EDPS 855 Projects

Beth Wagoner
Assignment 3

Select

1. Importance of Association
    - Frequent and long-term exposure doesn't always lead to an accurate memory.
        - Showing up for class and listening to the teacher's words isn't enough.
        - Neither is repeated piecemeal exposure to the information. The following methods are not effective ways of learning information:
            - Recopying notes
            - Reciting notes word for word
            - Isolation of facts
                - Easily confused or forgotten
                - Arbitrary and nonmeaningful
    - Meaningful learning occurs when
        - Ideas being learned are associated to one another
        - Ideas are associated to information outside of the material
    - When associations are made
        - The information is no longer arbitrary or independent
        - Easier to learn
2. Memory Experts Use Association
    - Recalling numbers – times, area codes, dates, ages
    - Names – associate name or food with a facial feature
    - Salad dressings – first letters spell the word "BOOF J.C."
3. Types of Association
    - Internal
        - Link ideas within the material presented
    - External
        - Link ideas outside of the material presented
        - Connect what is being learned to something you already know
4. Implications for Building Associations
    - Raise Association Questions
        - What's above, below, and alongside?
            - Appropriate when information is arranged in a hierarchy.
            - When information is organized sequentially, ask what is before and after.
            - Example
                - What's below? Triangles have subtypes of equilateral, isosceles, and scalene.
                - What's alongside? Other geometric shapes like squares and rectangles
        - How are these things alike and different?
            - Alike because they are presented collectively.

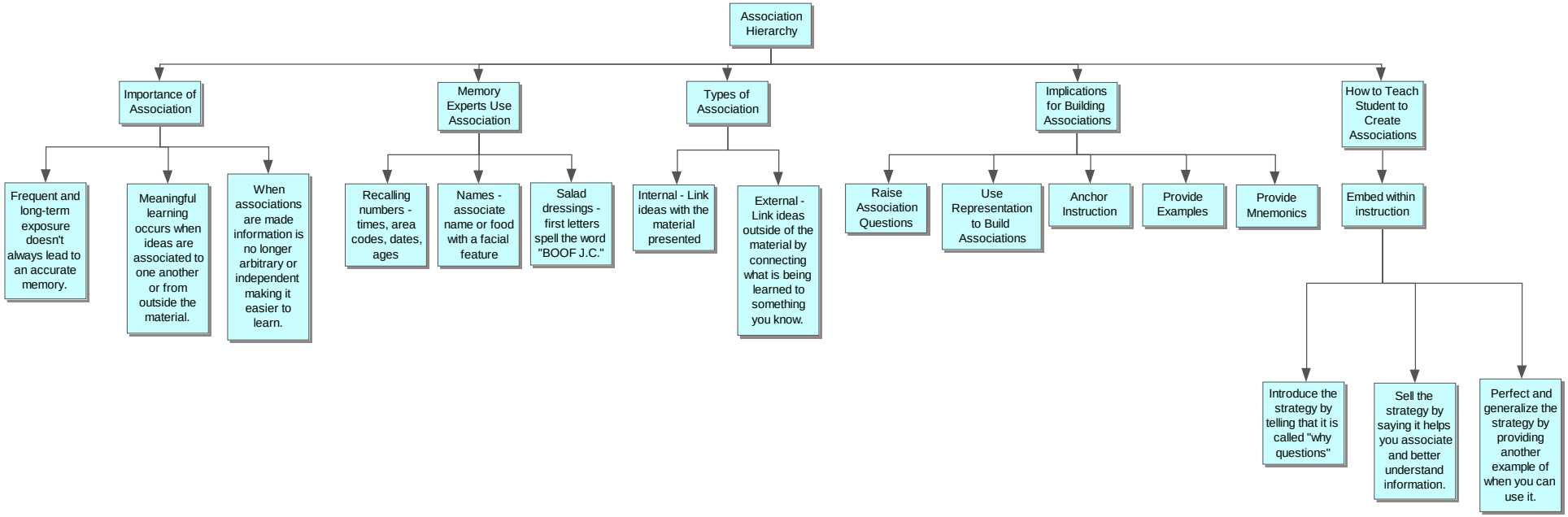
        - Different because they have a unique name.
        - Example
            - Proactive and retroactive interference in psychology are alike in that they are both forms of forgetting where the learning of one stimulus blocks the recall of a second stimulus.
            - Different in when the stimulus comes.
                - Before – Proactive
                - After - Retroactive
    - What's the association between structure and function?
        - In science, all things have structure and function and there is some kind of association between them.
        - Examples
            - Incisor teeth are pointed (structure) to tear food (function)
            - Molar teeth are large and flat (structure) to grind food (function)
    - What common categories cut across topics?
        - Identify categories along which topics can be compared.
        - Examples
            - Wars: parties involved, location, cause, outcome, time
            - Painting: title, period, artist, subject, style
    - What do I know about this?
        - Learning depends on new information being associated with previously acquired information.
        - Makes it meaningful and easy to remember.
        - Example
            - Pacific Northwest Native Americans built homes with wood planks and slanted roofs because of the abundance of rain and trees.
    - Why?
        - Prior knowledge associated with the information learned.
        - Meaningful explanation of information learned.
        - Example
            - Why study animal behavior in laboratories? The animals are easier to control and observe.
- Use Representation to Build Associations
    - Are constructed to build associations.
    - Should reveal the intended message almost at once.
    - Within-topic associations are within a single topic.
    - Across-topic associations are made within one or more categories.
    - External associations extend beyond the information given.
- Anchor Instruction
    - Information should not be taught in ways that make it meaningless and unusable.

