

Co-Teaching Series

Training Guide – Co-Instruction Module 3

Co-Teaching For Student Success			
Training Components	Activity	Time	Materials Needed
Pre-Training (Slides 1-3) Learning Targets Training Module Purpose			
Co-Instructing Content Training (Slides 4-13)	Read slides and complete discussion questions found in notes	15 minutes	Power point Presentation
Co-Instructing or Turn Taking? (Slides 14-21)	Scenarios and Turn and Talk	5-7 minutes	Power point Presentation
Content Overview of Specially Designed Instruction, UDL, and Differentiated Instruction (Slides 22-34) Think-Pair and Share (Slides 35-37)	Think-Pair Share	15 minutes	Power Point Presentation
Application Time (Slides 38-44)	Application Time Activity	30 Minutes	<ul style="list-style-type: none"> Power Point Presentation Handout: Module 3 Individual Learning Profile Handout: UDL Overview Handout: Co-Instructing: Approaches that Engage Both Teachers and Students Handout: Application Time Module 3 Note-Taking Page

Co-Teaching For Student Success

Training Components	Activity	Time	Materials Needed
<p>Mini-Modules for Instruction (Slides 45-46)</p> <p>Co-Teaching is a Weapon of Mass Instruction and Closing Slides (Slides 46-52)</p> <p>Total Module: 1.5 hours</p>	<p>Review Mini-Modules</p> <p>Emphasis Co-Teaching is a Weapon...</p> <p>Review Learning Targets</p>	<p>10 Minutes</p>	<p>Power Point Presentation</p>

Module 3 Individual Learning Plan


Student(s)	Learning issues from Psych./Eligibility Report, PLOP	Weaknesses identified thru Milestones	IEP Goal Area / Summary of Objectives	Accommodations	Specially Designed Instruction
Tony, Betty Sue	Difficulty with peer and adult interactions; pattern of inappropriate behavior under normal conditions,	Passed with standard accommodations	<p>Comply with the request of an individual in a position of authority</p> <p>Display verbal self-control in the classroom</p> <p>Refrain from bringing up inappropriate issues, thoughts or feelings during class</p> <p>Participate with peers in a classroom activity for 15 minutes with adult intervention</p>	<p>Testing - testing in a separate location with a staff member they feel comfortable, testing scheduled for a time of day when student generally feels better</p>	<p>-Provide contingent praise and attention when student complies with the time limit for starting to complete the direction</p> <p>-Ask the student to do several preferred behaviors before asking the student to do the behaviors he/she does not want to do</p> <p>-Provide opportunities to attain a sense of belonging- eg. class jobs, special projects</p> <p>-Reduce stress – frequent breaks, shorten assignments, preferential seating, reduce distractions</p> <p>-Reduce amount of text presented at one time – reduce amount but not complexity</p>

<p>Zach, Johnny, Mary</p>	<p>difficulty with memory; has difficulty with tasks that have more than one step; blurts out; easily distracted; makes careless errors; doesn't check work before turning it in to the teacher; messy; does assignments at the last minute and the quality of the work is poor</p>	<p>Met expectations with accommodations</p>	<p>Work Habits: will use checklist to verify expectations are met before turning in an assignment;</p>	<p>Extended time for writing task to plan before writing; preferential seating; paraphrase directions;</p>	<p>-Rehearse information in preparation of exam; -prepare outlines before beginning to write; -Make a plan to complete complex, difficult and/or long term task; -use routine of Goal-Plan- Do –Review; -Require student to become more active in formulating plans and reviewing his performance -Break long term tasks into smaller steps needed to accomplish the task -Use graphic organizers to strengthen information, organize it, new information to previously stored information, and move in into long term memory</p>
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Student(s)	Learning issues from Psych./Eligibility Report, PLOP	Weaknesses identified thru Milestones	IEP Goal Area / Summary of Objectives	Accommodations	Specially Designed Instruction
<p>Isabella Ellie Juan</p>	<ul style="list-style-type: none"> Weak in Decoding and fluency Can not follow more than two steps in a process Attention and high anxiety due to low reading levels 	<p>Did not meet but developing learner with accommodation</p>	<ul style="list-style-type: none"> Will decode two and three syllable words using direct instruction and modeling Will improve reading fluency by 3 wpm every 6 weeks. 	<ul style="list-style-type: none"> Preview vocabulary and new concepts Scaffold new concepts Text readers Positive behavior supports 	<ul style="list-style-type: none"> -preview new vocabulary and ideas -daily fluency practice -explicit and direct instruction reading -peer buddy or text reader for reading grade level passages -Break long term tasks into smaller steps needed to accomplish the task Use graphic organizers to


