typical lecture time with an in-class activity that asks the students to *use* the information provided in your lecture. For example, a statistics instructor may record a lecture on standard deviations, and in class, rather than lecture about it, would design an activity that would ask students to use data sets to correctly identify the standard deviation. The instructor may even ask students to discuss the value of that deviation to understand its impact and significance.
3. Then jump in and out of the student discussions to help guide students, answer questions, put out fires, encourage thinking, push students--embodying more the role of a guide rather than instructor. [Here's a video](#) from FCC to show you how.
4. Assess the results of your efforts. Compare student engagement and knowledge with your experience of the traditional lecture.

The first effort may not work according to plan, so if it doesn't seem to work, then tweak the plan, try again, and see what happens.



Source: <http://ctl.utexas.edu/sites/default/files/flippedflowmodel.png>

Video Link: <http://ctl.utexas.edu/ctl/teaching/flipping-a-class>

## Resources

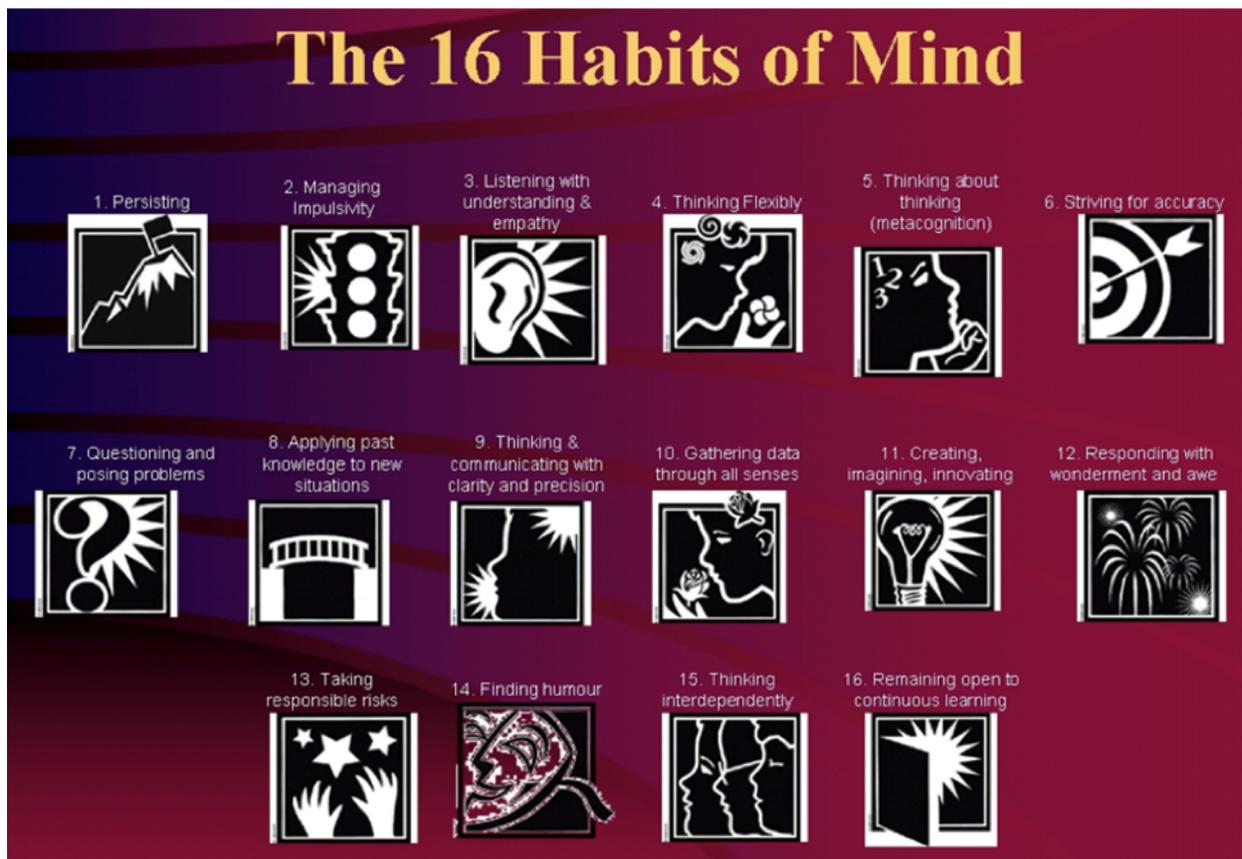
1. Eric Mazur's "[Confessions of a Converted Lecturer](#)" on YouTube.

2. 3CSN's presentation on the flipped classroom, "[How to Flip without Flopping.](#)"
3. Jennifer Demski's article "[6 Expert Tips for Flipping the Classroom](#)" in *Campus Technology*.
4. K. Walsh's article "[8 Great Videos About the Flipped Classroom](#)" in *EmergingEdTech*.
5. [The Flipped Learning Network](#).
6. Ron Kordyban's and Shelley Kinash's article "[No More Flying on Autopilot: The Flipped Classroom](#)" from Bond University, [ePublications@bond](mailto:ePublications@bond)

## Habits of Mind

It's all **POSSIBLE** if you choose to adopt a mindset geared toward success...

The **Habits of Mind model** emphasizes the importance of students knowing how to behave intelligently when they are uncertain of an answer. It promotes having a mindset toward behaving intelligently when faced with paradoxes, dilemmas, enigmas, and other gray or fuzzy areas, the answers to which are not readily apparent.



Contributions to <https://thinkerstoolbox.wikispaces.com/> are licensed under a [Creative Commons Attribution Share-Alike 3.0 License](#). 

With established effectiveness worldwide, the Habits of Mind approach embodies the essence of **critical thinking**. The focus of a Habits of Mind initiative at any educational institution is student behavior under challenging conditions that demand careful reasoning, insightfulness, persistence, innovation, and craftsmanship. The foundation of intelligence in humans is not only the ability to acquire information but also the

understanding of how to apply it successfully. Individuals who exercise the Habits of Mind must cultivate patterns of intellectual behavior that produce powerful results. These habits are a combination of many skills, attitudes, and propensities.

Researchers, Art Costa and Bena Kallick, have identified 16 traits that constitute the various Habits of Mind. This list is certainly not finite, and institutions are free to adapt the model to fit their own unique circumstances.

### 16 Traits that Constitute the Various Habits of Mind

<b>Persisting</b>
<b>Thinking and communicating with clarity and precision</b>
<b>Managing impulsivity</b>
<b>Gathering data through all senses</b>
<b>Listening with understanding and empathy</b>
<b>Creating, imagining, innovating</b>
<b>Thinking flexibly</b>
<b>Responding with wonderment and awe</b>
<b>Thinking about thinking (metacognition)</b>
<b>Taking responsible risks</b>
<b>Striving for accuracy</b>
<b>Finding humor</b>
<b>Questioning and posing problems</b>
<b>Thinking interdependently</b>
<b>Applying past knowledge to new situations</b>
<b>Remaining open to continuous learning</b>

Since its inception, schools around the world have promoted Habits of Mind initiatives on their campuses to raise both student and faculty awareness of the various characteristics that are indicative of success in the realm of academics and beyond. By using a common language to refer to these Habits, school communities are causing students to reflect on their own attitudes, evaluating the consequences of certain

mindsets. The end result is the immersion of students in a culture of success.

### **Impact of Habits of Mind on Students and Teachers**

The following citation refers to an 8:33 video clip on YouTube in which Art Costa discusses the impact that Habits of Mind has had on both students and teachers in a variety of settings worldwide. He provides consistent anecdotal evidence along with research-based support.



[Click Here to watch a Video of Art Costa on Habits of Mind](#)

### **Effectiveness of Building Strong Habits of Mind**

The Higher Education Research Institute (HERI) at UCLA, home of the Cooperative Institutional Research Program (CIRP) embarked on a research endeavor and produced a PowerPoint summarizing the results of their investigation, which is entitled, [“Fostering ‘Habits of Mind’ for Student Learning in the First Year of College: Results from a National Study.”](#) This longitudinal study focused on various learning experiences that students undergo during their first year of college and which ones have the greatest impact on students’ development of Habits of Mind traits. The approach of this study was based on CIRP-generated surveys (The Freshman Survey and Your First Year College Survey), making it unique compared to similar studies of the past in which student success was measured by college GPA.

The surveys were administered to 27,371 students at 484 institutions. Results indicated that service learning along with educationally purposeful activities *outside* the classroom and first-year seminars have been linked to learning gains (i.e. Habits of Mind cultivation) in the first year. Educationally purposeful activities outside of the classroom included pursuits such as discussing course content with other students frequently, especially sharing ideas with students of different racial/ethnic backgrounds, which promotes a tolerance of diversity and open-mindedness in general. Certainly, this is one reason why **Supplemental Instruction (SI)** continues to be so effective. Another aspect of the first-year experience that has a positive influence on students’ character growth is both the quantity and quality of faculty contact, thus affirming the value of mentoring.

In a nutshell, the implication of this study is not really surprising, that what students engage in outside the classroom is equally important, if not more so, to what transpires in the classroom. Thus, college administrators and faculty need to encourage students to get involved on their campus and reach out to peer mentoring programs like SI in order to realize their full potential for success.

If you are interested in the website which contains the full, research-based PowerPoint (along with many other great research articles and presentations produced by HERI), [click here](#). For the PowerPoint alone, select this [link](#).

## Links to Additional Resources

- Habits of Mind: [www.habitsofmind.org/](http://www.habitsofmind.org/)
- The Art Costa Centre for Thinking: <http://www.artcostacentre.com>
- The Official Habits of Mind Institute Website: [www.habitsofmindinstitute.org/](http://www.habitsofmindinstitute.org/)
- California Community Colleges Success Network: [www.3csn.org/completion-initiative/habits-of-mind/](http://www.3csn.org/completion-initiative/habits-of-mind/)

*Successful people are simply those with successful habits.*

-----Brian Tracy [http://www.brainyquote.com/quotes/authors/b/brian\\_tracy.html](http://www.brainyquote.com/quotes/authors/b/brian_tracy.html)

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## Reading Apprenticeship



Many of the lessons offered in this section of the CTE handbook are based on the highly successful Reading Apprenticeship program.

What follows, is a short overview and history of the program.

[Reading Apprenticeship](#)® is a research-based and research-proven instructional framework for improving the academic literacy of middle school, high school, and college students.

Three recent randomized controlled studies found that students using Reading Apprenticeship strategies in CTE classrooms made significant gains in literacy and disciplinary knowledge (Reading, 2015). They also developed more positive academic identities and dispositions for reading and learning.

### Reading Apprenticeship for College & Career

When literacy instruction and subject area instruction are integrated, middle school, high school, and community college students all benefit from the synergy. New standards for K–12 schooling—the Common Core State Standards and Next Generation Science Standards—underscore the importance of this fundamental Reading Apprenticeship approach.

At the community college level, faculty report that integrated instruction increases student engagement, persistence, and success. Learning accelerates. When college-level literacy learning is contextualized in subject area instruction, students engage as readers in authentic, discipline-specific problem solving, and gain confidence in their ability to do so. They take up the kind of independent learning that transfers across academic contexts and into the workplace and beyond.

Since 2008, faculty at 200+ colleges in 25 states have experienced Reading Apprenticeship through small seminars, online courses, faculty inquiry groups, and designated communities of practice. The numbers are growing as word gets around.

## Why Reading Apprenticeship Works

### Collaborative learning environments:

When teachers invite students to approach, engage, and persevere in the hard work of understanding complex texts, students learn that exposing their thinking or confusion can lead to new levels of understanding. Reading Apprenticeship shows teachers how to create classrooms in which students become more willing to take academic risks and develop, as a result, into more resilient learner

**Metacognitive conversations:** In Reading Apprenticeship classrooms, students and teachers think and talk about *how* they learn, not only what they learn. As students encounter challenging text, they ask themselves What do I know?, What's confusing?, and What can I do to understand this text and move forward? By learning to surface the usually “invisible” thinking that goes on when they read, and to use that as a basis for individual and collaborative problem solving, students develop the capacity to take control of their learning.

**Reading happens:** Instead of teaching around the text, lecturing, or summarizing for students, teachers engage students in multiple opportunities to actually engage with



Image of CTE students working on work orders, to show that reading strategies can be used to help in a variety of ways.

texts—to read—in class. They model disciplinary-specific literacy skills, help students build high-level comprehension strategies, engage students in building knowledge by making connections to background knowledge they already have, and provide ample guided, collaborative, and individual practice *within the subject area curriculum*. When integrated, literacy learning and subject area learning amplify each other and accelerate students' success.



## National Impact of Reading Apprenticeship

RA is an [evidence based best practice](#) for improving student success in a variety of course disciplines. The following information highlights

### [Investing in Innovation \(i3\) RAISE validation grant \(2010–2015\)](#)

Reaching 400,000 students, 2,800 teachers of English, biology, and history in 300 schools and five states through Reading Apprenticeship professional development.

### [Investing in Innovation \(i3\) i-RAISE development grant \(2013–2016\)](#)

Translating Reading Apprenticeship professional development into an online course for science teachers to help increase the number of students who confidently pursue careers in science, technology, engineering, and mathematics.

### [IES Reading for Understanding \(2010–2015\)](#)

Participating as key partner in federal research project to improve the nation’s overall approach to literacy instruction in grades 6–12.