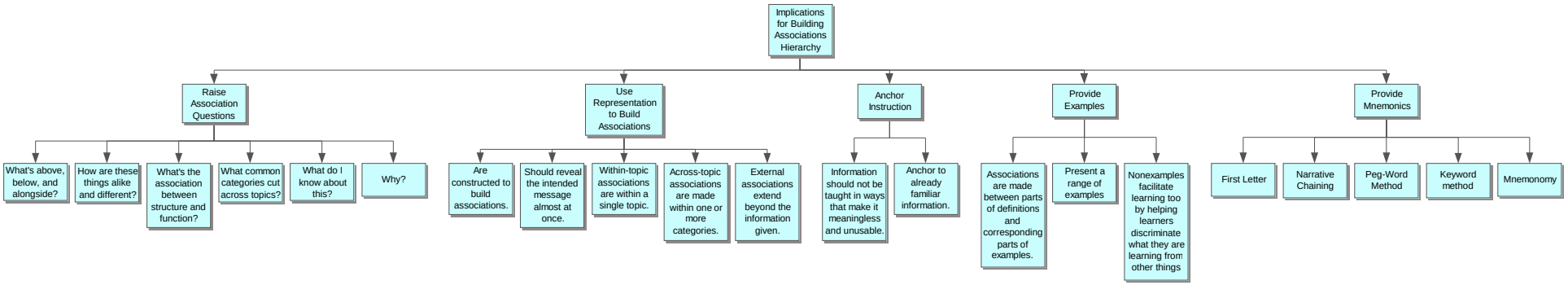
        - Anchor to already familiar information.
        - Examples
            - Parts of a city to parts of a cell
            - The cell wall is like the wall that surrounds a city. The membrane is like border guards.
- Provide Examples
    - Associations are made between parts of definitions and corresponding parts of examples
    - Present a range of examples
    - Nonexamples facilitate learning too by helping learners discriminate what they are learning from other things
        - Example
            - Positive reinforcement
            - Positive stimulus of food is presented but the dog doesn't continue doing the trick

- Provide Mnemonics
    - Used when students lack background knowledge
    - Contrived associations
    - There are five main types
        - First Letter
            - First letter of to be learned information is used to form a new word or sentence.
        - Narrative Chaining
            - Takes the information to be learned (or something that sounds like them) and makes them into a memorable story.
        - Peg-Word Method
            - Helps to remember lists
            - Establish 10 visual pegs in memory each with number 1 to ten
            - Hang information from each that is related to the number – rhyming is commonly used
            - Create visual images linking the pegs and list items
        - Keyword method
            - Associate a word with a familiar word or phrase then create an image linking the keyword with its definition or a related word..
            - Effective technique for teaching
                - Vocabulary
                - Science terms
                - Word pairs like capitals
        - Mnemonomy
            - A pictorial representation that helps learner associate and remember several facts.

- Powerful and fun.
- Should be used sparingly to remember things that cannot be more meaningfully learned.

5. How to Teach Student to Create Associations
    - Embed within instruction.
    - Teaching students about fish while incorporating the “why” strategy
        - Introduce the strategy by telling that it is called “why questions”
        - Sell the strategy by saying it helps you associate and better understand information.
        - Perfect and generalize the strategy by providing another example of when you can use it.
        - Example
            - Why does the crappie have a mottled appearance and how does that relate to its habitat?
            - Based on past experience with other animals like deer and polar bears you know that they try to blend in with their surroundings so that they won’t be detected by predators or prey.
            - The crappie may have a mottled appearance so they can hide among rocks or at the bottom of the lake.
            - Later this strategy can be used when learning about the location of glands relative to their functions.


Association Hierarchy
Importance of Association
Frequent and long-term exposure doesn't always lead to an accurate memory.
Meaningful learning occurs when ideas are associated to one another or from outside the material.
When associations are made information is no longer arbitrary or independent making it easier to learn.
Memory Experts Use Association
Recalling numbers - times, area codes, dates, ages
Names - associate name or food with a facial feature
Salad dressings - first letters spell the word "BOOF J.C."
Types of Association
Internal - Link ideas with the material presented
External - Link ideas outside of the material by connecting what is being learned to something you know.
Implications for Building Associations
Raise Association Questions
Use Representation to Build Associations
Anchor Instruction
Provide Examples
Provide Mnemonics
How to Teach Student to Create Associations
Embed within instruction
Introduce the strategy by telling that it is called "why questions"
Sell the strategy by saying it helps you associate and better understand information.
Perfect and generalize the strategy by providing another example of when you can use it.



Organize

Mnemonic Matrix

Used When	Students lack background knowledge				
Type	First Letter	Narrative Chaining	Peg-Word Method	Keyword method	Mnemonomy
How it's Used	First letter of to be learned information is used to form a new word or sentence.	Takes the information to be learned (or something that sounds like them) and makes them into a memorable story.	Uses pegs to help remember lists by numbering pegs and hanging information from them that is related to the number. Then visual images are created linking the pegs and list items.	Associate a word with a familiar word or phrase then create an image linking the keyword with its definition or a related word.	A pictorial representation that helps learner associate and remember several facts.
Example	Roy G. Biv is used to remember the colors of a rainbow: **r**ed, **o**range, **g**reen, **b**lue, **i**ndigo, and **v**iolet.	To introduce plant reproductive parts: "That's what Phil meant (*filament*) when he went *ovary* his *anther*."	To remember healthy habits: 1 a bun soaked in water 2 a shoe on a pillow 3 climbing a tree 4 a book propping a door open 5 friends showing off their rings 6 six-pick of apples 7 Mickey Mantle batting with a carrot 8 a gate in a wheat field 9 a cat buckled up for a car ride 10 a tent stuffed with bike helmets	Scapula is the shoulder blade. Scapula sounds like spatula. Imagine a spatula scraping something off your shoulder.	A picture of a toe peeking (Topeka) out of a can (Kansas).