	<ul style="list-style-type: none">• Grade level listening ability		<ul style="list-style-type: none">• Will listen to a grade level story and answer 8/10 comprehension questions		<ul style="list-style-type: none">• strengthen information, organize it, new information to previously stored information, and move it into long term memory
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Provide multiple means of **Engagement**




Affective Networks
The "WHY" of Learning

Provide multiple means of **Representation**



Recognition Networks
The "WHAT" of Learning

Provide multiple means of **Action & Expression**



Strategic Networks
The "HOW" of Learning

Access

Provide options for **Recruiting Interest**

- Optimize individual choice and autonomy
- Optimize relevance, value, and authenticity
- Minimize threats and distractions

Provide options for **Perception**

- Offer ways of customizing the display of information
- Offer alternatives for auditory information
- Offer alternatives for visual information

Provide options for **Physical Action**

- Vary the methods for response and navigation
- Optimize access to tools and assistive technologies

Build

Provide options for **Sustaining Effort & Persistence**

- Heighten salience of goals and objectives
- Vary demands and resources to optimize challenge
- Foster collaboration and community
- Increase mastery-oriented feedback

Provide options for **Language & Symbols**

- Clarify vocabulary and symbols
- Clarify syntax and structure
- Support decoding of text, mathematical notation, and symbols
- Promote understanding across languages
- Illustrate through multiple media

Provide options for **Expression & Communication**

- Use multiple media for communication
- Use multiple tools for construction and composition
- Build fluencies with graduated levels of support for practice and performance

Internalize

Provide options for **Self Regulation**

- Promote expectations and beliefs that optimize motivation
- Facilitate personal coping skills and strategies
- Develop self-assessment and reflection

Provide options for **Comprehension**

- Activate or supply background knowledge
- Highlight patterns, critical features, big ideas, and relationships
- Guide information processing and visualization
- Maximize transfer and generalization

Provide options for **Executive Functions**

- Guide appropriate goal-setting
- Support planning and strategy development
- Facilitate managing information and resources
- Enhance capacity for monitoring progress

Goal

Expert learners who are...

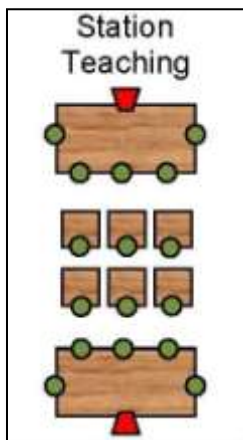
- Purposeful & Motivated**
- Resourceful & Knowledgeable**
- Strategic & Goal-Directed**

March 2019

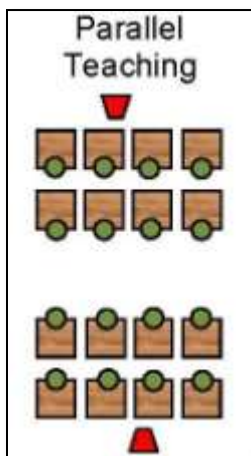
Co-Instructing: Approaches that Engage Both Teachers and Students

Co-teaching involves two or more licensed educators sharing purposeful instruction for a single group of students, primarily in a single classroom. It typically refers to a general educator and a special educator sharing joint accountability for student success, not only by teaching together, but by co-planning all instruction and assessment as well. Co-teaching is a proactive approach to education, allowing students with disabilities to have their unique learning needs addressed within the regular classroom as they work with their non-disabled peers. Co-teaching also allows opportunities for enrichment of instruction for students with strong academic skills in heterogeneously grouped co-taught classes. Paraprofessionals are sometimes assigned to co-taught classes, and they may work with students under teacher supervision. However, because they do not have the same accountability for student performance and are often not licensed educators, paraprofessionals are not considered co-teachers.