### [Community College \(2006–ongoing\)](#)

In California, state funds support a community of practice in Reading Apprenticeship, and the Helmsley Charitable Trust has invested in a Reading Apprenticeship Community College STEM Network. In Washington, the state has worked through the Council on Basic Skills and the Workforce Education Council to promote and support

CURRENTLY REACHING

204,570 secondary students

CURRENTLY REACHING

1,567 secondary teachers

CURRENTLY REACHING

175 secondary schools

CURRENTLY REACHING

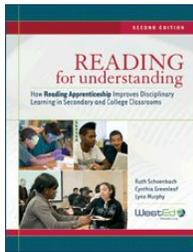
519 community college faculty

3 randomized controlled studies, all with statistically significant, meaningful effect sizes on students' standardized test scores

4 current multi-year studies funded by U.S. Department of Education to increase reach and effectiveness of Reading Apprenticeship

the Reading Apprenticeship program in CTE courses.

Reading Apprenticeship activities also include site-based and national professional development institutes for secondary and college faculty, an online course for community college instructors, and curriculum and professional development for the grade 9 Reading Apprenticeship Academic Literacy (RAAL) course.



A best-selling and newly updated book, [\*Reading for Understanding\*](#), describes the Reading Apprenticeship framework with examples from many subject area classrooms,

ranging from middle school through community college.

### **Video Highlighting Versatility of Reading Apprenticeship**



The strategies used in the Reading Apprenticeship program can be adapted to a wide variety of Academic and Career Technical Education courses. [Click here](#) to see a video discussing several areas where this program has been successful. For more voices and views, [click here](#).

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# Study Skills



## Overview of Study Skills

Although **study skills** in connection with the reading process were a significant matter of focus in the early part of the twentieth century, they have not received much research attention since the 1970's. A recognition of the importance of students developing effective study skills has been around since the early 1900's. For instance, McMurry (1909) created the following list as comprising study skills: (a) setting specific purposes for study (b) identifying supplemental information (c) organizing ideas (d) judging the worth of the material (e) memorizing (f) keeping an open attitude, and (g) relying on self-direction in learning. Throughout subsequent decades, this list has remained relatively unaltered. However, Lenz, Ellis and Scanlon (1996) make a distinction between study tactics and study strategies.

Study tactics refer to a sequence of steps or procedures while study strategies represent a learner's comprehensive approach to determining the most effective tactics for a particular study task. For example, if a person reads an article on the origin of wrestling in order to learn about the sport, that person is using a study strategy, but if the person adopts a particular reading technique (like **SQ3R**) during the reading process, then a study tactic is being applied.



This is a map illustrating the various study skills that students can use for academic success.

The difference between the two is essential to understand because while study strategies may

stay relatively the same over time, study tactics/behaviors may have more of a tendency to shift along with changes in study environments.

One of the largest shifts in how students approach their studies is a direct result of the explosion of computer-based technology that society has experienced in the last 20 years. This monumental increase in technology has also impacted the types of assignments given by instructors. In order to remain competitive in today's world, students must know how to efficiently and effectively take advantage of the many electronic tools at their disposal. Though the learning process for the human brain has remained the same since time immortal, the study tactics available to students to promote their learning are frequently in a state of flux, driven heavily by continual developments in technology.

Below, is a video series explaining study skills. Here's the [Youtube link](#) that will take you directly to the series

<https://www.youtube.com/playlist?list=PL85708E6EA236E3DB>

**How to Get the Most Out of Studying Video Series**  
by Samford Office of Marketing and Communication • 5 videos • 136,540 views •  
Last updated on Jul 2, 2014

Dr. Stephen Chew provides great insight to effective study strategies. Visit [www.samford.edu](http://www.samford.edu) to learn more.

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1		How to Get the Most Out of Studying: Part 1 of 5, "Beliefs That Make You Fail... Or Succeed"	Samford Office of Marketing and Communication	6:54
2		How to Get the Most Out of Studying: Part 2 of 5, "What Students Should Know About How People Learn"	Samford Office of Marketing and Communication	7:15
3		How to Get the Most Out of Studying: Part 3 of 5, "Cognitive Principles for Optimizing Learning"	Samford Office of Marketing and Communication	5:46
4		How to Get the Most Out of Studying: Part 4 of 5, "Putting Principles for Learning into Practice"	Samford Office of Marketing and Communication	9:17
5		How to Get the Most Out of Studying: Part 5 of 5, "I Blew the Exam, Now What?"	Samford Office of Marketing and Communication	7:29

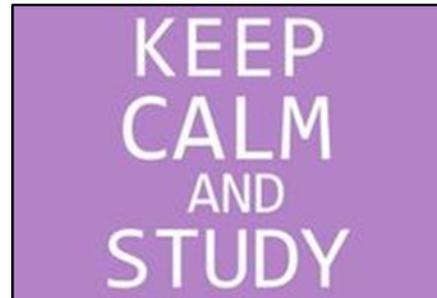
This is an image of the Youtube Channel where readers can locate the video series "How to Get the Most Out of Studying" by Dr. Stephen Chew. The purpose is to show readers what the video series entails and what to look for when they search for the site.

Dr. Stephen Chew delivers excellent insight on which study strategies work most effectively with the human brain. The information he provides is not only relevant for students who want to study smarter but also for instructors interested in how the brain incorporates new concepts. For more information, one can visit [www.samford.edu](http://www.samford.edu).

## Research on Effectiveness of Study Skills

Carey, Benedict. "Forget What You Know About Good Study Habits". nytimes.com. New York Times, 7 Sept. 2010. Web.

This article is a pleasant and breezy read written at the layman's level, but it nevertheless contains some very intriguing points regarding effective study habits. Perhaps what is most unsettling of all is the fact that many traditional notions of good study habits have now been debunked by recent cognitive research. And this article refers to study after study to back its claims. Yet, these updated study tips have not generally caught on with students or educators.



“For instance, instead of sticking to one study location, simply alternating the room where a person studies improves retention,” the article’s author points out. The usual advice given by study skills gurus is that students should pick out one distraction-free location and make that their permanent study spot. However, as it turns out, the brain retains more information when ideas are associated with subtle changes in environment, even at a subconscious level. Such was confirmed by a classic 1978 experiment in which college students who studied vocabulary words in two different environments did much better on a recall test than a group that studied the same words twice in just one environment. Also, though educators frequently emphasize that students should concentrate intensely on one subject during a study session, research indicates that studying different but, at the same time, interwoven ideas in one sitting works better for the brain. Musicians and athletes have applied this principle for years, incorporating drills as well as new skills into their daily routines.

Another rule of thumb for study skills embodies the notion that it is better to interact with mixed problem sets as part of studying rather than one long drill with the same sort of problem repeated. Interestingly, exams usually present students with a variety of tasks to complete, so doing exercises requiring a variety of interrelated approaches prepares students better for upcoming tests. Along the same line of thinking, the very act of taking a test can be an incredible learning experience as much as it is an assessment of learning that has already taken place. The brain learns more thoroughly when confronted with an assortment of problems each requiring a different approach because it has to exercise **critical thinking** to determine which approach is best to use.

Another reason why tests represent such a great learning tool is because they are notoriously hard, and the very act of students applying themselves with every fiber of their being in a “do or die” situation creates a setting in which the information is likely to

be remembered for a long time. The harder a person must dig to locate the answer to a tough problem, the harder it is to forget the information surrounding the challenge.

One commonly expressed study principle, that it is better to study for shorter periods of time (ex., 1 hour per session) frequently (ex., 3-4 times per week) rather than cram 8 hours of studying in at the last minute, still holds true according to recent investigation. The brain needs frequent reinforcement of material to deepen the grooves of neural pathway storage.

Motivation is the final factor to which the article refers, and it underlies every human behavior. Unfortunately, why some students are highly motivated while others could care less is a question that will not be answered anytime soon.

## Links to Main Organization Websites

- Study Skills--Center for Research on Teaching and Learning  
[www.crlt.umich.edu/tstrategies/tsss](http://www.crlt.umich.edu/tstrategies/tsss)
- Research Synthesis on Study Skills--ASCD  
[http://www.ascd.org/ASCD/pdf/journals/ed\\_lead/el\\_198111\\_armbruster.pdf](http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_198111_armbruster.pdf)
- Study Smart--American Psychological Association  
<http://www.apa.org/gradpsych/2011/11/study-smart.aspx>

## References

1. Study Skills How-to Articles and Tips [www.how-to-study.com/](http://www.how-to-study.com/)
2. Study Skills for Students-Education Corner [www.educationcorner.com/study-skills.html](http://www.educationcorner.com/study-skills.html)
3. Study Skills: When You Hit the Books and They Hit Back [www.howtostudy.org](http://www.howtostudy.org)
4. Study Guides and Strategies [www.studygs.net/](http://www.studygs.net/)
5. Study Skills Center for Research on Learning and Teaching [www.crlt.umich.edu/tstrategies/tsss](http://www.crlt.umich.edu/tstrategies/tsss)
6. 5 Study Skills to Accelerate Your Learning-Global Cognition
7. [www.globalcognition.org/head-smart/5-study-skills-to-accelerate-your-learning/](http://www.globalcognition.org/head-smart/5-study-skills-to-accelerate-your-learning/)

## Technology Tools

### Why Integrate Technology into the Curriculum?

Integrating technology into classroom instruction provides many benefits to instructors and students, including increased communication, ability to gather instant feedback, ability to teach and learn content in a variety of ways (audio, visual, tactile), increased student engagement through the use of videos, classroom polls, and screencasts, and the opportunity “flip the classroom” and have students preview course lectures and lab instruction before showing up to the classroom. Integrating technology into the teaching and learning process allows instructors to make learning fun, interactive and meaningful.

An article in Education Weekly noted that “effective technology integration is achieved when the use of technology is routine and transparent and when technology supports curricular goals.” There are a vast amount of technology tools (social media, apps, Youtube, text message apps, overhead projector, Blackboard, websites etc.) available to instructors, which create the opportunity to meet the learning needs of a diverse student population. In addition, the Internet provides students with the opportunity to learn about their future careers and connect with professions in a variety of industries automotive, agriculture, health and business. Pre-exposure to the culture within the industry allows students to make connections long before they arrive to first interview or internship.

Technology also offers educators effective methods to reach different types of learners and assess student understanding through multiple means. Technology, when properly integrated, can enhance the teaching and learning process making it more fun and engaging for the instructor and students.

The Speak Up survey conducted by Project Tomorrow and Blackboard, Inc., “surveyed nearly 300,000 students, parents, teachers, and other educators about their views on technology in education.” Survey findings revealed “an increased interest from educators in mobile learning, as well as an increase in the number of students who own mobile devices such as smartphones, regardless of economic or demographic differences” (Education Week, 2010). Researchers caution that more research is needed on the topic of technology and education before conclusions can be drawn about the impact technology has on student learning.

## Suggested Technology Tools and Uses

Below is an overview of several technology tools that our faculty have found helpful and a few suggestions for how to use them in your class, peer study session, or program.

### YouTube



YouTube is a video-sharing website that allows students and instructors to access thousands of educational and inspirational videos. An exciting way to use YouTube in Career Technical Education Courses is to develop a YouTube channel and create short demonstration videos for students to review before or after the lesson or lecture has been given. [Click on this video link](#) to see an example. This video was created by a peer leader at Fresno City College for Dr. Deborah Shelly's human anatomy tutorial series.

YouTube is also a powerful way for students to demonstrate their learning and share with the instructor and their classmates. If you go the Youtube website and search "student project videos" or "nursing assessment" you can see a number of examples.

Another great use for Youtube is for peer tutoring. The Fresno City College Tutorial Center created a YouTube channel called FCC Tutors, which houses a number of videos on math, science, writing, study skills, and general information about the campus. [Click here](#) to check out the FCC Tutors Youtube channel.



This links below will provide you with step-by-step instructions on how to create a YouTube channel (for public or classroom use), create a demo video, and upload and share your video with students.

#### How to Create a YouTube Channel

[click here](#) for instruction video

#### How to upload a video to Youtube

[click here](#) for instruction video

## Khan Academy

Khan Academy’s mission is to “provide a world-class education for anyone, anywhere.” All of the Khan Academy content is available free on their website at [www.khanacademy.org](http://www.khanacademy.org). Khan Academy can help instructors embed developmental math lessons into any CTE curriculum. Faculty have the ability to customize learning for students. Instructors can encourage mastery-based learning, diagnose issues, and run individual and class student progreports.



Welding instructor, Randy Emery at [College of the Sequoias](#) (COS) Tulare Center, utilizes Khan Academy in his welding courses to assist students with basic math skills. Randy includes sign-up information in his syllabus for students, and in his course calendar page he provides a list of lessons that are due each week. The math lessons correlate with his curriculum.



Randy incorporated Khan Academy into his classroom practice by assigning students Khan Academy lessons that align with his welding curriculum. As part of the required course, students complete developmental math lessons at home (or on campus in the computer lab) to build up the foundational skills necessary to complete the welding curriculum. Randy lists the math lessons in the course calendar of his syllabus. Randy has also had the opportunity to have his peer leader work with students on their skill building with Khan Academy. As CTE students progress through the math lessons, the peer leader acts as the Khan Academy Coach and checks their progress. The peer leader pays special attention to the areas where students get stuck so that he/she can target academic support to the student’s needs. Click [HERE](#) to see a short video (4:38) by Tim O’Connor, a math professor at Community College of Vermont. Tim shares information about how to use a blended-learning approach to teaching. CTE students shared that Khan academy allows them to move through the content at their own pace, which increased their confidence and understanding of math skills that are critical to student success.