Organize

Association Question Matrix

Why to use	Makes it meaningful and easy to remember the information presented.					
Question	What's above, below, and alongside?	How are these things alike and different?	What's the association between structure and function?	What common categories cut across topics?	What do I know about this?	Why?
When to Use	Information is in a hierarchy or if organized sequentially then ask what is before or after.	To compare things that are alike and different. **Alike** because they are presented collectively. **Different** because they have a unique name.	In science, all things have structure and function and there is some kind of association between them.	Identify categories along which topics can be compared.	Learning depends on new information being associated with previously acquired information.	Prior knowledge associated with the information learned.
Example	**What's below?** Triangles have subtypes of equilateral, isosceles, and scalene. **What's alongside?** Other geometric shapes like squares and rectangles	Triangles are **like** squares and rectangles because they are geometric shapes. They are **different** because they have a unique name indicating that they have three sides.	Right triangles have three sides and one 90 degree angle (**structure**) and can be used as a ramp to elevate objects (**function**)	Triangles: types, angles, side length, equation for calculating area, equation for calculating angle size.	You know that rectangles are geometric shapes and can calculate the area of them. A rectangle can be divided into two triangles by making a diagonal line between two corners.	Why break a rectangle into two triangles? This will help you remember how calculate the area of the triangle because the equation is similar to the one used when calculating the area of a rectangle.

Organize

Importance of Association Matrix

	This Type of Learning Is	What Occurs	What does it lead to?
Without Associations	Ineffective	Repeated piecemeal exposure to the information Examples Include: Rereading Rehearsing Recopying notes Reciting notes word for word	Isolation of facts Material is easily confused or forgotten The information becomes arbitrary and nonmeaningful
With Associations	Effective	Materials being learned are associated to one another (internal) Ideas are associated to information outside of the material (external)	The information is no longer arbitrary or independent Easier to learn

Organize

Peg-Word Sequence
Helps Learners Remember Lists

Create visual images linking the pegs and list items

Steps

Establish 10 visual pegs in memory each with number 1 to ten. Hang information from each peg that is related to the number – rhyming is commonly used

→

Develop a list of things that you need to remember or learn.

→

Create visual images linking the pegs and list items

Example

1. Bun
2. Shoe
3. Tree
4. Door
5. Bee Hive
6. Sticks
7. Heaven
8. Date
9. Dine
10. Hen

→

Grocery List

1. Butter
2. Vegetable Oil
3. Apples
4. Peanut Butter
5. Honey
6. Soup
7. Milk
8. Flour
9. Wine
10. Eggs

→

1. Putting butter on the bun.
2. Stepping in oil with your shoe
3. An apple falling of a tree and hitting you in the head
4. A peanut knocking on the door
5. Stirring the soup with a stick
6. Bees making honey in a bee hive
7. Angels in heaven drinking milk while sitting on a cloud
8. Imagine bringing your date a sack of flour instead of flowers
9. A bottle of wine and wine glasses sitting on the dinner table.
10. A hen sitting on the eggs she just laid

Internal Associations

- Making associations is a better way to learn new information than redundant strategies because associated materials are no longer arbitrary and independent like they would be if they were learned in a piecemeal fashion.
- Memory experts use techniques like mnemonics to remember large amounts of information by associating what they want to remember with outside material.
- There are two types of associations: internal and external. They are alike in that they link presented ideas. They are different because internal associations are made within the material and external associations connect what is being learned to something outside the material.
- One way to build associations is to ask questions about the material. An example of a question that could be asked is "What's above, below, and alongside?". This question is good for materials that are organized in a hierarchy and is used for internal associations. You could arrange the association questions in a hierarchy where the other questions are alongside. The heading "Association Questions" is above and an example is below each question.
- An external association question is "What do I know about this?". This relates the information being learned to something that is already known to make it easier to remember. As you read through this chapter you may already know that Roy G. Biv is a mnemonic standing for the first letter of the colors of the rainbow, but you may not know that there are other types of mnemonics.
- Within-topic and across-topic associations are alike in that they are both representations. They are different in that within-topics are made within a single topic and across-topics are made across categories.
- External associations can be made by providing examples of the parts of a definition of a term being taught. A range of examples should be provided as well as nonexamples which will help the learner discriminate what they are learning from what they already know.
- All mnemonics can be used to make contrived associations when students lack background knowledge. They differ in how they are used.
- Students can be taught to create associations by embedding examples of them in instruction.

External Associations

Examples of associations comparing bats to birds

	Bats	Birds
Foods that both eat	Insects and fruits	
How they get around	Fly with wings	
Scientific class	Mammalia	Aves
Covered with	Hair	Feathers
Birth	Born alive	Hatched from eggs
Warm blooded	Body temperature remains the same even in differing temperatures.	

Association Question	Type of Association	Example 1	Non example	This is a non example because
What is above, below, and alongside?	External	What's above? Other things that fly like insects and airplanes.	What's below? Foods that both eat.	It is an internal association.
How are these things alike and different?	Internal	Birds and bats are alike because both get around by flying. They are different because one is covered with hair and the other with feathers.	Bats are like humans because they are both warm blooded. They are different because they are from the scientific order Chiroptera.	It is an external association.
What is the association between structure and function?	Internal	Feathers are structured so that they are light weight making it easier to fly (function).	Bats have hair.	It only describes the structure not how it functions.
What categories cut across topics?	Internal	Bats and birds both belong to a scientific class.	Dogs are in the scientific class of Mammalia like bats.	It is an external association.
What do I know about this?	External	Humans are born alive and are considered mammals. Since bats are born alive, they are also mammals.	Bats are born live and birds are hatched from eggs.	It answers the question how are these things alike and different and is an internal association.
Why?	External	Why study how bats and birds fly? So that we can learn how to make other things fly like airplanes.	Why did the chicken cross the road? To get to the other side.	This question is a joke not an association.