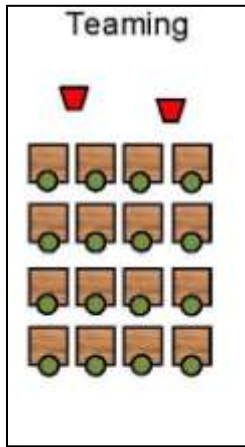
When co-teaching partners engage in co-instructing, they effectively use a number of co-teaching approaches. Examples of the most common approaches are noted below and a variety should be used on a daily/weekly basis. Some models are best used for shorter periods of time while others can be used more extensively; the maximum recommended usage is noted within each description.



Station Teaching involves each teacher in teaching a different concept or skill to a small group, and students rotate from one teacher to the other. Teachers often plan a third station where students work independently. This approach reduces the pupil-teacher ratio and encourages student participation, and can be used effectively 30-40% of the time. Station Teaching is recommended early in the co-teaching process, as co-teachers are learning to work together.



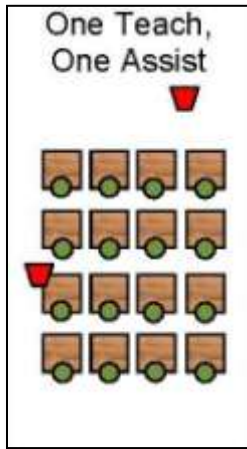
Parallel Teaching allows each teacher to teach the same information, but the class is divided so teachers have a better opportunity to respond to individual needs and encourage student participation. The approach can also be used 30-40% of the time and is recommended early in the co-teaching process.



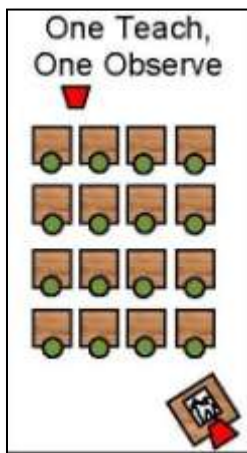
Teaming occurs when both teachers share responsibility for delivering instruction to the whole class. It is the most complex style of co-teaching; teachers often play off each other like a “tag team.” This approach evolves later in the co-teaching process, particularly if the special educator is not initially familiar with the curriculum. Having a relationship based on trust and respect is necessary for this approach to be effective, and such a relationship takes time to develop. The approach can be used effectively 20-30% of the time. Teaming is often referred to as Team Teaching, but must be distinguished from team teaching with general educators who have similar content expertise. The contributions of co-teachers may vary. For example, a special educator who is learning the content may work at a document camera recording class discussion notes in a format that will facilitate copying and studying by the students. The general educator, who is more comfortable with the new content, is then free to circulate around the room to enlist active student participation and provide proximity control to improve behavior. From the front of the room, the special educator is able to reinforce points and ask clarifying questions when students seem confused. While not having as much responsibility for teaching new content, the special educator is viewed by students as a teacher, not an assistant.



Alternative Teaching provides opportunities for remediation, re-teaching and enrichment in response to formative assessment. In Alternative Teaching, one teacher provides remediation for struggling learners in a small group, while the other teacher leads enrichment activities for students who have mastered those skills. The groups are then brought back together to proceed with new content instruction. This approach is best used about 20% of the time, and teachers should alternate roles depending on the needs of the students and their own expertise.



One Teach, One Assist allows one teacher to assume the primary teaching responsibility while the second teacher moves around the room providing individual assistance to students as needed. This strategy should not be used over 20% of the time. If overused without alternating roles, students come to see the assisting teacher as a paraprofessional rather than a co-equal teacher of the class.



One Teach, One Observe occurs when one partner teaches and the other observes. The observer's purpose is to generate data to improve instruction or to assess student progress toward IEP goals. For example, the observer may focus on student engagement or time-on-task as well as mastery of content. This strategy is beneficial when used about 5-10% of the time.