For additional resources on content specific material and “how to videos,” access the the Khan Academy YouTube page by [clicking here](#).

## Poll Everywhere

[Poll Everywhere](#) allows instructors to engage students in class in real time. It's a great assessment tool that can be utilized to get instant feedback on what your students are grasping during class sessions. Poll Everywhere is a free text message tool that allows

instructors to pose questions on an overhead and students text in their responses, options include multiple choice, true/false, and open ended. An example of how CTE faculty can utilize Poll Everywhere in their class is to quiz students on a steps to complete a certain task, on safety measures, on critical vocabulary etc. Instructors or peer leaders could start the session with a few quick assessment questions to see where students need extra focus.



[Click here](#) for a complete guide and additional resources for Poll Everywhere. Poll Everywhere also has a YouTube page with "how to" videos. [Click here](#) to access the YouTube page.

## Remind 101



[Remind 101](#) is a free text messaging tool that creates a safe way for instructors, peer leaders, and counselors to text students important reminders. A few suggestions for how to use Remind 101 is to create your account before the semester begins, list the registration number on your syllabus, post the Remind 101 registration instructions on Bb, have students register in the first or second week of the semester, begin sending important messages, assignment reminders, important deadlines and due dates

(for class or campus), send motivational texts etc. Students receive message instantly right to their phone. Visit the [Remind 101 YouTube page](#) for an overview and tutorials. Also, for suggestions on how instructors can use Remind101 in their classes visit the Remind 101 blog by [clicking here](#).

## Screenr

[Screenr](#) is a free tool that can capture your computer screen and audio voice over for up to 15 minutes. This helpful tool can be utilized on a Windows or Mac computer without downloading any software. A few suggestions to CTE faculty for use with Screenr is to conduct voice overs of important diagrams that are in your text or manuals. You can simply open the diagram on your computer screen, open Screenr and create up to a 15 minute voice over, using your mouse to point out each item as you talk through the what, why, how etc. of the diagram on your screen. After you finish your recording your video, you can upload it to your course management system and students can watch it before they come to class. This is a great tool for a flipped classroom style of teaching. Screenr is quick, easy and helpful. It is a tool that can help bring static diagrams and photos to life. [Click here](#) to watch a short Youtube video that provides an overview of how to use Screenr.



## TED-Ed

[TED-Ed](#) is committed to creating educational lessons worth sharing. TED-Ed has a video library, filled with educational videos. The TED-Ed platform allows teachers (and peer leaders) to take an educational video and develop a customized lesson plan around the video. Instructors can distribute the lessons to students and track the impact on the the entire class or an individual student.



[Click here](#) to be redirected to a video, which provides a step-by-step tutorial on how to use TED-Ed to flip your classroom. You can also visit the [Ted-Ed YouTube](#) page for hundreds of informative, motivational, and inspirational videos.

TED is a nonprofit devoted to spreading ideas, usually in the form of short, powerful talks (18 minutes or less). [TED-Talks videos](#) are a great way to inspire students, foster innovation, and increase student confidence and determination, especially when students are faced with a difficult challenge (i.e. major exams, beginning and end of the semester, program completion etc.). Many educators find that showing a short video that's funny, inspiring, or informative is great way to engage students.

# PART III

## Contextualized Learning for Health Care

### Supplemental Instruction

#### Positioning

<b>CTE PATHWAY:</b> Health Care	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Supplemental Instruction
<b>SPECIFIC TOPIC:</b> Positioning	<b>TARGET LEARNER GROUP:</b> Rad Tech Students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will demonstrate their ability to apply positioning techniques.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> X-rays are conducted to assess abnormalities in the body. Students need to be able to apply their textbook knowledge in a structured lab setting before placement in an institutional setting (i.e. hospital or clinic).	<b>REQUIRED RESOURCES:</b>  Textbook List of guiding questions Watch this helpful <a href="#">video</a> to see how it's done
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Proper positioning for X-rays	
<b>INSTRUCTIONAL PROCEDURES:</b> <ol style="list-style-type: none"> <li>A. In small groups (4-6 students), review/discuss main points of positioning from textbook and lecture.</li> <li>B. After reviewing all positions, peer leader(s) walks students through each position step-by-step in the lab to model what each pair will do during session.</li> <li>C. Students are paired and each pair takes turns walking through each position. As student pairs walk through each position, they talk through each step outloud for observers to assess their techniques.</li> <li>D. Tap-in/Tap-out technique is used during each round. If a student pair get's stuck on a position they can tap-in another student to help them get unstuck.</li> <li>E. While students are working in pairs, the peer leader observes and asks guiding questions to prompt students recall of the positions. For example, after a pair gets a</li> </ol>	



## Mnemonic Devices

<b>CTE PATHWAY:</b> Health Care	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Supplemental Instruction
<b>SPECIFIC TOPIC:</b> Mnemonic for Carpal	<b>TARGET LEARNER GROUP:</b> Any
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Demonstrate use and understanding of mnemonic devices to help recall key information.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students must memorize terminology, steps in a procedure, etc. Using Mnemonic devices helps students retain and recall important information.	<b>REQUIRED RESOURCES:</b> List of material (steps in a procedure, vocabulary etc.) to study; textbook, flashcards, pen/pencil
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Students will use the Mnemonic device for	
<b>INSTRUCTIONAL PROCEDURES:</b> <p><b>A. Attention Getter/Warm-Up:</b></p> <p>Ask student to recall any Mnemonic devices they used in grade school to see if they can still recall the information (i.e. Please Excuse My Dear Aunt Sally (PEMDAS) for the order of operations -- parentheses, exponents, multiplication, division, addition, subtraction). Ask students what they think are the benefits of using Mnemonic devices. At this time students can also share tips they have used with Mnemonic devices that have been helpful.</p> <p><b>B. Presentation of New Information:</b> (What process will you follow?)</p> <p>Mnemonics are useful for memorizing the order and location carpal bones. They describe the position of the carpal bones from lateral-to-medial in the proximal row and then the distal row:</p> <ul style="list-style-type: none"> <li>• Steve Left The Party To Take Carol Home</li> <li>• Send Letter To Peter To Tell'em (to) Come Home</li> </ul> <p>Mnemonics</p> <ul style="list-style-type: none"> <li>• S: scaphoid</li> <li>• L: lunate</li> <li>• T: triquetrum</li> <li>• P: pisiform</li> <li>• T: trapezium</li> <li>• T: trapezoid</li> <li>• C: capitate</li> <li>• H: hamate</li> </ul>	

If applicable, ask student to open their text and turn to the page containing the Mnemonic for carpal. Then ask students to write the Mnemonic on a flashcard. Next, pair students and ask them to take turns reading and reviewing the mnemonic for carpal with their partner. After approximately 5-10 minutes bring everyone back together and proceed with the formative check, student participation and closing.

MNEMONIC FOR CARPAL		
MNEMONIC		CARPAL
Send		Steve
Letter		Left
To		The
Peter	or	Party
To		To
Tell 'em (to)		Take
Come		Carol
Home		Home
		Scaphoid
		Lunate
		Triquetrum
		Pisiform
		Trapezium
		Trapezoid
		Capitate
		Hamate

**C. Formative Checks:** (How will you assess student understanding throughout the lesson?)

Pass out a sheet of paper with the letters S-L-T-P-T-T-C-H on it and ask students to list the position of the carpal bones

**D. Student Participation:** (How will you ensure that everyone is involved?)

Use collaborative strategy pair/share on page 15 and 16 to pair students, ask them to share with their partner, and then bring it back to the group. Student share challenges and tips with the group based on their experience with the activity.

**E. Closure:** (How will you end the lesson?)

Ask for three volunteers to share with the entire group. Ask students to share how they will use/study this over the next few days

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

At the beginning of the next class session start class with the same formative check

# Habits of Mind for Health Care

## Self-Awareness of 8 Key Habits

<b>CTE PATHWAY:</b> Health Care	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Habits of Mind
<b>SPECIFIC TOPIC:</b> Self-awareness of 8 Key Habits (focus of Bakersfield College)	<b>TARGET LEARNER GROUP:</b> Nursing students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Able to answer 8 questions addressing progress in cultivating certain Habits of Mind	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> The more students are conscious of the mental choices they are making and how these relate to success, the more they can actively focus on developing a productive mental outlook that can replace their former, non-productive habits of mind.	<b>REQUIRED RESOURCES:</b> Handout-- <a href="#">Habits of Mind for Nursing (Self-Analysis Questions)</a>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Meaning and application of 8 Habits of Mind: 1) PERSIST, 2) ORGANIZE, 3) STRIVE FOR EXCELLENCE, 4) STAY INVOLVED, 5) INNOVATE, 6) BE FOCUSED, 7) LEARN FOR LIFE, AND 8) EMPHASIZE INTEGRITY--form the acronym <b>POSSIBLE</b>	
<b>INSTRUCTIONAL PROCEDURES:</b> <ul style="list-style-type: none"> <li><b>A. Attention Getter/Warm-Up:</b> Pose question to class: What qualities does a nursing student need to have to be successful in this program?</li> <li><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> <ul style="list-style-type: none"> <li>1. Brief overview of what Habits of Mind entails; explanation of what acronym <b>POSSIBLE</b> represents</li> <li>2. Distribute handout of 8 questions: Can be used in numerous ways....               <ul style="list-style-type: none"> <li>a. Students fill out during class and share with a partner</li> <li>b. Students interview a partner and fill in their copy with partner's answers.</li> <li>c. Students take the questions home to work on and discuss with class the next lecture.</li> </ul> </li> </ul> </li> </ul>	

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)* Frequent questioning of random students--asking for paraphrase, personal examples, critical analysis, etc.

**D. Student Participation:** *(How will you ensure that everyone is involved?)* Random questioning and possible pairing up of students

**E. Closure:** *(How will you end the lesson?)* Reiteration of importance of Habits of Mind; possibly showing a video clip from YouTube on a person who clearly exhibits one or more of the Habits

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Reading students' answers to the Habits of Mind self-survey questions to see if they comprehended the gist of each Habit

## Getting Organized

<b>CTE PATHWAY:</b> Healthcare	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Habits of Mind
<b>SPECIFIC TOPIC:</b> Getting Organized	<b>TARGET LEARNER GROUP:</b> Students in any healthcare field
<b>PERFORMANCE OBJECTIVE:</b> (What measurable skill(s) should students be able to demonstrate upon completion of the lesson?) Students will write 1-2 sentences per picture explaining how they think the particular picture conveys the concept of being organized.	
<b>RATIONALE:</b> (Why do students need to learn this information?) Students need to realize the importance of punctuality and neatness as it pertains to their field of study.	<b>REQUIRED RESOURCES:</b> PowerPoint: <a href="#">“Organize in Pictures for Healthcare Students”</a> (ability to project on large screen)
<b>LESSON CONTENT:</b> (What is to be taught?) As is commonly said, a picture is worth a thousand words. Highlighting the Habit of Mind of organization, this lesson promotes reflection and discussion on what it truly means to have all your ducks in a row. Carefully chosen, though-provoking pictures of organization lead to students focusing on their own degree of discipline and how they can become more structured.	
<b>INSTRUCTIONAL PROCEDURES:</b>  <b>B. Attention Getter/Warm-Up:</b> Pose question to class: Who is the most organized person you know?  <b>B. Presentation of New Information:</b> (What process will you follow?) *Brief discussion of characteristics of an organized person *What are benefits to being organized as students majoring in healthcare? *Show PowerPoint slides while students write notes as to their impressions. *After all 10 have been shown, either pair students up or proceed as a whole class to share with one another what aspect of organization each slide conveyed. *Follow-up questions: --What prevents you from being organized? --How does being organized help you specifically as a student and in your future career?	

**C. Formative Checks:** (How will you assess student understanding throughout the lesson?)

Calling on students randomly by name

**D. Student Participation:** (How will you ensure that everyone is involved?)

Group work and drawing names for input

**E. Closure:** (How will you end the lesson?)

Write down 3 proactive steps you will take this week to become better organized (exs. Set up a daily schedule and to-do list, Organize class materials into folders, etc.)

**ASSESSMENT:** (What tool(s) will you use to assess whether or not the material has been learned?) One way would be to survey students before/after organization talk to see if they report improvement. Another suggestion is to have students report back to class regarding specific behaviors they have adopted and their degree of success in implementing them.

## Power of Persistence

<b>CTE PATHWAY:</b> Healthcare	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Habits of Mind
<b>SPECIFIC TOPIC:</b> Power of Persistence	<b>TARGET LEARNER GROUP:</b> Students in fields of healthcare
<b>PERFORMANCE OBJECTIVE:</b> (What measurable skill(s) should students be able to demonstrate upon completion of the lesson?) Students should be able to articulate what it means to persist and provide personal examples of persistence.	
<b>RATIONALE:</b> ( <i>Why do students need to learn this information?</i> ) Course content to prepare students for careers in healthcare is very rigorous and demanding, such that only those who persist will make it to the finish line!	<b>REQUIRED RESOURCES:</b> PowerPoint " <a href="#">Persist in Pictures for Healthcare Students</a> "
<b>LESSON CONTENT:</b> (What is to be taught?) Through viewing PowerPoint slides depicting impressive instances of persistence, students will reflect on how persistence has played a role in their own lives up to this point, how important it is for survival as a student preparing for a job in healthcare, and identify potential circumstances that could sabotage their degree of persistence.	
<b>INSTRUCTIONAL PROCEDURES:</b> <ul style="list-style-type: none"> <li>A. Attention Getter/Warm-Up: Pose question to class: What is an example of persistence that you have witnessed personally?</li> <li>B. Presentation of New Information: (<i>What process will you follow?</i>)           <ul style="list-style-type: none"> <li>*Brief discussion of concept of persistence.</li> <li>*Why do some students complete their academic goals while others do not?</li> <li>*Show PowerPoint slides while students write notes as to their impressions.</li> <li>*After all 10 have been shown, either pair students up or proceed as a whole class to share with one another what aspect of persistence each slide conveyed.</li> <li>*Follow-up questions:               <ul style="list-style-type: none"> <li>--What is your automatic response when the going gets tough?</li> <li>--Are there situations when persisting would be foolish?</li> </ul> </li> </ul> </li> </ul>	

--What challenges might arise in your health care program (or later on in a healthcare career) that could hinder your persistence?