Questions

What do I know about this?

- It is difficult to remember a lot of seemingly unrelated information.
- There would not be memory experts unless there was a way to increase the amount of material you can learn.
- It is easier to remember something if you connect it to something else. For example, making part of a password your daughter's birthday.
- When something is internal, it is within something else. When it is external, it is outside of it.
- It is easier to remember that Select, Organize, Associate, and Regulate are learning strategies because the first letters spell out the word SOAR. SOAR is an example of a mnemonic.

Why Questions

- Why is it difficult I remember what I ate for dinner a week ago unless something out of the ordinary happened? You do not typically connect what you ate for dinner to something else because it is something that happens repeatedly. If your birthday had been a week ago, you might be able to remember what you ate because you went to your favorite restaurant and you always order the same thing when you go there. This associates the food you ate with your birthday and the restaurant.
- Why use associations? You cannot easily and accurately remember a long list of things unless there are ways of connecting the items with each other or with something you already know.
- Why can you remember that Never Eat Soggy Waffles stands for the directions North, East, South, and West, but forget whether you lived on North or South Elm Street when you were a freshman in college? You are able to remember Never Eat Soggy Waffles because it is a first letter mnemonic which is a strategy used by memory experts and teachers to connect information to be learned to something that is novel. You can't remember the address that you lived at during college because you have moved around a lot since then.

External Associations

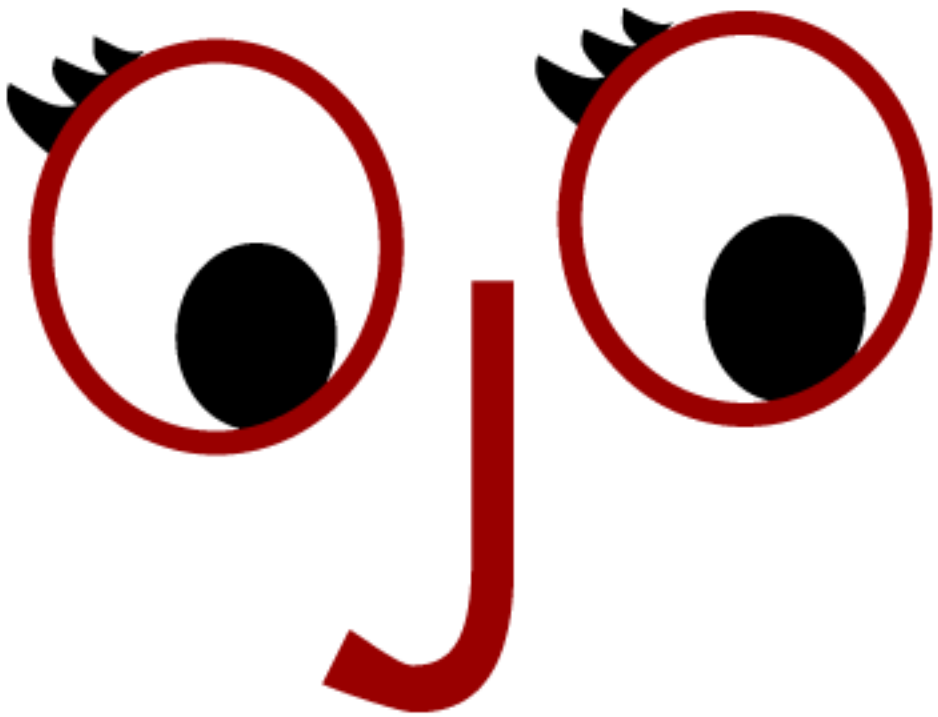
Peg-Word Mnemonics

10. A ***hen*** sitting on the ***eggs*** she just laid

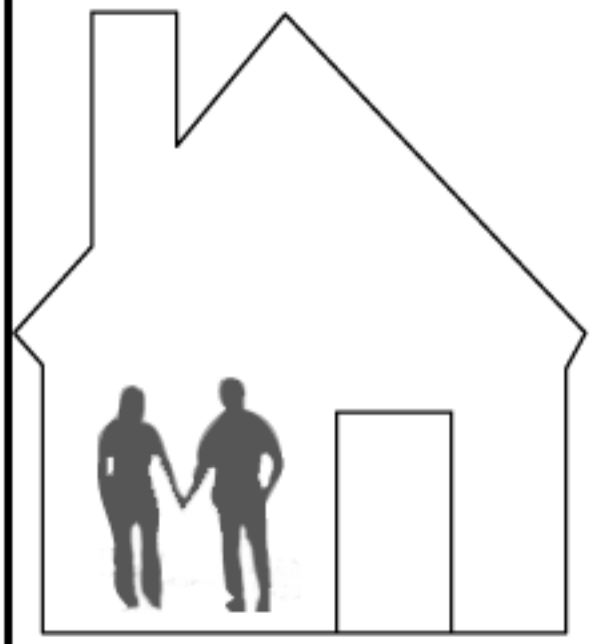
3. An ***apple*** falling of a ***tree*** and hitting you in the head

External Associations

Mnemonic Images



OJO is Spanish word for eye -
The O's look like eyes and the J is the nose between



