I. Diffusion

The Basics of Diffusion

STANDARD:
Interactions between people lead to different types of diffusion.

Innovation and social learning are essential elements to the success of the human species. Humans are a fairly pathetic collection of creatures - slowly running on just two legs, weak muscles, fragile jaws, pitiful nails, poor eye sight, and a minuscule sense of smell. Humanity's success has come from its ability to invent, share these inventions, and then innovate in future generations. Inventors create new concepts, tools, or technology including designs, words, musical beats, poems, buildings, and games. Innovators improve upon inventions by refining and pushing existing technologies to new levels. Receivers are the people who learn the new idea or use the newly invented tool. As receivers share their new knowledge with others, it begins to diffuse - or spread - away from the hearth (an invention's place of origin) to other people and places. The phenomenon begins at Point A (the hearth) before diffusing (moving/spreading) to Point B. Diffusion can be analyzed on a local level using person-to-person or group-to-group interactions. For example: Malik diffused news of his graduation to Aaliyah when they met at the coffee shop. Diffusion can also be analyzed on a regional-to-global scale, analyzing the activity of specific groups of people, cities, or countries. For example, the Han Chinese population diffused to East Africa during the early 2000s, or the internet was developed in the USA before companies diffused the technology throughout Europe, Asia, and the rest of the world.

Networks and technology have a drastic impact on diffusion. Without the assistance of technology, diffusion is limited to face-to-face interactions, and if a person needs to share a message or exchange goods, they have to walk. The further the distance between groups of people, the greater the friction of distance (time, effort, money). As a result, diffusion without technology is extremely slow, as people rarely traveling far from their hearth. This degradation of knowledge sharing over long distances is known as distance decay. As humans developed technology, time-space compression began to improve, improving the diffusion of ideas and goods over greater and greater areas. Seemingly simple technological innovations, from riding animals to developing networks of roads, drastically reduced the friction of distance between urbanized settlements. With industrialized technology, there is minimal friction of distance when diffusing people and goods globally.

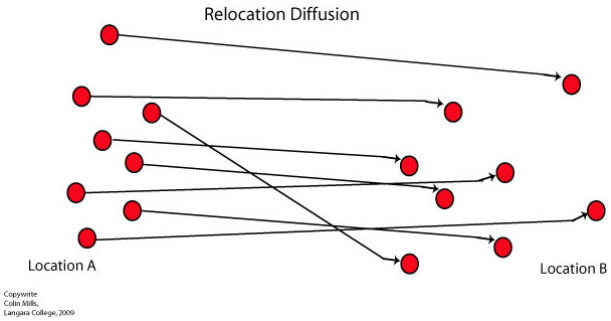
In modern times, advancements in communication technology allow people to spread *ideas* instantaneously across vast distances, removing all distance decay. Train lines, highways, sea ports, and airports create a web along which millions of *people* speed along. As a result, ideas and people can more efficiently diffuse around the world than ever before. For example: A Beyonce video uploaded in New York City can be viewed by tens of millions of people in Tokyo, Singapore, Sidney, Paris and Rio within seconds of being posted. A person can shop online and receive packages with goods from 10 thousand miles away at their door the next day. Communication and transportation networks allow for diffusion at a speed previously unfathomable…. *as long as the person is connected to the network of wires and roads*.

APPLICATION #1: Compare these two pictures. Describe how the ability to diffuse information & goods would be different for these families.

TYPES OF DIFFUSION

#1 Relocation Diffusion

Relocation diffusion is when a person moves from one location to another, taking their goods and ideas with them, entering a new space without changing the number of people who have experienced the phenomenon. For example: Jada migrated (moved) from New York to Los Angeles. In New York, Jada says the word "Brick" to talk about how cold it is outside (for example: "I'm staying in tonight, it's brick out there!"). As Jada arrives in LA, all of Jada's possessions, ideas and language have travelled with her. This is an example of relocation diffusion because the trends and goods have travelled with Jada to a new space, but have not spread (yet) to anyone new. Migration and colonization are classic examples of relocation diffusion. The Europeans migrated (moved) from Europe to other locations around the world, taking their European ideas, languages, and possessions with them.