C. **Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Calling on students randomly by name

D. Student Participation: *(How will you ensure that everyone is involved?)*

Group work and drawing names for input

E. Closure: *(How will you end the lesson?)*

Encourage students to have self-insight as to their own personal level of persistence.

When tempted to quit, stop, take a breath, and consider alternatives.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* One way would be to survey students before/after persistence talk to see if they report trying harder. Or have them report back to class regarding a specific incident in which they did or did not persist and the consequences of their decision.

# Flipped Classroom for Health

## AP Spine Positioning Lesson

<b>CTE PATHWAY:</b> Radiology Technology	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Flipped Classroom
<b>SPECIFIC TOPIC:</b> AP Spine Positioning Lesson	<b>TARGET LEARNER GROUP:</b> CTE Students enrolled in RAD Tech
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i>	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i>	<b>REQUIRED RESOURCES:</b> Textbook Notes <a href="#">Video(s)</a>
<b>LESSON CONTENT:</b> (What is to be taught?) How to position a body for an AP spine x-ray	
<b>INSTRUCTIONAL PROCEDURES:</b>	
<p><b>A. Presentation of New Information:</b> <i>(What process will you follow?)</i></p> <ol style="list-style-type: none"> <li>Students will read assigned pages in text related to positioning</li> <li>Students will watch the positioning video on Bb (2-3 times) while following along with text information.</li> <li>Student should write down any questions they need clarified when they attend class.</li> </ol> <p><b>B. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> While students walk through the procedure they should model the instructor's method and verbally explain each step as they engage in the activity.</p> <p><b>C. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i> In the lab, students can take turns demonstrating to the instructor how to position the body for an AP Spine x-ray. As students wait their turn, they should watch and learn from their classmates.</p> <p><b>D. Closure:</b> <i>(How will you end the lesson?)</i> Discuss what was helpful about the flipped classroom method. Then discuss any challenges and brainstorm ways to overcome the challenges.</p>	
<b>ASSESSMENT:</b> <i>(What tool(s) will you use to assess whether or not the material has been learned?)</i> In the lab, students can take turns demonstrating to the instructor how to position the body for an AP Spine x-ray.	

# Reading Apprenticeship for Health Care

## RA Lesson Plan

<b>CTE PATHWAY:</b>	<b>BASIC SKILLS AREA OF EMPHASIS:</b>
<b>SPECIFIC TOPIC:</b>	<b>TARGET LEARNER GROUP:</b>
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i>	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i>	<b>REQUIRED RESOURCES:</b>
<b>LESSON CONTENT:</b> (What is to be taught?)	
<b>INSTRUCTIONAL PROCEDURES:</b> <b>Attention Getter/Warm-Up:</b>  <b>Presentation of New Information:</b> <i>(What process will you follow?)</i>  <b>Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i>  <b>Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i>  <b>Closure:</b> <i>(How will you end the lesson?)</i>	
<b>ASSESSMENT:</b> <i>(What tool(s) will you use to assess whether or not the material has been learned?)</i>	

# Study Skills for Health Care

## Improving Memory

<b>CTE PATHWAY:</b> Health-care	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Study Skills
<b>SPECIFIC TOPIC:</b> Improving Memory	<b>TARGET LEARNER GROUP:</b> Healthcare students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will be able to describe and apply 6 principles for improving their ability to remember information.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Healthcare students are often required to memorize large amounts of information, so understanding how human memory works and principles that assist memory can be extremely helpful.	<b>REQUIRED RESOURCES:</b> PowerPoint <a href="#">“6 Memory Principles for Healthcare”</a>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> 6 Memory Principles of SELECTIVITY, ASSOCIATION, VISUALIZATION, EFFORT, CONCENTRATION, and RECITATION	
<b>INSTRUCTIONAL PROCEDURES:</b>  <p><b>A. Attention Getter/Warm-Up:</b>          Pose question: Who thinks they have a bad memory? How do you think our memories work?</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i></p> <ol style="list-style-type: none"> <li>1. Go through each PowerPoint slide, stopping to discuss content and doing exercises on handout as indicated.</li> <li>2. During lecture, students should be taking their own notes.</li> </ol> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i>          Frequent, impromptu questioning related to content and appropriate application; walking around and informally assessing students as they complete various exercises</p> <p><b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i></p>	

Randomly calling on students by name

**E. Closure:** *(How will you end the lesson?)*

Restatement of 6 principles, encouraging students to apply principles to recall data for their next exam and then share their results with us (voluntarily)

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Mostly informal for this lesson via oral questioning of students

## Time Management/Organization

<b>CTE PATHWAY:</b> Healthcare	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Study Skills
<b>SPECIFIC TOPIC:</b> Time Management/Organization	<b>TARGET LEARNER GROUP:</b> Healthcare students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> <ol style="list-style-type: none"> <li>1. Create an effective Weekly Calendar that shows commitment to priorities.</li> <li>2. Establish a daily To-Do List that focuses on tasks for the day.</li> <li>3. Organize notebooks and folders for classes.</li> <li>4. Examine attitude toward school/learning, making adjustments as needed.</li> </ol>	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Poor time management and lack of organization are key contributing factors to student failure and subsequent dropout.	<b>REQUIRED RESOURCES:</b> This plan should be used in conjunction with: <ol style="list-style-type: none"> <li>1) PowerPoint <a href="#">“Managing Your Time and Getting Organized Fill-in-the-Blank”</a></li> <li>2) <a href="#">Worksheet for Getting Organized for Healthcare Students</a></li> </ol>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> How to make a useful calendar every week, purpose of a To-Do List and tips for making one, suggestions for organizing school materials, importance of attitude in life as a student	
<b>INSTRUCTIONAL PROCEDURES:</b>  <ol style="list-style-type: none"> <li>A. Attention Getter/Warm-Up: PowerPoint slide #2 containing clipart of person with organized closet vs. person with chaotic closet</li> <li>B. Presentation of New Information: <i>(What process will you follow?)</i> Following PowerPoint:           <ol style="list-style-type: none"> <li>1. Discuss importance of weekly scheduling and pointers for achieving an effective calendar.</li> <li>2. Explain To-Do lists with modeling and examples.</li> </ol> </li> </ol>	

3. Present ideas for getting organized in each class/solicit ideas from students.
4. Reflect on value of attitude in accomplishing all of the above.
5. Go over students' answers to worksheet provided.

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

IMPORTANT: Call on students by name at random to answer impromptu verbal questions! Exs. of questions--What challenges do you face in following a schedule? Who uses To-Do lists and why? Why does attitude matter in all we do?

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Again, random calling of students' names (bingo roller or coffee cup with slips of paper containing students' names suggested to achieve true randomness).

Students can work in pairs or small groups on various aspects of lesson, for ex. in filling out the worksheet.

**E. Closure:** *(How will you end the lesson?)*

What will you do to get ready for next week? Make your own Weekly Schedule.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Have students prepare a Weekly Schedule for the upcoming week, make a copy of it, and turn in the copy for instructor to assess.

## Test Taking Strategies

<b>CTE PATHWAY:</b> Healthcare	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Study Skills
<b>SPECIFIC TOPIC:</b> Tips for Better Test Taking	<b>TARGET LEARNER GROUP:</b> Healthcare students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> 1. Students will be able to identify various methods for reducing test taking anxiety. 2. Students will be able to set up their own 5-Day Study Plan for a real test coming up. 3. Students will be able to name at least 3 effective test taking behaviors and explain how they are going to apply them on their next exam.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Like it or not, how students perform on exams largely determines the success of their futures.	<b>REQUIRED RESOURCES:</b> <ol style="list-style-type: none"> <li>1. PowerPoint “<a href="#">Strategies for Test Taking Anxiety and Successful Test Performance</a>”</li> <li>2. <a href="#">Test Anxiety Profile/My Weekly Calendar</a></li> </ol>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> In keeping with PowerPoint slides, content will cover test taking anxiety along with what it is and how to cope with it. Emphasis will be on the fact that the best way to reduce such anxiety is to be thoroughly prepared, to overlearn the information by setting up the 5-Day Study Plan. Lastly, effective study behaviors (i.e. quiet study area, frequent review, no cramming, etc.) are addressed.	
<b>INSTRUCTIONAL PROCEDURES:</b> <ol style="list-style-type: none"> <li><b>A. Attention Getter/Warm-Up:</b> Pose question to class: Tell us about the time you experienced the worst test taking anxiety!</li> <li><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> Use PowerPoint slides as your guide to make sure you cover all the key points thoroughly and systematically, pausing when you reach Discussion Slides to allow students time to respond to questions and/or answer items on the accompanying handouts.</li> </ol>	

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Go over answers to Discussion Slides as a means of informally assessing student understanding.

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Pair students up to answer Discussion Slides; call on individuals by name at random to share ideas mentioned in pairs.

**E. Closure:** *(How will you end the lesson?)*

How will you use the 5-Day Study Plan to prepare for your next exam? Be specific.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Have students apply test taking principles learned in this lesson to their next test. After taking the test, students will write a brief reflection paper on the extent to which the strategies helped them to be a more successful test taker.

## Math Lessons for Health Care

### Decimals

<b>CTE PATHWAY:</b> All	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Operations with decimals (add/sub, mult/div)
<b>SPECIFIC TOPIC:</b> Decimals	<b>TARGET LEARNER GROUP:</b> Those lacking pre-requisite skills with decimals
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students should be able to add, subtract, multiply, and divide with decimals	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students will need to use these operations within their field of study	<b>REQUIRED RESOURCES:</b> Will vary dependent on instructor, CTE program and course
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Discuss the various place values of decimal numbers. Add/subtract numbers by aligning the decimals (can only combine “like” terms). Multiply/divide fractions, showing why they behave this way through examples.	
<b>INSTRUCTIONAL PROCEDURES:</b>  <p><b>A. Attention Getter/Warm-Up:</b> Ask them to add \$1.25 and \$2.50...how did they know to do this? They combined “like” terms and lined up the decimals without knowing! Decimals are similar to fractions in that they represent part of a whole. Thus, we still need to have like parts in order to combine (add/subtract)...which means the only thing we have to do in order to add or subtract like parts is line up the decimals (and sometimes add zeros as place holders).</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> Now present several examples of all the various types of conversions (decimals to fractions, percents, etc. and vice versa) and operations with decimals, while using various <b>[pedagogies]</b> throughout your presentation to ensure involvement. Choose basic examples to start, and then progressively incorporate your particular CT course’s application in the examples to show the students the use of learning these concepts directly.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> Random choosing of students to check for understanding for next step(s), answer(s), how to proceed, etc. and/or calling for a <b>[pair]</b> or <b>[small group]</b> representative to explain how they arrived at their conclusion or answer will help with informal assessment throughout.</p>	

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Do a quick recap on the key points and explain how they will use the newly learned concepts in the future or the respective field.

**E. Closure:** *(How will you end the lesson?)*

See above (part C) for ideas; feel free to use any other techniques (i.e. [polleverywhere])

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

Give a 3-5 question (informal) post assessment on the key concept(s) of the lesson as a quick way to check for mastering (polleverywhere?). Anyone missing any of the questions should stay and do a few more of the missed problems as remediation.