Internal
Inside
Where you would want your current boyfriend or girlfriend

External
Outside
Where you would want your ex-boyfriend or ex-girlfriend

Regulate

1. True or False: Recopying notes is an effective way to remember things when you study.
    a. Answer: False
    b. Fact Question
2. True or False: One of the techniques that memory experts use to remember this is mnemonics.
    a. Answer: True
    b. Fact Question
3. Fill in the blank: _____ association is used to link ideas within the material presented.
    a. Answer: Internal
    b. Fact Question
4. Provide an example of an association question that could used to create an internal association.
    a. Answer: Varies. One example answer would be “What’s above, below, and alongside?”
    b. Fact Question
5. Short answer: List the five main types of Mnemonics.
    a. Answer: First letter, Narrative Chaining, Peg-word Method, Keyword Method, Mnemonomy
    b. Fact Question
6. Fill in the blank: When teaching students about association you should _____ it within instruction.
    a. Answer: Embed
    b. Fact Question
7. Blanco is the Spanish word for white. It sounds like blank. Picture a blank white-board that was just erased by a teacher. This is an example of _____ mnemonic.
    a. Answer: Keyword method
    b. Concept Question
8. Using the phrase “every good boy does fine” to remember the g-clef notes in music is an example of a _____ mnemonic.
    a. Answer: First Letter
    b. Concept Question

When provided with the following matrix on HTML (Hyper Text Markup Language) tags generate three internal and three external associations (skill question).

Tag	**Purpose**	**How to use**	**Sample code**	**What the sample code looks like on a website**
<!-- -->	Comment can be used in the head or body of a document	Has a start tag and end tag that enclose the text that you are applying the tag to	<!--Sample code -->	Is not visible unless you view the page's source
	Bolding Text		Sample code	**Sample code**
	Italicizing Text		Sample code	*Sample code*
<u>	Underling Text		<u>Sample code</u>	<u>Sample code</u>
<meta />	Defines metadata in the head of the document	Self closing includes a forward slash within the tag	<meta name="author" content=" Sample code" />	Is not visible unless you view the page's source
 	Line Break		Sample Code	Sample code
<hr />	Horizontal Rule		Sample <hr /> Code	Sample code

Answers: Vary, but all should include three internal and three external associations using concepts learned in the chapter. What follows are example answers.

Internal Associations

1. All HTML tags are contained within angle brackets. They are different in that some are self closing containing a forward slash within a tag and not having an end tag.
2. Some HTML tags apply formatting to text. Others can be used to break-up text.
3. Comment tags and meta tags are similar in that both invisible unless you view the page's source. They are different in that meta tags appear only in the head of the document and comments can be used in both the head and the body of the document.

External Associations

1. Use a mnemonic to picture a **strong** man holding up the word **BOLD** to remember that it is the tag used to make text **bold**.

2. You are familiar with applying formatting like bold and underlining to text in a word processor. You can do the same things in a web browser by using HTML tags.
3. Use narrative chaining to remember what the letters in HTML stand for. The **hyper** boy **text**ed his friend **Mark** in another **language**.

Beth Wagoner
Assignment 4

Introduction

This is a lesson on the difference between RAM, hard disk size, and processing speed. It is intended for computer novices who are taking a workshop on how to buy a computer at a community college and is only a portion of the workshop. It is likely that the participants in the workshop will be older adults who are intimidated by technology. The goals of this lesson will be:

- Participants will be able to define RAM, hard disk, and CPU.
- Participants will be able to distinguish the differences between RAM, hard disk, and CPU.
- Participants will be able to pick the best computer when given the specifications for three of them.

Objectives

1. Upon request (condition), students will define RAM, hard disk, and CPU (behavior) without error (standard).
   *Fact

2. Given a list of three characteristics (condition), students will identify whether the characteristics describe RAM, hard disk size, or CPU (behavior) without error (standard).
   *Fact

3. Given the specifications for three computers (condition), students will explain why one computer is more expensive than other (behavior) with 90% accuracy (standard).
   *Skill

Motivation

Desire to learn is an important component of motivation. Without desire, it is difficult to get students to learn material especially if it is difficult or if they feel what they are learning is irrelevant to them. There are two sources of desire: internal and external. Internal is also referred to as intrinsic motivation and external as extrinsic motivation. An individual has intrinsic motivation if they like what they are doing. It comes from within. Extrinsic motivation comes from outside awards.

It is likely that students in this workshop already have some desire to learn more about computers. They paid money to attend and have taken time out their lives devoted to learning more. They may have seen that others enjoy working on computers and as a result want to learn more about them themselves. It is possible that they are embarrassed about their lack of computer knowledge and feel intimidated by going to purchase a computer from a pushy salesman. For those who do not have much internal desire, there are four ways of increasing it: consciousness-raising, emotional arousal, modeling, and mastery orientation.

Consciousness-raising is used by providing knowledge about the topic being learned. That knowledge drives people to want to learn more and causes people to take action to do so. For the people in this workshop, it will be helpful to tell them what computers can do and why they might want to purchase one. They will need to know what specifications the computer they are buying should have to do the things that they want to do with it. If someone only wants to send email and surf the web, they might not need as much processing power and hard drive space as someone who wants to do digital photography.

Emotional arousal inspires you to want to do something. It gets you to do things because the actions touch your heart. Both verbal and visual stories can get you to something. In the case of the students in class, they can be told that computers have allowed people to communicate with a loved one who is fighting overseas in Iraq. As well as describing how you can tell your story through words and pictures leaving behind a legacy for your grandchildren. Anything related to a computer that ignites that spark of desire would be useful to share with workshop participants.

Models are an important source of motivation for students. Seeing someone who is like them and successful at what they do gives them the confidence they need to think that they can do it themselves. Having someone speak to workshop participants about how computers have made them successful would be helpful especially someone who is a peer. Mentioning people who have reached the epitome of a career in computers like Bill Gates and Steve Jobs would make them realize that the sky is the limit.

The final thing that can be done to create internal desire is to teach students how to master the materials. This should be their goal rather than things that are external like money and fame. It can done by making sure the workshop is enjoyable and allowing the participants to

work together to solve problems. If someone who is participating in the workshop falls behind, encouraging them and telling them that a neighbor can help them will get them back on track.