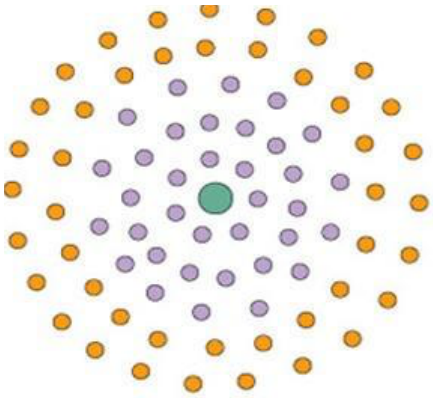


#2 Expansion Diffusion

Expansion diffusion spreads ideas and goods from one place to another AND increases the number of people who use the innovation. For example: Jada had relocated in our last example from New York City to Los Angeles and starts attending a new school and begins to make friends. While talking with her friends, Jada's friend tries to take her chips at lunch. Jada snatches the chips away and says, "Fuhgedaboudit." Her friend turned and said, "Bro! That word is DANK!." Soon, all of her friends look at each other and yell "Fuhgedaboudit." What started as a word only used by Jada has now diffused (spread) AND expanded (increased in number).

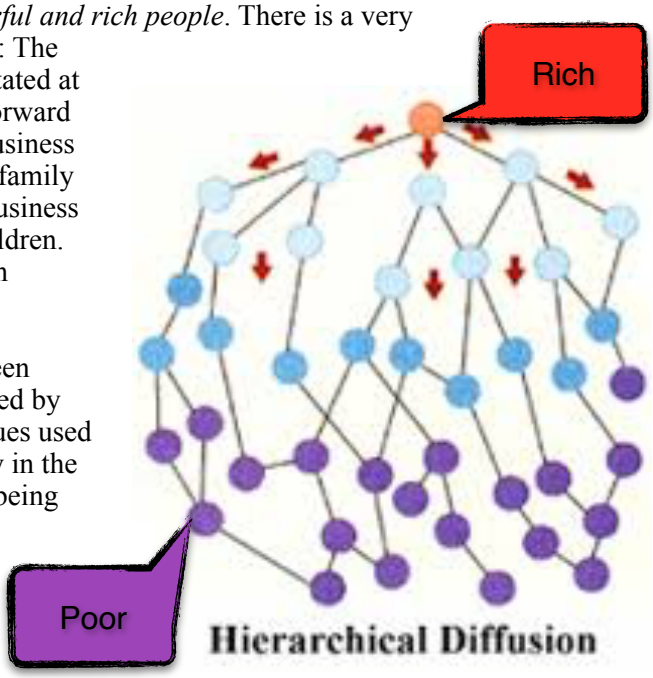
There are four different types of expansion diffusion used to explain HOW phenomena spread to other locations AND how they increase the number of people affected:

A. **Contagious Diffusion.** Contagious diffusion spreads from one person to other people through personal contact. Like the example above with Jada, the diffusion started when one person was affected by and then adopted the phenomenon. That person introduced the phenomenon to their friends and acquaintances, and then their friends and acquaintances adopted the new trend and began to introduce it to THEIR friends and acquaintances. This is similar to how a disease spreads from person to person or how popular words diffuse through a population. With the time-space compression of the internet, people are able to network through social media and diffuse phenomena instantly. Anyone connected overcomes the friction of distance and distance decay. As a result, technology allows trends, memes, vines, or cat videos to spread "virally" around the world through contagious diffusion. Businesses have begun to create whole marketing campaigns to sell their products by giving away "free samples" to people and offering rewards if the person posts their review of the product on social media. This spreads publicity of the product "contagiously" through social networks and helps businesses to make a profit while minimizing money spent on advertising.