## Dosages

<b>CTE PATHWAY:</b> Health Care	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Math
<b>SPECIFIC TOPIC:</b> Dosages	<b>TARGET LEARNER GROUP:</b> All students in the CT field
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will be able to use unit conversions and proportions to find proper doses.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students will need to use these operations within their field of study.	<b>REQUIRED RESOURCES:</b> Calculator
<b>LESSON CONTENT:</b> (What is to be taught?) Discuss conversion rates for the CT field. May include:  <u>Metric Weight Measures</u> 1 kilogram (kg, Kg) = 1000 grams or 1000 g 1 gram = 1000 milligrams or 1000 mg 1 milligram (mg) = 1000 micrograms or 1000 mcg 1 microgram (mcg) = 0.001 milligrams or 0.001 mg 1 milligram = 0.001 gram or 0.001 g 1 microgram (mcg) = 0.000001 gram or 0.000001 g  <u>Metric Volume Measures</u> 1 milliliter (ml) = 0.001 liter or 0.001 L 1 liter = 1000 milliliters or 1000 ml 1 kiloliter = 1000 liters or 1000 L  <u>Metric Length Measures</u> 1 millimeter (mm) = 0.001 meter 1 centimeter (cm) = 0.01 meter or 0.01 m 1 decimeter (dm) = 0.1 meter or 0.1 m 1 kilometer (km) = 1000 meters or 1000 m 1 meter (m) = 100 centimeters or 100 cm 1 meter (m) = 1000 millimeters or 1000 mm 1 centimeter (cm) = 10 millimeters or 10 mm  <u>Household measures</u> 3 teaspoons (tsp) = 1 tablespoon or 1 tbsp 1 ounce (oz) = 2 tablespoons or 2 tbsp 1 pint (pt) = 2 cups or 2 c 1 pint (pt) = 16 ounces or 16 oz	

1 juice glass = 4 ounces or 4 oz  
1 coffee cup = Usually 6 ounces or 6 oz, but can vary depending on size of cup.  
1 glass = 8 ounces or 8 oz  
1 measuring cup (c) = 8 ounces or 8 oz  
1 teaspoon (tsp) = 60 drops or 60 gtt  
1 quart (qt) = 2 pints or 2 pt  
1 gallon (gal) = 4 quarts or 4 qt

### Metric to Apothecary Conversion

1 gram (gm) = 15 grains or 15 gr  
15 (16) grains (gr) = 1000 milligram or 1000 mg  
7.5 grains (gr) = 500 milligrams or 500 mg  
5 grains (gr) = 300 (325) milligrams or 300 (325) mg  
1.5 grains (gr) = 100 milligrams or 100 mg  
1 grain (gr) = 60 milligrams or 60 mg  
A half (0.5) grain (gr) = 30 milligrams or 30 mg  
0.6 milligrams (mg) = 1/100 grain or 1/100 gr  
0.4 milligrams = 1/150 grain or 1/150 gr  
0.3 milligrams (mg) = 1/200 grain or 1/200 gr

### Metric to Household Conversion

1 kilogram (kg) = 2.2 pounds or 2.2 lb  
1000 grams (gm) = 2.2 pounds or 2.2 lb  
30 milliliters or 30 ml = 1 ounce (oz)  
1 liter (L) is equivalent to 1 quart or 1 qt  
500 milliliters or 500 ml = 1 pint (pt)  
240 milliliters or 240 ml = 1 glass  
180 milliliters or 180 ml = 1 teacup  
15 milliliters or 15 ml = 1 tablespoon (T)  
5 milliliters or 5 ml = 1 teaspoon (t)  
1 milliliter (ml) = 15 - 16 drops or 15 - 16 gtt

### Apothecaries to Household Conversions

32 fluid ounces = 1 quart (qt)  
16 fluid ounces = 1 pint (pt)  
480 grains or 480 gr = 1 ounce (oz)  
1 minim = 1 drop or 1 gtt

### **INSTRUCTIONAL PROCEDURES:**

#### **A. Attention Getter/Warm-Up:**

Discuss the importance of unit conversions and proportions in determining dosages and how they can cause harm and/or death if miscalculated!

#### **B. Presentation of New Information:** (*What process will you follow?*)

Discuss the unit conversion rates. Give examples of using proportions to determine correct dosages, including word problems.

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Random choosing of students to check for understanding for next step(s), answer(s), how to proceed, etc. and/or calling for a **[pair]** or **[small group]** representative to explain how they arrived at their conclusion or answer will help with informal assessment throughout.

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

See above (part C) for ideas; feel free to use any other techniques (i.e. **[polleverywhere]**)

**E. Closure:** *(How will you end the lesson?)*

Do a quick recap on the key points and explain how they will use the newly learned concepts in the future or the respective field.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

Use a quiz or a test to check for understanding. Students should re-study and re-test until they correctly do all of the problems.

**Supplemental Reference Material for Drug Dosage Problems:**

1. <http://www.germann.edu/tutor/Handouts/Nursing/Drug%20Dosage%20Practice%20Problem%20Packet.pdf>
2. <http://becps.net/>
3. <http://www.germann.edu/tutor/Handouts/Nursing/Drug%20Dosage%20Calculation%20Packet.pdf>

## Fractions

<b>CTE PATHWAY:</b> All	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Operations with fractions (add/sub, mult/div)
<b>SPECIFIC TOPIC:</b> Fractions	<b>TARGET LEARNER GROUP:</b> Those lacking prerequisite skills with fractions
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students should be able to add, subtract, multiply, and divide with various forms of fractions	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students will need to use these operations within their field of study	<b>REQUIRED RESOURCES:</b> Will vary dependent on instructor, CTE program and course
<b>LESSON CONTENT:</b> (What is to be taught?) Discuss what a fraction/ratio is and the various types. Teach them how to change to/from a proper to an improper fraction. Add/subtract fractions with like denominators, then unlike by finding the Least Common Denominator (LCD). Multiply/divide fractions, show why they behave this way through examples.	
<b>INSTRUCTIONAL PROCEDURES:</b> <p><b>A. Attention Getter/Warm-Up:</b> Ask them to add two strawberries and an apple...do you get 3 strapples? No, need to have “like” terms. The same goes for fractions. Fractions represent the quantity (numerator) of what you’re dealing with (denominator). Thus, we need to have like denominators in order to combine (add/subtract) fractions...which means the only thing that will change is the numerator (quantities), not the denominator (what you’re dealing with), once they are alike.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> Now present several examples of all the various types of conversions and operations of fractions, while using various <b>[pedagogies]</b> throughout your presentation to ensure involvement. Choose basic examples to start, and then progressively incorporate your particular CT course’s application in the examples to show the students the use of learning these concepts directly.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> Random choosing of students to check for understanding for next step(s), answer(s), how to proceed, etc. and/or calling for a <b>[pair]</b> or <b>[small group]</b> representative to explain how they arrived at their conclusion or answer will help with informal assessment throughout.</p>	

**D. Student Participation:** *(How will you ensure that everyone is involved?)*  
See above (part C) for ideas; feel free to use any other techniques (i.e. [polleverywhere])

**E. Closure:** *(How will you end the lesson?)*  
Do a quick recap on the key points and explain how they will use the newly learned concepts in the future or the respective field.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*  
Give a 3-5 question (informal) post assessment on the key concept(s) of the lesson as a quick way to check for mastering (polleverywhere?). Anyone missing any of the questions should stay and do a few more of the missed problems as remediation.

# English Lessons for Health

## APA Style and Documentation

<b>CTE PATHWAY:</b> Health	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Writing
<b>SPECIFIC TOPIC:</b> APA Style & Documentation	<b>TARGET LEARNER GROUP:</b> Any
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Write short and long documents using industry standards for documentation and formatting.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> To meet industry standards for document production.	<b>REQUIRED RESOURCES:</b> Computer Lab, Online Database access, PPT & Projector
<b>LESSON CONTENT:</b> (What is to be taught?) APA style for formatting documents & citing sources.	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up:</b> Show a video illustrating poor uses and/or lack of providing sources.</p> <p>Healthcare example: <a href="http://video.answers.com/jenny-mccarthy-on-vaccines-and-autism-114223940">http://video.answers.com/jenny-mccarthy-on-vaccines-and-autism-114223940</a> The above video is of Jenny McCarthy on “The Doctors” television program failing to cite her sources on information on vaccinations.</p> <p>Alternative Energy example: <a href="http://www.youtube.com/watch?v=bN-lipXxa4g">http://www.youtube.com/watch?v=bN-lipXxa4g</a> The above video claims that it’s easy and affordable but provides no specifics for documentation of their claims.</p> <p>Mixer: As the teacher, you may decide to use a cartoon and print enough copies for the students. Have the students get in small groups and encourage collaboration and ask them to provide up to three (3) examples of how the cartoon demonstrates a poor use or lack of providing proper documentation. For example, is the cartoon might be depicting one of the characters presenting factual information to the other character. One student notation may include where is the first character obtaining their information? It’s not to say that cartoon strips need to “cite their sources” but rather to illustrate that any time one (in the case of the student) provides information for another source, then it needs to be properly cited.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> <a href="https://owl.english.purdue.edu/owl/section/2/10/">https://owl.english.purdue.edu/owl/section/2/10/</a> Use Power Point on Purdue Owl web site: <a href="https://owl.english.purdue.edu/owl/resource/560/17/">https://owl.english.purdue.edu/owl/resource/560/17/</a></p>	

Brief and expanded definitions and guidelines on the Purdue web site, including Power Point presentation.

For an example of an APA Sample paper, go to:

<https://owl.english.purdue.edu/owl/resource/560/18/>

MIXER: Engage your students in a [round table] discussion.

Here's a starter question: "What stood out in the Power Point presentation and *why*?"

One student may respond by saying, "I did not know that there were so many different ways to cite resources! Why is that?"

The teacher could respond by saying, "That's a great question...can anyone answer that?" Honor the silence, then probe the students to think beyond the obvious and ask, "How many different ways is there to collect information in today's world? Ten? Twenty? Can anyone name a few?"

Ideally, you want student(s) to start engaging by listing the obvious like, Internet, print, radio...etc.

As the list of resources grows and is being discussed in the classroom, begin to lead the students into *how* these sources are categorized, or identified, and as to why each category has its own information requirements.

For example, the information gathered for "non-print sources" (interviews, email, personal communication, motion picture, etc.) will differ from "articles in periodicals" (journals, magazines, newspaper, etc.).

Purdue OWL – Non-Print Sources

<https://owl.english.purdue.edu/owl/resource/560/11/>

Purdue Owl – Articles in Periodicals

<https://owl.english.purdue.edu/owl/resource/560/07/>

TIP: You want the student to realize that *depending on source* will determine *how* the source is actually cited (APA Style).

Encourage dialogue in the classroom from the students, and continue the conversation, until you believe new insights, discoveries, and basic understandings around the *how* and *why*'s have been reached.

**C. Formative Checks:** (*How will you assess student understanding throughout the lesson?*)

Outline that students complete as instructor presents the PowerPoint presentation (see attached). Initial the outlines (of each student's participation) and give class participation points.

**D. Student Participation:** (*How will you ensure that everyone is involved?*)

List net books and/or online articles in context to their field, and have the student's get pairs/groups and provide proper documentation, per collection of books, per group.

See attached, "Student Source List Exercise." Instruct students to use indicated databases (attached) to find specific articles/books.

When students have created their APA lists, use “References Key” (attached) to have students correct their own, or each other’s work.

For an online example for citing electronic sources, go to Purdue Owl link for “Reference List: Electronic Sources (Web Publication) <https://owl.english.purdue.edu/owl/resource/560/10/>

**E. Closure:** *(How will you end the lesson?)*

Show the correct APA Reference page for the sources with students (References Key), and they correct their own work.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

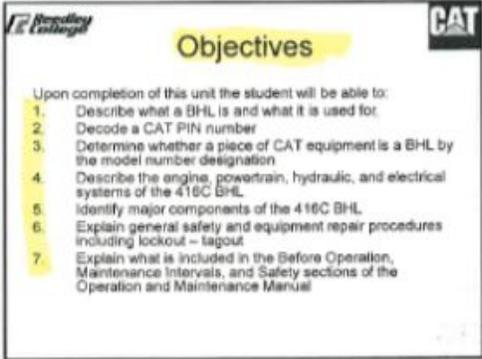
Require an APA style page (using one or more source) on their next take-home assignment.

# PART IV

## Contextualized Learning for Manufacturing & Mechanized Ag

### Supplemental Instruction for Mech Ag

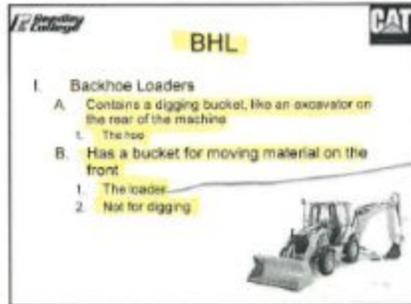
#### Flashcards

<p><b>Study Session Plan:</b>  <b>Creating Flashcards</b>          C6 Consortium Integrated Tutoring</p>	<p>Leader: _____          Course: <u>MAG 20</u>          Instructor: _____          Date: _____</p>
<p><b>Primary Learning Goal(s) of Activity:</b></p> <ul style="list-style-type: none"> <li>◆ Create and study a set of flashcards</li> </ul>	
<p><b>Resources Needed:</b></p> <ul style="list-style-type: none"> <li>◆ Blackboard notes, Lecture notes, Textbook and/or Manual</li> <li>◆ Flash cards</li> <li>◆ Highlighters</li> </ul>	
<p><b>Session Instructions:</b></p> <ol style="list-style-type: none"> <li>1. Have the students go through their notes, PowerPoint handout and/or text/manual to find key words</li> <li>2. Add any bold or highlighted words or images from the text/manual</li> <li>3. Write them on one side of the flash card</li> <li>4. Student then writes the definition or example on the other side of the flash card.</li> <li>5. This can last from 15 to 45 minutes depending on how much material has been covered in class</li> <li>6. Tell students to review their flashcards for 10-20 minutes three times per day</li> <li>7. As students review flashcards, they will sort them into two piles 1) I know it, and 2) I don't know it. Each time students review cards they study only the "I don't know it pile" eventually moving all cards to the "I know it pile"</li> <li>8. Tell students to bring cards to each study session for quick review in pairs at the beginning of sessions</li> <li>9. As an added suggestion for a future session, have students write 1-2 quiz questions from concepts they feel were difficult to grasp during the lecture or when they reviewed their flashcards</li> </ol>	
 <p><b>Objectives</b></p> <p>Upon completion of this unit the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe what a BHL is and what it is used for.</li> <li>2. Decode a CAT PIN number</li> <li>3. Determine whether a piece of CAT equipment is a BHL by the model number designation</li> <li>4. Describe the engine, powertrain, hydraulic, and electrical systems of the 416C BHL.</li> <li>5. Identify major components of the 416C BHL.</li> <li>6. Explain general safety and equipment repair procedures including lockout – tagout</li> <li>7. Explain what is included in the Before Operation, Maintenance Intervals, and Safety sections of the Operation and Maintenance Manual</li> </ol>	<p>Creating flashcards for each of the learning objectives in the image to the left.</p> <ol style="list-style-type: none"> <li>1. On front side of flashcard, have students write the key term or step in a process (i.e. Backhoe Loaders)</li> <li>2. On side two, have students transfer key content into their own words</li> </ol>

## Flashcards continued

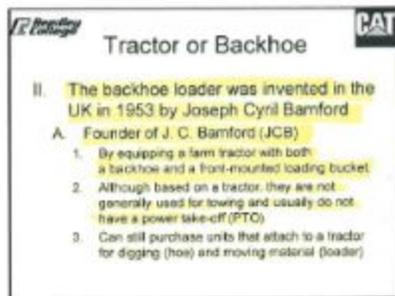
Example:

Describe what a BHC is and what it's used for.