Virginia co-teachers use the approaches above to teach the required curriculum as outlined by the Virginia Standards of Learning (SOL) and school division guidelines, complemented by specially designed instruction (SDI) to close any gaps between students' skills and grade-level curriculum demands. SDI is often outlined in IEPs of students with disabilities or determined necessary during formative assessment. SDI may include teaching lessons to develop reading and writing skills, vocabulary memorization strategies, social skills, etc., (See the *Definitions of Related Terms* in Webshop #1) The co-teaching approaches to be used are determined during the co-planning process.

References:

"*Collaborating for Student Success: Principals' Workshop Report.*" VASSP/VFEL Professional Program Series, 2007

http://www.doe.virginia.gov/special_ed/tech_asst_prof_dev/principals_workshop_collaborating_student_success.pdf

Friend, Marilyn. *Co-teach!: Building and Sustaining Effective Classroom Partnerships in Inclusive Schools.* Greensboro, NC: Marilyn Friend, 2013. Print.

Application Time Handout for Note-Taking Instruction in the Co-Taught Classroom

Application Scenario	Principles of UDL	Differentiated Instruction	Specially Designed Instruction	Co-Teaching Approach
1				
2				

3

**Real
Lesson
To Be
Taught**

Specially Designed Instruction: Realizing the Potential of Co-Teaching

 ttacwm.blogs.wm.edu/specially-designed-instruction-realizing-the-potential-of-co-teaching/

Susan Jones, M.S. Ed.

October 31, 2016

The principle of least restrictive environment (LRE) requires schools to provide instruction in the general education classroom for students with disabilities unless the “nature and severity” of the student’s disability prevents it (Individuals with Disabilities Education Improvement Act [IDEA], 2004). Additionally, the IDEA mandates access to the general education curriculum with instruction from qualified teachers. To meet the LRE and access requirements, many schools choose co-teaching as a service delivery model. Access to a co-taught classroom alone, however, does not satisfy the legal requirements. Access must also result in improved academic outcomes for students with disabilities.

Recent research provides evidence that, when implemented as intended, co-teaching leads to increased academic success in the general education curriculum and classroom for students with disabilities (Huberman, Navo, & Parrish, 2012; Rigdon, 2010; Tremblay, 2013; Walsh, 2012). While expectations for co-teaching remain high, disappointing results on high-stakes tests for students with disabilities suggest that many co-teaching teams are not providing instruction in ways that realize the tremendous potential of this service delivery model (Murawski, 2006; Scruggs, Mastropieri, & McDuffie, 2007).

Recognizing that co-teaching is a promising vehicle for the delivery of special education to students with disabilities, how can we maximize its potential? The fuel for this vehicle is effective core teaching paired with specially designed instruction (SDI) tailored to the individual needs of students with disabilities. SDI is “instruction directly connected to the student’s IEP goals and his or her documented needs ... in any domain in which the student has special needs ... [with] changes in content (but usually not standards), methodology, or delivery of instruction ... [using] ongoing monitoring of progress [and] approaches and techniques that other learners do not generally need” (Friend, 2016, pp. 18-19).

Teachers can intensify instruction by choosing co-teaching approaches that reduce group size and allow for more individualization. Such approaches include station teaching, parallel teaching, and alternative teaching. Table 1 lists examples of how co-teachers might use these higher-intensity co-teaching variations to deliver SDI to meet individual student needs in general education classrooms.

Table 1

Embedding SDI into Co-Taught Classrooms

Co-Teaching Approaches	Opportunities to Embed Specially Designed Instruction (SDI)
Station Teaching	<p>During small-group math groups focused on subtraction with regrouping, two groups use representational models to solve, while the third group uses concrete models, computational tools, and organizational aids, including</p> <ul style="list-style-type: none"> ● base ten blocks ● number lines ● graph paper to line up numbers <p>Multisensory language instruction for one guided reading group while other groups focus on basal skills using leveled readers</p> <p>Explicitly teaching students with recall challenges to engage interactively with reading material using</p> <ul style="list-style-type: none"> ● Self-Questioning Strategic Instruction Model Learning Strategy (SIM[®]) ● ability-level reading passages <p>Other groups learn basic annotation strategies on grade-level material</p>
Parallel Teaching	<p>During project requiring work with multiple partners, behavioral support for one student using</p> <ul style="list-style-type: none"> ● visual/verbal cueing ● self-monitoring strategy instruction <p>Paragraph writing for students with organizational or task-completion difficulties using</p> <ul style="list-style-type: none"> ● visual/kinesthetic props for brainstorming/prewriting ● a writing frame/graphic organizer for composing ● a task list for editing