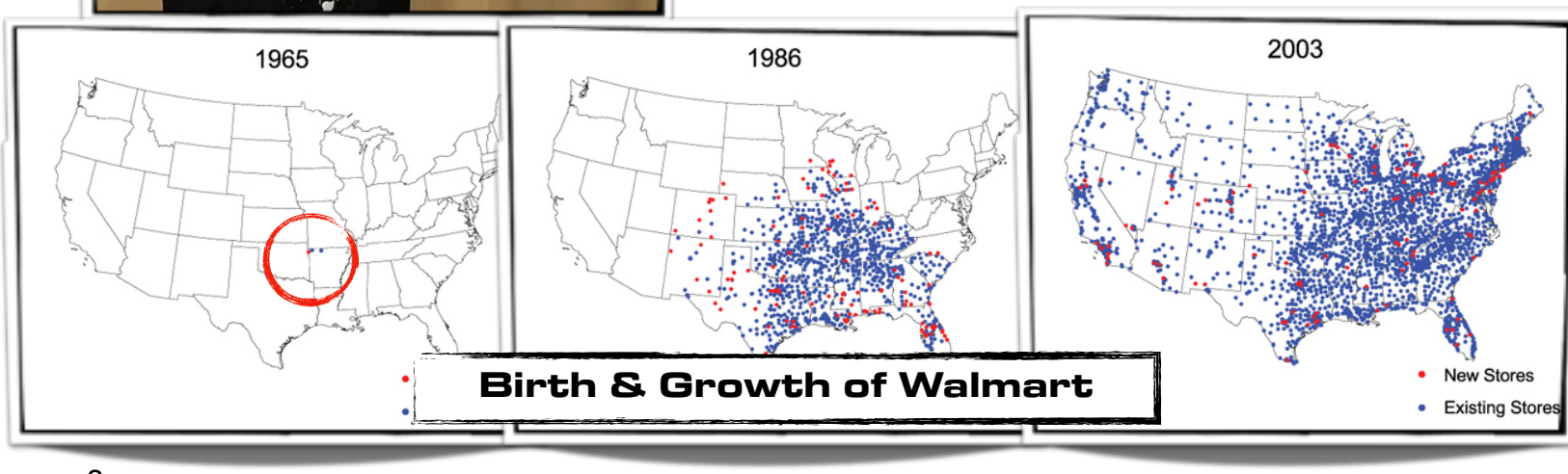


B. **Hierarchal Diffusion.** Hierarchal diffusion also spreads ideas or trends from its hearth to other people, *but the trend originates at the top of the social ladder with powerful and rich people*. There is a very clear class/power structure within hierarchal diffusion. Examples: The dress worn by Beyonce at the Grammy Awards being sold or imitated at Target and Walmart for everyday people to purchase. Ideas put forward by the President being discussed around a family dinner table. Business models and marketing trends used by Starbucks being copied by family owned stores. iPhones were first used by the rich and powerful business men and celebrities, but are now in the hands of many school children. Facebook started off as a tool used on Harvard's campus, but then quickly spread and expanded to other colleges around the world.

Hierarchal Diffusion also works when discussing diffusion between locations. Ideas that originate in rich and powerful cities are copied by smaller cites, towns, and villages. For example: Policing techniques used in New York City (the most populated, wealthy and powerful city in the USA) are copied by medium sized cities across America, before being diffused to smaller towns and rural communities. Financial policies used in the USA and England are copied by financially weaker nations in Central America.



C. **Reverse Hierarchal.** Reverse hierarchal diffusion refers to the spread of trends and ideas that start at the BOTTOM of the social ladder and work their way up. For example: Rap and Hip Hop music started in the impoverished ethnic communities of New York City, but the music gained popularity until the middle and upper class citizens were listening. In the late 2000's President Obama referenced rap music lyrics in a presidential speech. A trend/phenomena started in the impoverished streets, but spread its way up through the President of the USA - one of the most powerful political figures in the world #POTUS. Another example is Walmart. Walmart started as a small family store in Arkansas. As the store's business model gained popularity, Walmart began to expand to the cities within the region. Now, Walmarts are ubiquitous and can be found in every major urban center in over 10 countries.