*Front of flash card*

**Describe what a BHC is and what it's used for.**



*Back of flashcard*

- Piece of excavating (digging) equipment invented in 1953
- Front has loader bucket & back has digging bucket
- Uses: material handling, scrape, grab things, move + position dirt

Additional suggestions:

- After students create 3-5 flashcards, pause and ask them to work in pairs.
- Ask students to share their cards with another person in the session so they can each see how another student created his/her cards.
- A pair/share will give students suggestions for constructing flashcards and hold them accountable during the session because they know they are going to share them with a peer.
- When students are in a pair share ask them to quiz each other on the first few cards they created. This may help them see the value in reading, thinking, and writing content in their own words and then reviewing the content with a classmate.

[Click here for pdf of session plan](#)

## Small Group or Pair/Share: Valve Adjustment

### Study Session Plan Valve Adjustment

C6 Consortium Integrated Tutoring

Leader: \_\_\_\_\_

Course: MAG 20 \_\_\_\_\_

Instructor: \_\_\_\_\_

Date: 1-29-15 \_\_\_\_\_

#### Primary Learning Goal(s) of Activity:

- ◆ Students will demonstrate their ability to adjust C15 Caterpillar engine valves

#### Resources Needed:

- ◆ C15 Caterpillar engine
- ◆ Valve Lash Adjustment handout (see attached for complete handout)
- ◆ Tools? (what tools would students need to conduct the adjustment should we list a few here)

Use the following procedure to adjust the valve lash:

1. Put the No. 1 piston at the top center position on the compression stroke. Refer to Testing and Adjusting, "Finding Top Center Position for No. 1 Piston".

Table 2

TC Compression Stroke	Inlet Valves	Exhaust Valves
Valve Lash	0.38 ± 0.08 mm (0.015 ± 0.003 inch)	0.76 ± 0.08 mm (0.030 ± 0.003 inch)
Cylinders	1-2-4	1-3-5

#### Session Instructions:

1. Leader will model to the entire group how to work in pairs or small groups to adjust C15 Caterpillar engine valves
2. Leader will ask for a volunteer to pair with him/her for the demonstration
3. Leader will walk through each step and verbally share what he/she does as adjustment is conducted
4. After leader walks through the adjustment, the volunteer will review the work and give feedback to the leader noted any areas that were missed or anything that was unclear about the verbal portion
5. After demonstration is complete students will be paired or placed into small groups (3-4) and assigned a station (C15 Caterpillar engine)
6. Students will take turns walking through and conducting the valve adjustment

C15 Caterpillar Engine Valves



[Click here for pdf of session plan](#)

## Small Group or Pair/Share: Valve Lash Check

### Study Session Plan Valve Lash Check

C6 Consortium Integrated Tutoring

Leader: \_\_\_\_\_

Course: MAG 20 \_\_\_\_\_

Instructor: \_\_\_\_\_

Date: 1-29-15 \_\_\_\_\_

#### Primary Learning Goal(s) of Activity:

- ◆ Students will demonstrate their ability to analyze C15 Caterpillar engine valves

#### Resources Needed:

- ◆ C15 Caterpillar engine
- ◆ Valve Lash Check handout or diagram

#### Valve Lash Check

An adjustment is not necessary if the measurement of the valve lash is in the acceptable range in Table 1.

Table 1

	Inlet Valves	Exhaust Valves
Valve Lash (Stopped Engine)	0.38 ± 0.08 mm (0.015 ± 0.003 inch)	0.76 ± 0.08 mm (0.030 ± 0.003 inch)
TC Compression Stroke	1-2-4	1-3-5
TC Exhaust Stroke <sup>(1)</sup>	3-5-6	2-4-6
Firing Order	1-5-3-6-2-4 <sup>(2)</sup>	

<sup>(1)</sup> 360° from TC compression stroke

<sup>(2)</sup> The No. 1 cylinder is at the front of the engine.

If the measurement is not within this range, an adjustment is necessary. Refer to "Valve Lash Adjustment" for the proper procedure.

#### C15 Caterpillar Engine Valves



#### Session Instructions:

1. Leader will model to the entire group how to work in pairs or small groups to analyze the Valves
2. Leader will ask for a volunteer to pair with him/her for the demonstration
3. Leader will walk through each step and verbally share what he/she does as analysis is conducted
4. After leader walks through the analysis, the volunteer will then take his/her turn conducting the analysis and verbally sharing what he/she observes
5. After demonstration is complete students will be paired or placed into small groups (3-4) and assigned a station (C15 Caterpillar engine)
6. Students will take turns walking through and conducting the analysis

[Click here for pdf of session plan](#)

# Flipped Classroom for Mech Ag

## Valve Adjustment

<b>CTE PATHWAY:</b>	<b>BASIC SKILLS AREA OF EMPHASIS:</b>
<b>SPECIFIC TOPIC:</b>	<b>TARGET LEARNER GROUP:</b>
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i>	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i>	<b>REQUIRED RESOURCES:</b>
<b>LESSON CONTENT:</b> (What is to be taught?)	
<b>INSTRUCTIONAL PROCEDURES:</b> <b>A. Attention Getter/Warm-Up:</b>  <b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i>  <b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i>  <b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i>  <b>E. Closure:</b> <i>(How will you end the lesson?)</i>	
<b>ASSESSMENT:</b> <i>(What tool(s) will you use to assess whether or not the material has been learned?)</i>	

# Habits of Mind for Mech Ag

## Strive for Excellence

<b>CTE PATHWAY:</b> Mechanized Agriculture	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Habits of Mind
<b>SPECIFIC TOPIC:</b> Strive for Excellence	<b>TARGET LEARNER GROUP:</b> Mech Ag students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students should be able to articulate what it means to strive for excellence in their field and provide personal examples of striving for excellence.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Striving for excellence is important for every student in any career path, mech ag being no exception!	<b>REQUIRED RESOURCES:</b> PowerPoint <a href="#">“Strive for Excellence in Pictures Mech Ag”</a>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Through viewing PowerPoint slides depicting visual examples of people striving for excellence, students will reflect on how striving for excellence has played a role in their own lives up to this point, how important it is for survival as a student preparing for a job in mech ag, and identify potential factors that could hinder their desire to strive for excellence.	
<b>INSTRUCTIONAL PROCEDURES:</b>  <b>A. Attention Getter/Warm-Up:</b> How have you striven for excellence today?  <b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> *Brief discussion of what it means to strive for excellence. *Why do some students complete their academic goals while others do not? *Show PowerPoint slides while students write notes as to their impressions.	

\*After all 10 have been shown, either pair students up or proceed as a whole class to share with one another what aspect of striving for excellence each slide conveyed.

\*Follow-up questions:

--What is your automatic response when you are tempted to do less than your best?

--Are there situations when you should aim for mediocre? Explain.

--Give one example of how you strove for excellence in a task related to Mech Ag. Give one example of an incident in Mech Ag where you could have done a better job but did not do so. Explain why you chose to underperform.

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Calling on students randomly by name

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Group work and drawing names for input

**E. Closure:** *(How will you end the lesson?)*

Encourage students to have self-insight as to what motivates them to strive for excellence. When tempted to slack, stop, take a breath, and reexamine the situation.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

One way would be to survey students before/after excellence talk to see if they report trying harder.

Or have them report back to class regarding a specific incident in the context of Mech Ag in which they did or did not strive for excellence, the consequences of their decision, and how they will handle it differently in the future.

## Innovation

<b>CTE PATHWAY:</b> Mechanized Agriculture	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Habits of Mind
<b>SPECIFIC TOPIC:</b> <b>Innovation</b>	<b>TARGET LEARNER GROUP:</b> Mech Ag students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will be able to describe 5 innovations that have had a significant impact on the mech ag industry and discuss the importance of being an innovative thinker.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Innovation has played a powerful role in mechanized agriculture, allowing farmers the capacity to feed the world.	<b>REQUIRED RESOURCES:</b> *PowerPoint <a href="#">“History of Ag Mechanization”</a> (slides printed out OR students looking at individual screens in a computer lab) * <a href="#">5 Innovations that Transformed Mech Ag</a>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Without innovation in the Mech Ag industry, people would have succumbed to starvation. Students will realize all the different inventions that have contributed to the efficient system of farming that we benefit from today.	
<b>INSTRUCTIONAL PROCEDURES:</b>  <b>A. Attention Getter/Warm-Up:</b> Pose question to class: What does innovate mean to you in the context of Mech Ag? What force drives individuals to be innovative?  <b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> 1. Put students in groups of 2-3, and distribute printouts of slides from PowerPoint. 2. Then distribute chart on 5 Innovations that Transformed Mech Ag. 3. Have students complete their charts as they work in groups, taking information off the various slides.	

4. After 20-25 minutes, bring class back together and ask students to share an innovation and details about it from their chart.

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Random calling on students by name

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Making effort to call on every student at least once; putting students in pairs or small groups

**E. Closure:** *(How will you end the lesson?)*

Based on your current understanding of mechanized ag practices, what is one challenge that we still need to address? What sort of innovation can you imagine that might solve or at least alleviate the problem? (Caution: This may require more than just perfunctory thought.)

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

\*Collect their charts and look over to see if they identified significant innovations in Mech Ag.

\*Verbally assess the extent to which they are able to think outside the box when inquiring during Closure as to new innovations they can imagine to address current challenges.

## Persistence

<b>CTE PATHWAY:</b> Mechanized Agriculture	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Habits of Mind
<b>SPECIFIC TOPIC:</b> Persistence	<b>TARGET LEARNER GROUP:</b> Mech Ag Students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will be able to write a brief paragraph on ways that cotton farmer Steve Mckaskle has persisted in his efforts to grow organic cotton and what would have been the result had he not persisted. How does this apply to their current lives as students in a Mech Ag class?	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> In the field of mechanized agriculture, a host of challenges will inevitably arise requiring grit and determination to overcome. Students also need persistence to make it through the program in order to attain their ultimate career goals.	<b>REQUIRED RESOURCES:</b>  Article <a href="#">“Mississippi Steve Mckaskle’s Personal Cotton Research Center”</a>
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> The importance of persistence as illustrated in the true story of a cotton farmer from Missouri will be explored.	
<b>INSTRUCTIONAL PROCEDURES:</b>  <p><b>A. Attention Getter/Warm-Up:</b>          Pose to class: Describe an instance you might encounter as a farmer that would call for persistence.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i>          *Put students in groups of 3-4; assign roles of speaker, note taker, time keeper, etc.          *Distribute article, and instruct group to read through and discuss its contents. (Optional: You may want to provide a set of questions ahead of time for which they need to find/write down the answers based on the article.)          *Go over main ideas of article, focusing on quality of persistence.          *Have students write a paragraph, discussing the many ways Mckaskle demonstrated persistence, the impact it had on his outcomes, and the role persistence plays (or should play) in their own lives.</p>	

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Formative checking will take place during the phase of the lesson in which various group speakers share the main ideas that they gleaned from the article.

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Random calling on individuals by name throughout lesson; collecting the paragraph that all students are required to write.

**E. Closure:** *(How will you end the lesson?)*

Share a pithy quote on Persistence: "Farming looks mighty easy when your plow is a pencil and you're a thousand miles from the corn field." - Dwight David Eisenhower

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Grade paragraphs that students wrote in reaction to the article, assessing them primarily for content and depth of thought.

# Reading Apprenticeship for Mech Ag

## Understanding Complex Diagrams

<p><b>CTE PATHWAY:</b> Mechanized Ag</p>	<p><b>BASIC SKILLS AREA OF EMPHASIS:</b> Reading Apprenticeship</p>
<p><b>SPECIFIC TOPIC:</b> Understanding Complex Diagrams</p>	<p><b>TARGET LEARNER GROUP:</b> Any CTE course where diagrams are used</p>
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will learn to critically analyze diagrams and relate them to the textual information relating to them.</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Diagrams are a vital and common element in learning in all areas of CTE. Many diagrams are difficult to decipher.</p>	<p><b>REQUIRED RESOURCES:</b> The diagram the student is working with and the “diagram dialogs” worksheet. <a href="#">Link to Diagram Dialog</a> <a href="#">Link to Ignition Diagram</a></p>
<p><b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Students will learn to comprehend a given diagram in detail by visually observing the diagram while answering specific questions regarding the important elements of the diagram.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up:</b> The instructor can begin by talking about the common use and value of all types of diagrams in CTE courses. The discussion can also include the common use of diagrams on the job.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> 1. Have students look at the diagram they are working with while the instructor gives a basic overview of what they are seeing. The instructor can also relate this diagram to what students are currently studying. 2. Then pass out the “diagram dialog” assignment and have students answer the questions, either individually or in pairs.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> 1. As students work, walk around the class monitoring their progress and asking if they need any help. If a question comes up that applies to the whole class, stop and discuss the question.</p>	

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

As the instructor walks around the class, he/she can observe who is participating and encourage those who are not.