Direct, systematic instruction in solving multi-step algebraic equations using:

- visual cueing
- color coding
- verbal “think aloud” for strategy
 - look at the equation from left to right
 - draw arrows to distribute
 - highlight like terms
 - combine like terms
 - move terms across the equal sign
 - solve

Solve and check:

$$9 - 3(-2x + 4) = -39$$

$$9 + 6x - 12 = -39$$

$$\begin{array}{r} \cancel{3} + 6x = -39 \\ +3 \qquad \qquad +3 \\ \hline 6x = -36 \end{array}$$

$$\frac{6x}{6} = \frac{-36}{6}$$

$$x = -6$$

Alternative Teaching	Using data from progress monitoring, one teacher reviews/re-teaches science vocabulary with five students immediately prior to a lab activity, while the other teacher and students review morning work
	Explicit instruction on multiplication strategies for students with retrieval concerns using <ul style="list-style-type: none"> ● mnemonics ● hundreds chart with manipulatives
	Reviewing video models for a small group of students to teach/reinforce turn-taking skills prior to cooperative group activity

Adapted from Friend (2016, pp. 19-21).

Working to realize the promise of co-teaching honors our commitment to the success of students with disabilities. It is not enough to have two teachers in a classroom. Co-teaching with fidelity, special and general educators must work together to provide purposeful and targeted interventions to students with disabilities. Co-teaching can help educators not only comply with legal requirements but also commit to the generous spirit of IDEA, which allows all students access to the great equalizer – a quality public education.

For a detailed description of the co-planning and co-teaching processes, along with implementation resources, see the following *Considerations Packets*:

- Co-Planning for Student Success
- Co-Teaching
- For an overview of the co-taught classroom as a service delivery model for SDI, see Debbie

Grosser's encore article, *The Nuts and Bolts of Co-Teaching*, in our September issue of *Link Lines*.

- For information on the crucial connection between student data, SOLs, and SDI, see Cathy Buyrn's article from our February 2016 issue of *Link Lines* entitled *Strategic and Specially Designed Instruction: Leveraging Data Sources to Ensure General Curriculum Success*.
- For information on providing students with SDI through strategy instruction, see Cathy Buyrn's article from our November 2015 issue of *Link Lines* entitled *Specially Designed Instruction: The Importance of Specific Strategy Instruction*.

References

Friend, M. (2016). Welcome to co-teaching 2.0. *Educational Leadership*, 73(4), 16-22.

Huberman, M., Navo, M., & Parrish, T. (2012). Effective practices in high performing districts serving students in special education. *Journal of Special Education Leadership*, 25(2), 59-71.

Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 612 (2004). Retrieved from <http://idea.ed.gov/explore/view/p/%2Croot%2Cstatute%2CI%2CB%2C612%2C>

Murawski, W. (2006). Student outcomes in co-taught secondary English classes: How can we improve? *Reading and Writing Quarterly*, 22(3), 227-247. doi:10.1080/10573560500455703

Scruggs, T. E., Mastropieri, M. A., & McDuffie, K. A. (2007). Co-teaching in inclusive classrooms: A metasynthesis of qualitative research. *Exceptional Children*, 73(4), 392-416.