Next we will discuss outside desire. It is used when people do not have much internal motivation to do something especially if they do not enjoy what they are doing. External rewards that are tangible are especially helpful. In the case of this workshop, I think that after I have tested student's knowledge about computers, I could enter their names in a drawing to win a key drive or digital camera.

To end the workshop, I will help student set goals that are short-term and long-term. This is important regardless of where their desire comes from. I will encourage them to create goals that are just challenging enough and to make them public by sharing them with a friend or family member. A potential short-term could to be to spend time on the Internet researching the computer that they want to buy. A long-term goal could be using their new computer to create a video with pictures and music that tells their family story. Students should now have all the information that they need to motivate them to learn about computers. Hopefully, this will build their confidence and help accomplish the goals that they set at the conclusion of the instruction.

Behavior Management

Now that the students have the motivation to succeed, behavior management should be considered so that discipline problems will be less of an issue. I will be discussing two behavior management strategies: preventive and control. Preventive strategies stop behavior problems before they start. Control strategies are put in place after the misbehaviors occur to decrease and ideally stop them.

Preventive strategies

The first preventive strategy that I will discuss is arranging the environment for success. Ideally the classroom will be arranged in such a way that distractions are limited. If it is not, one of the things that I can do is have the students move closer to the instruction. As the students enter the workshop, I will have them fill in the front seats first to make sure that they are not sitting towards the back of the room. This is typically what happens in a workshop setting if students are left to their own devises. Having them close to me will help me monitor what is happening in the room and make sure that they are learning the material that I am presenting. I will make sure that the temperature is comfortable and will close the classroom door after the workshop starts. If there are windows in the room, I will close the blinds. I will make sure that the students leave there personal items at the back of the room when they come in and that the computers in the room are turned off until they are needed for instruction. This should minimize environmental distractions and promote learning.

Next I will establish rules and routines for the classroom. I will ask the students to behave in such a way that they get the most possible out of the workshop. After all, they paid for it and I want them to get their money's worth. I will give them clear instructions so that they stay on task. I will tell them that they should listen attentively and take complete notes on the materials that I am presenting. Before instruction starts, I will tell them when we will be taking breaks so that they won't disrupt the room when they leave to go to the bathroom at an undesignated time. I will make sure that they know that I am doing this for their benefit. The test in this course will not be graded, but I will still give them some guidelines. I will ask that they put away their notes and do not ask their neighbor for assistance as I am passing out the tests. Hopefully, they will stick with these rules and routines so that they learn what they hoped to during this workshop.

I will also try to decrease bad behaviors by being "with-it" and smooth. I will work at knowing what is going on in the room and try to catch problems before they start. Ideally the students will come to think that I have eyes on the back of my head and that they can't get away with any misbehavior. To be smooth, I will set a good pace for the workshop. I will keep the group focused and will overlap when necessary. I will keep the pace moving but not so fast that the students feel lost or that they can't keep up with note taking. I will insure that all students have returned from breaks before I restart the workshop. I will ask questions randomly to keep

students engaged and to make sure that they are paying close attention. Finally as students work on their own, I will move about the room encouraging and helping them when necessary.

Control strategies

After anticipating problems before they start using preventive strategies, I will need to have a system in place to deal with problems when they occur. There are four control strategies that I can use: reinforcement, punishment, extinction, and time-out. I will discuss each one.

There are two types of reinforcement: positive and negative. The goal of both is to strengthen desirable behaviors. The difference between the two is how that is accomplished. In positive reinforcement, something is presented following the behavior, a good grade for example. Negative reinforcement takes away the stimulus and negative consequences are avoided. My preference will to use positive reinforcement. I will praise students when they answer questions correctly. I will also setup a token economy in which the students will get tokens that are chances to win a prize at the end of the workshop when they perform well.

Next I will look at punishment. Punishment typically has negative connotations. After punishment takes place a decrease in behaviors occurs following the presentation of a stimulus. In the case of my workshop, I will take the tokens that I mentioned away if a student is off task or disruptive. If they perform poorly on their test, I will remove even more. Hopefully, these punishments will be intense enough to result in a decrease of inappropriate behaviors.

Extinction results when reinforcement is withheld leading to a decrease in a reinforced behavior. In this context, I will use extinction by not helping students who interrupt the class with questions or who get behind. I will make sure that their classmates do the same so the reinforcement source is controlled.

The final control strategy that I will address is time-out. Time-outs work by removing access to reinforcement. I do not think that I will use time-outs when teaching this workshop. The participants will be adults and I do not think it will be effective for them.

Select

Students now have the motivation to succeed and an environment that is structured in such a way that allows them to do so. Next we will consider the "S" in the SOAR model which stands for Select. I will help students select both through how I teach and the material that I give them before the workshop. I will start by handing out skeletal notes. Then I will grab their attention with novel stimuli in the PowerPoint that I use to present the information that they are learning. I will put the terms that I am defining in a different **color** and in ***italics*** so that they know that they should take note of them. I will also vary my voice emphasizing the important terms by speaking more loudly and pausing at appropriate times. I will provide lesson cues by using the word definition when I am defining one of the terms that they are learning. Finally at the end of the lesson, I will give them complete notes that they can take with them to refer back to.