**E. Closure:** *(How will you end the lesson?)*

After students have discussed their answers in pairs, the instructor can project an image of the diagram on the overhead projector and the class can go through each question on the sheet as the instructor points out the relative information on the projected picture.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Instructors will collect the questions and answers, evaluating and responding to each of the questions on the assignment. The instructor can also quiz students by giving them a blank diagram and having them identify the important elements and explain their importance.

## Understanding the Reading Process

<p><b>CTE PATHWAY:</b> Mechanized Ag</p>	<p><b>BASIC SKILLS AREA OF EMPHASIS:</b> Reading Apprenticeship</p>
<p><b>SPECIFIC TOPIC:</b> Understanding the Reading Process</p>	<p><b>TARGET LEARNER GROUP:</b> Welding Students</p>
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will better understand their own reading challenges and investigate strategies to overcome these challenges.</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students must be able to comprehend information in welding textbooks and manuals.</p>	<p><b>REQUIRED RESOURCES:</b> Any text used in the class and the “capturing reading” handout. <a href="#">Link to “An Introduction to Metals”</a> <a href="#">Link to Capturing the Reading Handout</a></p>
<p><b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Students will become more aware of their reading problems and explore ways to overcome these problems.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up:</b> 1. Each student will write for 5 minutes on their past experiences with reading. 2. Next, the instructor will lead a 10 minute whole-class discussion on what students’ wrote.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> 1. Hand out the assigned text and ask students to read it over once quickly. 2. Then, ask them to read it again, more slowly and carefully, marking the areas they are having difficulty reading. 3. Hand out the “capturing the reading” response sheet and have students answer each questions while referring back to the marking they did on the text.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> 1. As they are working, walk around the class monitoring their progress and asking if they need any help. 2. After they have completed the questions, have another whole-class discussion about their responses.</p> <p><b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i> As the instructor walks around the class, he/she can observe who is participating and encourage those who are not.</p> <p><b>E. Closure:</b> <i>(How will you end the lesson?)</i> After the whole-class discussion has ended, the instructor will talk about the importance of building reading skills in order for students</p>	

to be success, both in the classroom and in the workplace. Let students know that they will be continually working on their reading skills throughout the class.

**ASSESSMENT:** (*What tool(s) will you use to assess whether or not the material has been learned?*) Instructors will collect the questions and answers, evaluating and responding to each of the questions on the assignment.

## Learning to Actively Read

<p><b>CTE PATHWAY:</b> Mechanized Ag</p>	<p><b>BASIC SKILLS AREA OF EMPHASIS:</b> Reading Apprenticeship</p>
<p><b>SPECIFIC TOPIC:</b> Learning to actively read</p>	<p><b>TARGET LEARNER GROUP:</b> All CTE students</p>
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will learn to be actively involved in the reading process by questioning and responding to the assigned text</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Many students have a hard time comprehending the assigned reading. Engaging physically with the material by writing their questions, thoughts and responses, helps them retain information and understanding.</p>	<p><b>REQUIRED RESOURCES:</b> Any text used in the class and the “double entry” assignment. <a href="#">Link to Double Entry Reading Journal</a> <a href="#">Link to “Welding Basics”</a></p>
<p><b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Students will learn to physically engage with their reading assignment by writing their own responses to the information.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up:</b> 1. The instructor can begin this lesson by asking students what they do when they read. Are they passive? Do they highlight? Do they annotate? Do they “talk back” to the information? The discussion can then move on to how this double-entry assignment can help student engage more clearly with the information they are reading.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> 1. Hand out the assigned text and ask students to read it over once quickly. 2. Then ask them if they comprehended every idea in the reading? Did they have any questions, etc. 3. Now, pass out the double-entry journal and ask them to read the article again and fill out the left-hand side of the journal. 4. Then tell them to look at each entry they put on the left side of the journal and write a corresponding response to that entry on the right side of the journal.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> 1. As they are working, walk around the class monitoring their progress and asking if they need any help. 2. If there are questions, answer these for the whole class.</p> <p><b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i> As the instructor walks around the class, he/she can observe who is participating and encourage those who are not.</p> <p><b>E. Closure:</b> <i>(How will you end the lesson?)</i> Ask each student to read one idea from the left side of the journal and the corresponding response on the right hand side. Then ask them to tell what they learned from this process.</p>	
<p><b>ASSESSMENT:</b> <i>(What tool(s) will you use to assess whether or not the material has been learned?)</i> Instructors will collect the journals, read and grade them.</p>	

## Understanding Difficult Information

<p><b>CTE PATHWAY:</b> Mechanized Ag</p>	<p><b>BASIC SKILLS AREA OF EMPHASIS:</b> Reading Apprenticeship</p>
<p><b>SPECIFIC TOPIC:</b> Understanding difficult information</p>	<p><b>TARGET LEARNER GROUP:</b> Automotive &amp; Airplane Students</p>
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will learn to preview a textual chapter, understand vocabulary and summarize information in their own words.</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students must be able to comprehend difficult new information and connect it to previous knowledge.</p>	<p><b>REQUIRED RESOURCES:</b> The classroom textbook and TSP worksheet. <a href="#">Link to TPS Worksheet</a> <a href="#">Link to Sample Chapter</a></p>
<p><b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Students will learn to preview a chapter before reading, identify and learn new vocabulary and summarize the chapter's information in their own words.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up:</b> 1. A whole-class discussion is conducted about the difficulties all students are having reading the information in the textbook. Instructor will ask specific questions to draw out student participation.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> 1. Have students turn to the assigned chapter. 2. Quickly go over the general information in the chapter and what they are expected to learn. 3. Have them begin to fill out the TSP worksheet. 4. The instructor may want to make this a homework assignment as it will take quite awhile to answer all the questions. 5. Once students have completed the assignment, have them work in pairs to compare answers and check for correctness.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> 1. As they are working, walk around the class monitoring their progress and asking if they need any help. If a question comes up that applies to the whole class, stop and discuss the question.</p> <p><b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i> As the instructor walks around the class, he/she can observe who is participating and encourage those who are not.</p> <p><b>E. Closure:</b> <i>(How will you end the lesson?)</i> After students have discussed their answers in pairs, have a quick whole-class discussion about the process and what students learned from it.</p>	
<p><b>ASSESSMENT:</b> <i>(What tool(s) will you use to assess whether or not the material has been learned?)</i> Instructors will collect the questions and answers, evaluating and responding to each of the questions on the assignment.</p>	

## Study Skills for Mech Ag

### Note-Taking

<p><b>CTE PATHWAY:</b> Mechanized Agriculture</p>	<p><b>BASIC SKILLS AREA OF EMPHASIS:</b> Study Skills</p>
<p><b>SPECIFIC TOPIC:</b> Cornell Note Taking Skills applied to chapter</p>	<p><b>TARGET LEARNER GROUP:</b> Mech Ag students</p>
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will be able to take a set of concise, coherent notes on a typical chapter from a Mech Ag textbook. Students will then use these notes to study for an upcoming quiz/test.</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> The ability to take notes clearly and efficiently forms the basis of effective studying and memorizing of information.</p>	<p><b>REQUIRED RESOURCES:</b> *Sample textbook chapter, <a href="#">“Unit 6, Shop Cleanup and Organization”</a> (any Mech Ag-related chapter will work well) *PowerPoint <a href="#">Intro to Cornell Note Taking System</a> *<a href="#">Cornell Note Taking Template</a></p>
<p><b>LESSON CONTENT:</b> (What is to be taught?) This lesson focuses on how to take a set of Cornell notes on any Mech Ag course topic, in this case cleaning the Mech Ag shop efficiently and organizing all tools and materials.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up: Pose question:</b> Do you consider yourself to be a good note taker? Why or why not?</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i></p> <ul style="list-style-type: none"> <li>● Lecture on the elements of the Cornell Note Taking method, explaining &amp; modeling each step.</li> <li>● Instruct students to practice using the Cornell Note Taking method on a relevant chapter in Mech Ag. They may work alone or in pairs.</li> <li>● After 20 minutes or so, have students exchange their notes with another student (outside their pairs).</li> <li>● Review the important ideas contained in the chapter while students check the notes in front of them.</li> </ul>	

- If time remains, demonstrate to students how the notes can be studied, for example: read question from left column and try to answer it while covering up answer in right column OR read information in right column with left column covered up and try to come up with the original question that solicited the answer. There will probably not be adequate time for this last step, so it is recommended that it be carried over into the next lesson.

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)* Random calling on students by name

**D. Student Participation:** *(How will you ensure that everyone is involved?)* Having students work in pairs and informally evaluate each other's notes helps to ensure a greater level of involvement.

**E. Closure:** *(How will you end the lesson?)* Tell students to hold on to their notes and bring them back to the next class because they will use them to study further for a short quiz at the end of the next class session.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* The short quiz that will be given at the end of the next class session will function as a means of assessing the effectiveness of the students' note taking skills because if they took useful notes and then studied them diligently, the logical outcome will be passing quiz scores.

## Acquiring Vocabulary

<b>CTE PATHWAY:</b> Mechanized Agriculture	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Study Skills
<b>SPECIFIC TOPIC:</b> Acquisition of Vocabulary	<b>TARGET LEARNER GROUP:</b> Mech Ag students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will master a list of 11 terms taken from a chapter in a textbook for Mech Ag. Mastery is defined as being able to accurately apply the term to a diagram drawn by the student.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students must understand and be able to apply course terminology.	<b>REQUIRED RESOURCES:</b> Set of terms from any chapter or lecture Blank white paper (8.5"x11")
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Based on the particular Mech Ag chapter highlighted in this lesson ( <a href="#">Unit 6: Shop Cleanup and Organization</a> ), students will be given the definitions of 11 words/phrases from the Terms to Know section of the chapter. After taking notes on each term's meaning, students will solidify their understanding by creating a diagram of an organized shop and labelling the various components using the terms just received.	
<b>INSTRUCTIONAL PROCEDURES:</b>  <p><b>A. Attention Getter/Warm-Up:</b>          Pose to class: Describe the elements of an organized shop. Why is it important to maintain an organized shop?</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i></p> <ol style="list-style-type: none"> <li>1. Explain to class that a new chapter is being started today and it has 11 new terms that they need to be familiar with and able to use in a shop setting.</li> <li>2. There are a number of ways to learn vocabulary, but 1 great way that really makes the terms stick in the memory is drawing your own visual diagrams.</li> <li>3. Go down the list of terms, discussing each one and providing the definition, pausing to allow students to take their own notes.</li> </ol>	

4. Have students take out a piece of blank white paper (or pass them out if you have them available). Their task is to draw a representation of clean, tidy shop, labelling each component with the terminology they just learned.
5. If time permits, have each student explain his shop setup to a partner, verbally using the terms as he explains the form/function of each aspect.

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)* Will assess informally during initial discussion of vocabulary and while walking around observing students as they create their shop diagrams

**D. Student Participation:** *(How will you ensure that everyone is involved?)* Calling students by name at random to answer questions/make comments; having students explain their diagrams to partners

**E. Closure:** *(How will you end the lesson?)* Tell students to post their diagrams somewhere at home where they will see them often and be able to review the terms on them.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Collect the diagrams after they are finished and check each one for accuracy before returning them to students to be posted on the wall.

## Time Management

<b>CTE PATHWAY:</b> Mechanized Agriculture	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Study Skills
<b>SPECIFIC TOPIC:</b> Time Management	<b>TARGET LEARNER GROUP:</b> Mech Ag students
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students will prepare a Weekly Schedule for the upcoming 7 days in which they set aside time for study, work, and personal pursuits, balancing all of these elements to further their ultimate goal of completing Mech Ag and securing a career in the industry.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> In order to successfully complete their Mech Ag program, students need the ability to juggle school, work, and personal demands. Adhering to a schedule as closely as possible will help them to develop the necessary discipline that will serve them well over a lifetime.	<b>REQUIRED RESOURCES:</b> PowerPoint on <a href="#">Creating a Weekly Calendar</a> <a href="#">My Weekly Calendar</a> or any other template for tracking a schedule
<b>LESSON CONTENT:</b> (What is to be taught?) Tips for creating a workable schedule and ways to refine it week by week to realize greater success	
<b>INSTRUCTIONAL PROCEDURES:</b>  <b>A. Attention Getter/Warm-Up:</b> Pose question: What current challenges do you face in managing your time? Do you think time management ever gets easier?  <b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> 1. Present PowerPoint slides on Creating a Weekly Schedule, pausing for reflection and discussion of each slide. 2. Distribute a copy of the Weekly Schedule template to each student and instruct them to set up a schedule to live by for the next 7 days. Remind them to apply the principles just learned from the PowerPoint as they create their schedules.	

3. Have them take home their Weekly Schedules and do their best to follow them. If they fail to do a planned activity, they should cross it out on the calendar and make a note of what caused them not to do it.
4. Next week, the schedules will be re-evaluated and refined for the subsequent week, leading to greater productivity and well-being over time.