Rigdon, M. B. (2010). *The impact of co-teaching on regular education eighth grade student achievement on a basic skills algebra assessment* (Doctoral dissertation). Retrieved from ProQuest. (3403056)

Tremblay, P. (2013). Comparative outcomes of two instructional models for students with learning disabilities: Inclusion with co-teaching and solo-taught special education. *Journal of Research in Special Education Needs*, 13(4), 251-258. doi:10.1111/j.1471-3802.2012.01270.x

Walsh, J. M. (2012). Co-teaching as a school system strategy for continuous improvement. *Preventing School Failure*, 56(1), 29-36. doi:10.1080/1045988X.2011.555792

Cornell Note Taking System

(For Lecture or Reading)

Taking good notes is one of several keys to academic success. There are several reasons why developing an effective technique of note taking is important.

Reasons for Developing Effective Note Taking Techniques



1. Prevents forgetting:

Our memory fades quickly. For most students, forgetting occurs very rapidly after listening to a lecture, or reading over informational material even if the material is engaging and interesting. After lectures, for example, research shows that we forget 50% of what we hear within an hour and more than 70% within two days.

2. Encourages concentration:

Taking effective notes requires a student to be mentally active during a lecture or while reading. One has to pay attention, interact with information, make decisions about what to record, and write. Given that the mind is occupied with a demanding task, there is less opportunity for the mind to wander.

3. Records testable material:

Instructors generally expect students to remember and apply facts and ideas presented in lecture or in texts. Tests are based on key ideas teachers emphasize in their lectures and/or written material that supports key concepts or themes. In other words, the testable material.

Cornell Note Taking: The Process

Introduction

There are a variety of note taking styles. No single method suits all students. However, many successful students and business people have found that the Cornell note taking system is very effective for lectures or reading that is organized around clearly defined topics, subtopics, and supporting details.

The Cornell System is both **a note taking** and **a study system**. There are **six steps** to it.

Step One: **Record**

- 1) **Prepare your notepaper** by creating a two-column table. The left-hand column should take up about 1/3 of your writing space, leaving the remaining 2/3 for recording information. Use only one side of each sheet of notepaper.
- 2) **Summarize and paraphrase** (restate in your own words) the facts and ideas presented. **Record** definitions as stated or written.
- 3) **Indicate changes in topic** with headings or by leaving a space between topics
- 4) **Number, indent, or bullet** key ideas presented with each topic.
- 5) Aim for **telegraphic (brief) sentences, abbreviations, and symbols**. This will increase your note taking speed.
- 6) **Write legibly** so your notes make sense to you later.
- 7) **Edit** as soon as possible.

Step two: **Question**

Formulate **test questions** based on the information recorded in notes and write them in the **recall clues** column on the left-hand side of notes. Questions should focus on specific definitions and “big ideas”.

Cornell Note Taking: The Process

Step three: **Recite**

- 1) **Recitation** means explaining the information in the notes out loud, in your own words. The information should be triggered by the test questions in the **recall clues** column.
- 2) **Purposes of recitation:**
 - a. **Improves learning:** Psychologists who study how the memory works say that reciting aloud is a powerful technique for anchoring information in the long-term memory.
 - b. **Ensures understanding:** Reciting requires you to think about and understand the information you are committing to memory.
 - c. **Facilitates retrieval:** Understanding information improves your ability to retrieve it from your memory. Studies show that students who recite tend to do better on tests than students who just read their notes silently to themselves.
- 3) **Step in recitation:**
 - a. **Cover up** the notes in the “record” column or fold notes back along line separating the “clues” from the “record” column.
 - b. **Use recall clues** to stimulate your memory and **recite** the relevant information.
 - c. **Check your answers.** This gives you immediate feedback on how well you have learned and are able to retrieve the information. If you have difficulty recalling the information or if your answers are incorrect, learn and recite over again.

Step Four: **Reflect**

- 1) Reflection has to do with thinking about the information you are learning.
- 2) One way to reflect is to look for connections with your own experiences and observations and with other facts and ideas discussed in class.
- 3) Another way to reflect is to ask questions like: How do the main ideas fit together into a “bigger picture”? How do these ideas fit in with what I have already learned? What do I agree with? What do I disagree with? Which ideas are clear? Which are confusing? What new questions do I have?