Here are the skeletal notes that I will provide:

RAM

- Stands for:
- Pronounced like:
- Defined as:
- Information is:
- Comparable to:
- Measured in:

Hard disk drive

- Abbreviated as:
- Defined as:
- Information is:
- Comparable to:
- Measured in:

CPU

- Stands for:
- Defined as:
- Comparable to:
- Measured in:

These are the complete notes that will be provided after the workshop:

RAM

- Stands for **R**andom **A**ccess **M**emory
- Pronounced like the word ram which is used to describe male sheep
- Defined as temporary storage that is used for running programs and is accessed randomly
- Information in RAM is lost if the power goes out
- Comparable to short-term memory
- Measured in Gigabytes (GB)

Hard disk drive

- Abbreviated as HDD
- Defined as the place where your computer's data is stored
- Information is stored magnetically so it is not lost when the power goes out
- Comparable to long-term memory
- Measured in Gigabytes (GB) or Terabytes (TB)

CPU

- Stands for **C**entral **P**rocessing **U**nit and is also referred to as the processor
- Defined as the portion of the computer that carries out the computer's instructions and functions
- Comparable to the brain
- Measured in Gigahertz (GHz)

Organize

The letter after the "S" in SOAR is "O". It stands for Organize. After selection, instructional materials should be organized in such a way that learning is facilitated. Organization can be accomplished by using patterns that signify relationship. These patterns are called the representational system and there are four of them: hierarchy, sequence, matrix, and illustration. The material in this workshop lends itself towards using the matrix and hierarchy representations. In the matrix, information will be arranged in columns and rows allowing the learner to compare the terms and see the relationships between them. In the hierarchy, the information will be arranged in a top to bottom format highlighting the superordinate and subordinate relationships between the information being taught.

Strategy Instruction

I am going to teach the strategy of organization to the students in my workshop using the complete notes that I provided in the selection section and the computer term matrix that follows. I will start the discussion like this. *I have given you complete notes that you can refer to after class. As we go through these notes, I would like to explain to you how you can organize them so that you can see the relationships between them better. This strategy works well any time that you are comparing things with multiple shared characteristics. It can be used any time that you are comparing two or more things. (Introducing and generalizing the strategy)*

As you look at your notes, you will see that there are three terms. You may think that the best way to learn them is to repeat the terms and their characteristics over and over. This might work for the test but what about down the road? Does doing this allow you to see the relationships between them and to remember them in the future? Probably not. In general, memorization is a bad strategy for long term retention. Memorizing can also lead you to confuse the terms because of the similarities between them. (Sell the strategy)

If you study the terms and their characteristics, you will find that there are commonalities between them. First of all they are all specifications for computers. Notice that each of them either is an abbreviation or has one. As you move down the list you will also see that each of them has a definition and can be compared to a different part of the brain. Finally, they are all measured in some way.

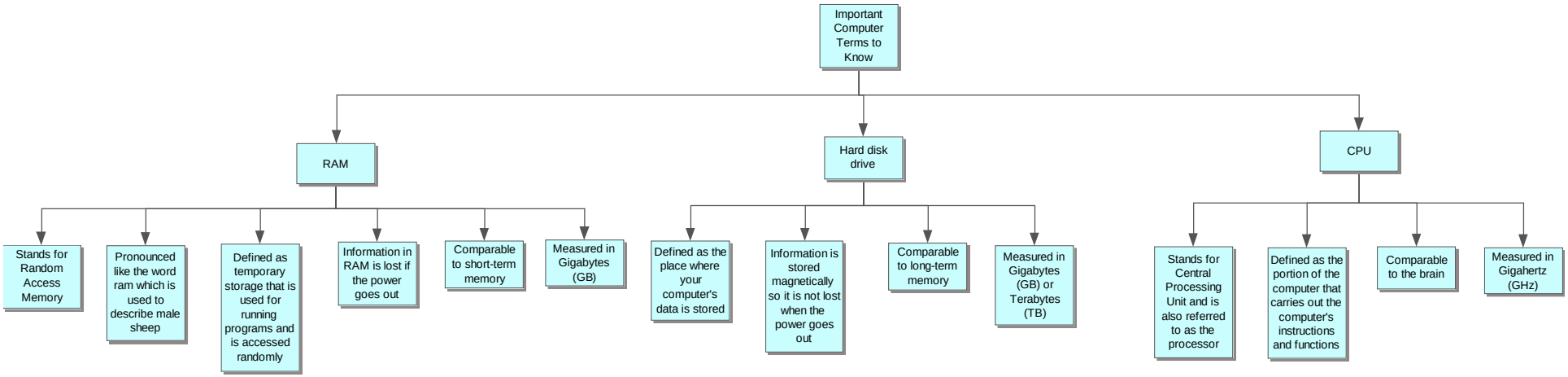
A good way to see the relationships between and to compare these terms is to setup a matrix. Watch as I setup a matrix for them on the board. To construct it, I will start by listing the terms on the left side. Each term will be placed on its own line. Then across the top I will list the categories that cut across the three topics that I mentioned earlier: what it stands for, its definition, what it can be compared to and how it is measured. I will complete the matrix by drawing lines between the rows and columns. In the cells that I create, I will place the characteristic for that term that falls into the category at the top. I am going to give you a

handout of the matrix that I have created on the board so that you can refer back to it whenever you need to.

Now you can see at a glance the relationship between the three terms that I have taught you. You can do this any time you are comparing things. Later when we look at monitors you can do the same thing and practice this strategy on your own. You will begin to see that there are lots of circumstances in which a matrix is an effective way of organizing material. (Perfect and generalize the strategy).

Computer Term Matrix

Term	Stands for	Definition	Comparable to	Measured in
RAM	Random Access Memory	Temporary storage that is used for running programs and is accessed randomly	Short-term memory	Measured in Gigabytes (GB)
HDD	Hard Disk Drive	The place where your computer's data is stored	Long-term memory	Measured in Gigabytes (GB) or Terabytes (TB)
CPU	Central Processing Unit and is also referred to as the processor	The portion of the computer that carries out the computer's instructions and functions	The brain	Gigahertz (GHz)



Associate

The computer terms in this lesson have now been selected and organized. Next I will show how the terms can be associated which is the "A" in SOAR. There are two types of association: internal and external. Internal associations are made within the material. External associations are used to connect the materials with information that students already know and are outside the information being learned. I will show examples of both.