**C. Formative Checks:** (*How will you assess student understanding throughout the lesson?*) Calling students by name randomly during discussions and circulating around room, spot-checking progress during creation of Weekly Schedule

**D. Student Participation:** (*How will you ensure that everyone is involved?*) Encouraging everyone to partake in discussion (random calling on by name); requiring every student to produce a schedule

**E. Closure:** (*How will you end the lesson?*) Provide quote on time: *The bad news is time flies; the good news is you're the pilot!*

**ASSESSMENT:** (*What tool(s) will you use to assess whether or not the material has been learned?*)

Check students' Weekly Schedules, and, as weeks pass by, look to see that fewer goals have been crossed out on schedule and that scheduling principles are being followed.

# Math Lessons for Mech Ag

## Ratios and Proportions

<b>CTE PATHWAY:</b> All	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Simplifying and solving ratios and proportions
<b>SPECIFIC TOPIC:</b> Ratios & Proportions	<b>TARGET LEARNER GROUP:</b> All course participants
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students should be able to set up, simplify, and solve ratios and proportions	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students will need to use these operations within their field of study	<b>REQUIRED RESOURCES:</b> Will vary dependent on instructor, CTE program and course
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Define a ratio and proportion and explain how to set them up. Simplify ratios, find an unknown in a proportion, and both set up and solve an applicable word problem using proportions.	
<b>INSTRUCTIONAL PROCEDURES:</b> <p><b>A. Attention Getter/Warm-Up:</b> Ask students to figure out how much money they would need in order to go to a movie with 5 of their friends if 1 ticket cost \$10...now show them how this same, simple problem, can be set up as a proportion and solved. Obviously our problems will not always be this simple, but the set up and way to solve will be very similar.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> Now present several examples involving the set up and simplification of ratios, set up and solving of various CTE program applicable proportions, all while using various <b>[pedagogies]</b> throughout your presentation to ensure involvement. Choose basic examples to start, and then progressively incorporate your particular CT course's application in the examples to show the students the use of learning these concepts directly.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> Random choosing of students to check for understanding for next step(s), answer(s), how to proceed, etc. and/or calling for a <b>[pair]</b> or <b>[small group]</b> representative to explain how they arrived at their conclusion or answer will help with informal assessment throughout.</p>	

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

See above (part C) for ideas; feel free to use any other techniques (i.e. [polleverywhere])

**E. Closure:** *(How will you end the lesson?)*

Do a quick recap on the key points and explain how they will use the newly learned concepts in the future or the respective field.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

Give a 3-5 question (informal) post assessment on the key concept(s) of the lesson as a quick way to check for mastering (polleverywhere?). Anyone missing any of the questions should stay and do a few more of the missed problems as remediation.

## Unit Conversions U.S. and Metric Systems

<b>CTE PATHWAY:</b> All	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Math
<b>SPECIFIC TOPIC:</b> Unit conversions between U.S. and metric systems	<b>TARGET LEARNER GROUP:</b> All students in the CT field
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> U.S. and metric system units used in length, area, volume, and mass/weight as required by the CT field.	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students will need to use these operations within their field of study	<b>REQUIRED RESOURCES:</b> Will vary dependent on instructor, CTE program and course
<b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Discuss conversion rates between the two systems and demonstrate how to make the conversions.	
<b>INSTRUCTIONAL PROCEDURES:</b> <p><b>A. Attention Getter/Warm-Up:</b> Give an example of a situation in which a conversion would need to be made. Use an example such as finding how many liters are in a gallon of milk or how many yards are in a 100-meter dash.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> Present all of the conversion rates needed. These can include conversions between: feet and meters, inches and centimeters, miles and kilometers, acres and hectares, gallons and liters, cubic inches and liters, pounds and kilograms, ounces and grams, etc. The particular conversions covered may be determined by the CT field. If desired, have the students memorize the conversion rates.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> Random choosing of students to check for understanding for next step(s), answer(s), how to proceed, etc. and/or calling for a <b>[pair]</b> or <b>[small group]</b> representative to explain how they arrived at their conclusion or answer will help with informal assessment throughout.</p> <p><b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i> See above (part C) for ideas; feel free to use any other techniques (i.e. <b>[polleverywhere]</b>)</p> <p><b>E. Closure:</b> <i>(How will you end the lesson?)</i> Emphasize again the importance of unit conversions in the CT field.</p>	

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

Use a written quiz to check understanding. Give approximately 10-20 conversion problems in which the conversion rates are provided. If the students are required to memorize conversion rates, have them list them on a separate quiz.

## Trigonometry

<p><b>CTE PATHWAY:</b> Welding &amp; IMM Students</p>	<p><b>BASIC SKILLS AREA OF EMPHASIS:</b> Trigonometry</p>
<p><b>SPECIFIC TOPIC:</b> Introduction to Trigonometry IMM students</p>	<p><b>TARGET LEARNER GROUP:</b> Welding &amp; IMM Students</p>
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems. Demonstrate an understanding of the trigonometric functions (sine, cosine, tangent, cosecant, secant, and cotangent). Relate the functions to their geometric definitions. Solve simple triangle problems using the triangle angle sum property.</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students need to find the sides of a Triangle when installing and welding a pipe.</p>	<p><b>REQUIRED RESOURCES:</b> Worksheets, paper, pencils, calculators, rulers, protractors, meter sticks, string, and miscellaneous objects</p>
<p><b>LESSON CONTENT:</b> <i>(What is to be taught?)</i> Students will work their way through the three basic trigonometric functions: sine, cosine, and tangent. Students will learn how to apply these functions to triangles, simple angles, and word problems. Students will also relate the functions to real life applications and see for themselves how accurate the functions are by acting out various word problems.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention getter/Warm-Up:</b> What are the trigonometric functions? What are basic angles and how can we solve for them? Where are angles in everyday life? How can we use trigonometry to solve day to day problems?</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> I will lecture using a PowerPoint Presentation. Students will work in groups of two and will share their results with the class.</p> <p><b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i> Students will work in groups, they will act out their problems, will measure using protractors, meter sticks, rulers etc. in order to find the answers to their word problems. This will be their experimental result.</p>	

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

Students will be asked to share with a partner the definition of sine, cosine and tangent on an angle given by the instructor.

**E. Closure:** *(How will you end the lesson?)*

Students will share with their partner what they learned about sine, cosine, and tangent.

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)* Pre-assessment will include questions at the beginning and throughout the lesson to see where students are - Does anybody know... Throughout the lesson students will be assessed through class work, homework, and short quizzes. The main forms of assessment will be the quiz on basic angles, the problem solving experiment, and the summative quiz at the end of the lesson.

## English Lessons for Mech Ag

### Writing a Business Letter

<b>CTE PATHWAY:</b> Any	<b>BASIC SKILLS AREA OF EMPHASIS:</b> Writing
<b>SPECIFIC TOPIC:</b> Writing a Business Letter	<b>TARGET LEARNER GROUP:</b> Entry-level CTE students
<p><b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i> Students should be better able to write and revise writing for their intended purpose and audience.</p> <p><b>ASSUMPTIONS:</b> Effective writing is heavily impacted by knowledge of the <b>[rhetorical situation]</b>, perhaps more so than understanding grammatical rules.</p>	
<p><b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i> Students may be asked to write a letter on behalf of the clinic, and students may need to write a cover letter for job applications.</p>	<p><b>REQUIRED RESOURCES:</b> Writing utensils, copies (digital or print) of a poorly-written business letter, example of a formatted business letter.</p>
<p><b>LESSON CONTENT:</b> (What is to be taught?) This lesson will teach the importance and impact of the [rhetorical situation] (speaker, audience, and message) on effective writing and the necessity for revision to produce effective writing.</p>	
<p><b>INSTRUCTIONAL PROCEDURES:</b></p> <p><b>A. Attention Getter/Warm-Up:</b> For 5 minutes, have students write a letter to their best friend describing the crazy party they had last weekend. For the next 5 minutes, have students write another letter, but this time write the letter to their parents about the party they had last weekend. <b>Discussion:</b> Have students read their letters aloud (both of them) so that the class can hear the difference between them. <b>Question:</b> Ask students why the letters are different. <b>Mix it up:</b> Change the audience or purpose of the letter or even the writer’s persona (maybe have them pretend to be the President) to demonstrate different changes in writing.</p> <p><b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i> Once some students have shared their letters and their explanations as to why they are different, discuss the fundamental pieces of writing at stake—the <b>[rhetorical situation]</b>—that impact every piece of communication. Highlight how their writing as a Physical Therapy Aide (or whatever CTE focus) are affected by the same factors, whether it’s their application cover letter, an incident report, an email, or an evaluation. If they understand the situation of their writing context, they can produce more effective writing.</p>	

**C. Formative Checks:** *(How will you assess student understanding throughout the lesson?)*

Ask students to review the bad business letter in their textbooks (or hand out copies). Ask students to review the model formatted business letter in their textbooks (or hand out copies). Ask students to identify the **[rhetorical situation]**. Once they've reviewed them, ask students to rewrite the bad letter—paying attention to purpose, audience, form, and clarity—and produce a more effective business letter. What deserves the most attention?

**D. Student Participation:** *(How will you ensure that everyone is involved?)*

As students are writing, walk around the classroom checking in with students and groups to check on their work, offer encouragement, and answer any questions.

**E. Closure:** *(How will you end the lesson?)*

NOTE: This lesson may not be “closed” until the following class period.

Have students submit their letters (in hand or electronically). Once they have done so, ask students to summarize their experience. What did they learn? What will they keep with them for the next time they write?

**ASSESSMENT:** *(What tool(s) will you use to assess whether or not the material has been learned?)*

Assess the submitted letters for their effectiveness. Students who do not meet standards must revise the letter again.

# Glossary

This glossary contains words or terms that appeared in boldface type in the text.

**Association** memory principle that states the brain remembers more effectively when learners link new information with information they already know (page 58)

**Concentration** memory principle that states the brain remembers more effectively when the learner focuses solely on the information to be retained, blocking out all other distractions (page 58)

**Cornell Note Taking** popular and highly effective method for taking notes from either a lecture or textbook, involving dividing a standard piece of paper into two columns with space for a brief summary at the bottom of the page. Notes are taken in the righthand column, and after the class/reading, questions or cues are written in the lefthand column which solicit the key points of the notes. The summary portion is only a few sentences in length, forcing the note taker to be clear and concise. (page 91)

**Critical Thinking** the objective analysis and evaluation of an issue in order to form a judgment (page 22)

**Effort** memory principle that states the brain remembers more effectively when the learner consciously exerts focus and energy to the task of memorizing (page 58)

**Formative Checks** refer to an instructor assessing students' understanding of knowledge as a lecture progresses rather than waiting until the end of class or the end of a unit to do a summative assessment (page 51)

**Habits of Mind model** approach to student success that emphasizes the development of key traits that lead to academic achievement, which, when adopted routinely, become habits (page 22)

**Innovation** a new method, idea, product, etc. In the context of Habits of Mind, it refers to the ability to synthesize information and problem solve in unique ways (page 58)

**POSSIBLE** acronym developed by [Bakersfield College's](#) Student Government Association to incorporate the 8 Habits of Mind traits (Persist, Organize, Strive for Excellence, Stay Involved, Innovate, Be Focused, Learn for Life, Emphasize Integrity) that faculty, staff, and students are encouraged to emphasize each semester (page 22)

**Recitation** memory principle that states the brain remembers more effectively when the learner paces around the room repeating the information out loud in full sentences (complete thoughts) (page 58)

**SQ3R** method for approaching a reading that involves the steps of Survey, Question, Read, Recite, and Review (page 30)

**Selectivity** memory principle that states the brain remembers more effectively when only the most pertinent information is selected to be memorized (page 58)

**Study Skills** strategies applied to learning, which are generally critical to success in school, considered essential for acquiring good grades, and useful for learning throughout one's life (page 30)

**Supplemental Instruction** peer-led small group study session held outside of the class on a regular basis (page 10).

**Visualization** memory principle that states the brain remembers more effectively when learners create a picture in their minds to represent the meaning of a word/phrase (page 58)

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# Appendix A: Lesson Plan Template

## OER Embedded Remediation Faculty Handbook Contextualized Learning Section—Lesson Plan Template

<b>CTE PATHWAY:</b>	<b>BASIC SKILLS AREA OF EMPHASIS:</b>
<b>SPECIFIC TOPIC:</b>	<b>TARGET LEARNER GROUP:</b>
<b>PERFORMANCE OBJECTIVE:</b> <i>(What measurable skill(s) should students be able to demonstrate upon completion of the lesson?)</i>	
<b>RATIONALE:</b> <i>(Why do students need to learn this information?)</i>	<b>REQUIRED RESOURCES:</b>
<b>LESSON CONTENT:</b> (What is to be taught?)	
<b>INSTRUCTIONAL PROCEDURES:</b> <b>A. Attention Getter/Warm-Up:</b>  <b>B. Presentation of New Information:</b> <i>(What process will you follow?)</i>  <b>C. Formative Checks:</b> <i>(How will you assess student understanding throughout the lesson?)</i>  <b>D. Student Participation:</b> <i>(How will you ensure that everyone is involved?)</i>  <b>E. Closure:</b> <i>(How will you end the lesson?)</i>	
<b>ASSESSMENT:</b> <i>(What tool(s) will you use to assess whether or not the material has been learned?)</i>	