Cornell Note Taking: The Process

Step Five: **Recapitulate** (summarize)

- 1) Write a summary of the main ideas using your own words. This is the best test of how well you understand the information.
- 2) Use a section at the bottom of each sheet of notes to write your summary or write a summary of all the notes on the last page of your note sheets.

Step Six: **Review**

- 1) A good guideline is to review nightly or several times during the week by reciting, not rereading.
- 2) Frequent, brief review sessions aid more complete comprehension of the material than cramming the night before a quiz/test.

Cornell Note Taking: Format

Recall Clues	Record
<p>Write recall questions here.</p>	<ul style="list-style-type: none">▪ Record notes here ▪ Remember to focus on testable information<ul style="list-style-type: none">○ “big ideas”○ definitions○ supporting details ▪ Bullet each piece of new information and skip lines to visually organize notes
<p>Summary:</p> <p>Write a summary of notes recorded on each page in this section of your notes...</p> <p>Or, create this section on the last page of your notes only, and summarize all information there.</p>	

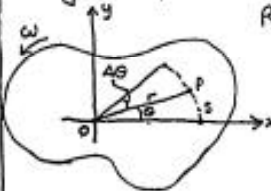
Examples of the Cornell Notetaking System

Example of the Cornell Notetaking System

<p>How do psychologists account for remembering?</p> <p>What's a "memory trace"?</p> <p>What are the three memory systems?</p> <p>How long does sensory memory retain information?</p> <p>How is information transferred to STM?</p> <p>What are the retention times of STM?</p> <p>What's the capacity of the STM?</p> <p>How to hold information in STM?</p> <p>What are the retention times of LTM?</p> <p>What are the six ways to transfer information from STM to LTM?</p>	<p style="text-align: center;">Psych.105-Prof.Martin - Sept.14 (Mon.)</p> <p style="text-align: center;"><u>MEMORY</u></p> <p>Memory tricky - Can recall instantly many trivial things of childhood; yet, forget things recently worked hard to learn & retain.</p> <p>Memory Trace</p> <ul style="list-style-type: none"> - Fact that we retain information means that some change was made in the brain. - Change called "memory trace." - "Trace" probably a molecular arrangement similar to molecular changes in a magnetic recording tape. <p>Three memory systems: sensory, short-term, long-term.</p> <ul style="list-style-type: none"> - <u>Sensory</u> (lasts one second) <ul style="list-style-type: none"> Ex. Words or numbers sent to brain by sight (visual image) start to disintegrate within a few tenths of a second & gone in one full second, unless quickly transferred to S-T memory by verbal repetition. - <u>Short-term memory [STM]</u> (lasts 30 seconds) <ul style="list-style-type: none"> • Experiments show: a syllable of 3 letters remembered 50% of the time after 3 seconds. Totally forgotten end of 30 seconds. • S-T memory - limited capacity - holds average of 7 items. • More than 7 items -- jellisons some to make room. • To hold items in STM, must rehearse -- must hear <u>sound</u> of words internally or externally. - <u>Long-Term memory [LTM]</u> (lasts a lifetime or short time). <ul style="list-style-type: none"> • Transfer fact or idea by: <ol style="list-style-type: none"> (1) <u>Associating</u> w/information already in LTM (2) <u>Organizing</u> information into meaningful units (3) <u>Understanding</u> by comparing & making relationships. (4) <u>Frameworking</u> - fit pieces in like in a jigsaw puzzle. (5) <u>Reorganizing</u> - combing new & old into a new unit. (6) <u>Rehearsing</u> - aloud to keep memory trace strong
<p>Three kinds of memory systems are sensory, which retains information for about one second; short-term, which retains for a maximum of thirty seconds; and long-term, which varies from a lifetime of retention to a relatively short time.</p> <p>The six ways (activities) to transfer information to the long-term memory are: associating, organizing, understanding, frameworking, reorganizing and rehearsing.</p>	

- What is the equation for angular displacement?
- What are the units of angular displacement?
- What does s represent?