Internal

- RAM and the hard disk drive are alike in that they are both types of memory. They are different in that the contents of the hard disk are not lost when the power goes out.
- The capacity of both the hard disk drive and RAM can be measured in bytes, but the hard disk drive is usually much larger than the amount of RAM.
- The CPU and RAM are both parts of a computer. One of the differences between them is that processor is measured in Gigahertz and the RAM in Gigabytes.
- Each time a new computer comes out the amounts of RAM, hard disk space, and processor speed increase.
- The common categories that CPU, RAM, and hard disk drive share are their definitions, that there are abbreviations for each, that they are comparable to parts of the brain, and that they are measured.
- The more RAM, CPU speed, and hard disk space a computer has the faster and more powerful it is. It also increases the cost of the computer.

External

- You know that you have memories and that you forget some things from time to time. You are more likely to remember something if it is stored in your long term memory like when you store something on your hard drive.
- Think of a ram hitting its head on a computer that is unplugged and saying "What did I forget this time?" to remember that RAM is a type of memory that is lost when the power goes out.
- Your brain is the command center for your body. It carries out the functions you need to live. The CPU is similar in that it carries out the functions of the computer.
- Giga sounds like biga. Use this to remember that the biga and better your hard drive is the more information you can store on it.
- It hurts when you hit your head. Hurts sounds like hertz. Use this to remember that the CPU's speed is measured in hertz.
- To remember the three computer terms think of the following phrase: the **CPU ram**med into the next car **hard** when it was **driving** down the street.

Examples comparing the specifications of three computers

	Example 1	Example 2	Example 3	Non-Example
RAM	32 Gigabyte	4 Gigabyte	8 Gigabyte	32 Gigagoogle
Hard Disk Drive	8 Terabyte	500 Gigabyte	500 Gigabyte	10 Megabyte
CPU	3.33 GHz	2.66 GHz	2.66 GHz	2.66 Megahurtz
This computer is	Best	Good	Better	Fictional
Why?	It has the most RAM, hard drive space, and fastest processor.	It has the least RAM.	It has more RAM than the good computer.	It doesn't have a very big hard drive and the measurements for the other terms are made up.

RAM Mnemonic

Regulate

The final component of the SOAR model that we will look at is the "R" which stands for Regulate. Regulation involves assessing student learning. It should be done throughout the learning process. It is best if regulation occurs before, during, and after instruction. Before instruction teachers should tell students what is expected of them. This can be done by providing objectives, grading rubrics, and timelines. In the case of this workshop, I will provide the students with the three objectives that I listed earlier which each contain the three parts of an objective: conditions, standards, and behaviors. During instruction, I will give students practice test questions so that they can know what to expect when they are assessed. These questions will be similar but not the same as those that will appear on the test. There are three types of test questions that I can provide them with: fact, concept, and skill. After instruction, I will give the students the opportunity to review their tests and will take time to explain each answer during the workshop so that they can make note of why they missed some questions.

These questions will be presented in random order:

1. Q: Define RAM.
   A: Temporary storage that is used for running programs and is accessed randomly.
   Skill question
   Objective #1
2. Q: Define hard disk drive.
   A: The place where your computer's data is stored.
   Skill question
   Objective #1
3. Q: Define CPU
   A: The portion of the computer that carries out the computer's instructions and functions.
   Skill question
   Objective #1
4. Q: Identify the computer component that is described by the following three characteristics:
   - Measured in Gigabytes (GB)
   - Pronounced like the word ram which is used to describe male sheep
   - Comparable to short-term memory

   A: RAM
   Fact question
   Objective #2

5. Q: Identify the computer component that is described by the following three characteristics:
   - Defined as the place where your computer's data is stored

- Measured in Gigabytes (GB) or Terabytes (TB)
- Information is stored magnetically so it is not lost when the power goes out

A: Hard drive
Fact question
Objective #2

6. Q: Identify the computer component that is described by the following three characteristics:
    - Defined as the portion of the computer that carries out the computer's instructions and functions
    - Measured in Gigahertz (GHz)
    - Comparable to the brain

    A: CPU
    Fact question
    Objective #2

7. Q: Which computer will be the most expensive and why?

	Computer 1	Computer 2	Computer 3
RAM	8 Gigabyte	4 Gigabyte	8 Gigabyte
Hard Disk Drive	2 Terabyte	500 Gigabyte	500 Gigabyte
CPU	2.66 GHz	2.66 GHz	2.66 GHz

A: Computer 1 because it has a larger hard drive than computer 3 and more RAM and hard disk space than computer 2.
Skill question
Objective #3

Learning Principle from the *Art of Learning*

The learning principle from the *Art of Learning* that I will incorporate is from Chapter 3 titled “Two Approaches to Learning”. In chapter 3 Waitzkin discusses entity and learning theorists. Entity theorists believe that intelligence is a fixed and cannot evolve. Students in this workshop who think like entity theorists may say things like “I am too old to learn about computers” or “I will never figure this out. The salesman at the store will take advantage of my lack of knowledge”. My hope is that I can change their thinking into that of a learning theorist. I will tell them that if they work hard they will successfully learn the material and that anyone at any age can learn. I will make sure that they know that hard work pays off, and although it may take time, they will learn the information that I am teaching. I will also try to make sure that they know that this mastery oriented approach can apply to any situation where they are faced with difficult material. I want them to know that they can learn anything they set their mind to if they do their best and put effort into learning it. With the right instruction and encouragement, the thinking of the entity theorists can evolve.