Review of Rotational Kinematics
 Rotational Motion of Rigid Objects
angular displacement

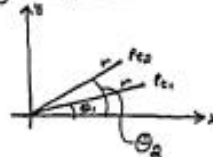


Rigid Object rotating about fixed axis O in z -direction

- $\theta = 0$, when \vec{r} is along x -axis
- $\theta > 0$, CCW rotation
- $\theta = s/r$, where s is arc length
- $[\theta] = \text{radians}$
- $\Delta\theta = \text{angular displacement}$

- What is the eq'n for average ang. speed?
- What is the eq'n for instantaneous ang. speed?

angular speed



- avg. angular speed
 $\bar{\omega} = \frac{\theta_2 - \theta_1}{t_2 - t_1}$
- instantaneous ang. speed,
 $\omega = \frac{d\theta}{dt}$
- $\omega > 0$, θ increasing in CCW direction
- $[\omega] = \text{rad/s}$

- How do we define instantaneous angular acceleration?

angular acceleration

- avg. ang. acc., $\bar{\alpha} = \frac{\omega_2 - \omega_1}{t_2 - t_1}$
- inst. ang. acc., $\alpha = \frac{d\omega}{dt}$ $[\alpha] = \text{rad/s}^2$
- $\alpha > 0$, ω increases w/ time
- $\alpha < 0$, ω decreases w/ time

Angular displacement is $\Delta\theta$, where $\theta = s/r = \text{arc length}/\text{radius}$
 $[\theta] = \text{radians}$
 Angular velocity is ω , where $\omega = \frac{d\theta}{dt} = \frac{\text{change in displacement (angular)}}{\text{change in time}}$
 $[\omega] = \text{rad/s}$
 Angular acceleration is α , where $\alpha = \frac{d\omega}{dt} = \frac{\text{change in angular speed}}{\text{change in time}}$
 $[\alpha] = \text{rad/s}^2$

Examples of Differentiated Instruction in the Co-Taught Middle/High School Classroom

Generalized Instruction	Differentiated Instruction	Specialized Differentiated Instruction		
		Content Related	Across Content	Published Programs
Lecture	Think-Pair-Share Diagrams Strategies Non-linguistic Representation (Graphic Organizer)	10/3 Lecture/Draw Orienting New American	Previewing	Explicit Instruction: Modeling Guided Prac. Generalizat. Errorless Learning Mastery Learning Prompting Chunking Behavior Contracts Fading Instant Feedback Task Analysis BIP Strategy Instruction Reinforcement Massed Trials Distributed Trials Progress Monitoring Self-Monitoring Kansas Content Enhancement Strategies Kansas Strategic Instruction Model Rewards Series Advanced Skills for School Success Corrective Reading Language!
Note taking	2 Column Notes Organizers–Free Farm Mapping Summarizing and Note taking Non-linguistic Representations	Graphic Cornell Notes	Guided Notes Copies of Notes Framed Notes Jigsaw Notes	
Writing	Graphic Organizer COPS Strategy	Rubrics PLEASE Strategy	Paragraph Writing Strategy Theme Writing Error Monitoring Strategy	
Reading Informational Text	SQ3R Summarization Strategy Advanced Organizer Chunking Radio Reading	Pairs Read Guided Reading KWL Reciprocal Teaching	Paraphrasing Strategy Self Questioning Strategy Visual Imagery Strategy Read Aloud Software	
Reading Narrative Text	Story Maps TELLS strategy (fact or fiction)	Pairs Read	Read Aloud Technology Previewing	
Discussions	Wait time to process questions Circle of Knowledge	Think-Pair-Share Agree/Disagree	Prompting Strategies Scaffolding Questions	
Math Independent Work	RPC-HECC (strategy)	Wipe off boards	Mnemonic Strategies PALS Strategy	
Vocabulary Development	Concept Maps Concept Definition Map Semantic Features Analysis	Frayer Model Word Sort Thinking Maps	LINCS DISSECT Vocabulary Strategy Paired-Associate Strategy	
Paper/Pencil Activities	Add page numbers for information		Completion Strategy	
Memorizing	Acronomyns Acrostics Rhymes and phrases Narrative chaining Kinesthetic Activities	Keyword Peg System Music	Time Delay Mnemonics	