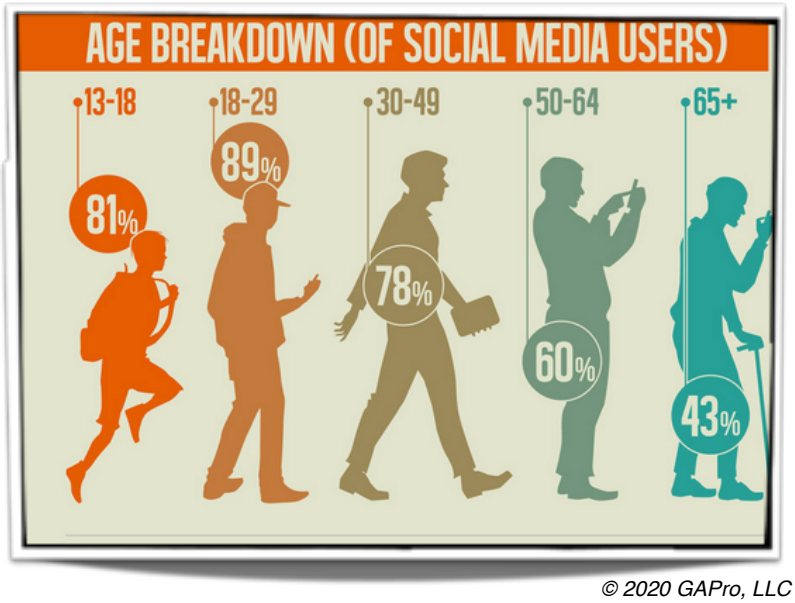


D. **Stimulus Diffusion**. The final type of expansion diffusion, stimulus diffusion, spreads PART of an idea or piece of technology to be used in a new or different way. Examples: McDonalds invented the concept of fast food restaraunts with a drive through, but banks copied ONLY the drive through part of idea, adding JUST the ability to be serviced without getting out of the car. Banks did not imitate Ronald McDonald, happy meal toys, or the burger cooking machines (although they do allow people to be fried and cooked by interest rates…

Barriers to Diffusion

Even with advanced modern technology, there are still barriers that keep ideas/people/goods from diffusing.

- **Physical & Distance Barriers.** Physical features and distance can stand between innovators and potential receivers, and were especially impactful during the pre-industrial eras. Mountain ranges, deserts, and distant islands can create separation between groups of people, causing them to become isolated. When people are isolated, they are left to create their own unique culture, food, and methods of production using the natural environment around them. The flow of goods and culture from the rest of the networked world does not easily reach these isolated individuals, nor do their culture or resources become shared beyond their local site. For example, in the Amazon there are over 100 isolated, uncontacted tribes living their unique lifestyle "off the grid" using the natural environment to survive. These cultures do not know that China or the USA exist, have never used electricity, have never heard of Beyoncé or Michael Jackson, and think that Star Wars would be a religious fight between their gods. This is because the Amazon Rainforest is a physical barrier that has disconnected these groups from the global network of goods, people and ideas.



•**Age/Generation Barriers.** Older generations can become set in their ways and resistant to the spread of new ideas and technologies. This generation gap can limit the spread and success of new innovations, especially when the older generation are in positions of political, economic, or social authority. For example, a family has owned and run a grocery store for decades. The grandfather who owns the store has been using carbon paper for receipts and a notebook to keep track of their accounts since he was a young man. When a young saleswoman offers to install a wireless internet service along with a new laptop, the grandfather declines stating, "If it isn't broken, don't fix it." In this example, the generation gap served as a barrier to diffusion technology.

- **Language Barrier.** There are over 7,000 languages in the world. When an innovation is in a different language, Dies wird zu einer Barriere für die diffusion (هذا يصبح حاجزًا أمام الانتشار , Это становится препятствием для диффузии, 这成为扩散的障碍)

- **Economic/Development Barriers.** When a place is less developed, the society will lack access to the technology and infrastructure needed to participate in the global network or to make use of new innovations. The new iPhone is an exciting piece of technology… that is unaffordable to the family in Chad making less than $1 per day or to the tribe in Papua New Guinea who does not have access to electricity.

- **Government Barriers.** Governments can control the flow of goods, ideas and people into and out of their country. China has placed strict regulations on the internet, forbidding large amounts of content from ever reaching its citizens #GreatFireWallofChina. This includes any movies, books, or imagery related to Winnie the Pooh. In India, there is a wall built along the border of Bangladesh to serve as a physical barrier to (attempt) to stop the flow of migrants into India. The USA imposed trade regulations on Iran, forbidding the flow of goods, services, and wealth from the USA to Iran. These government actions were put into place to serve as a barrier to restrict (or eliminate) the diffusion and flow of various goods into and out of a country.

•**Cultural & Ethnic Barriers.** Some cultures and ethnicities greatly value their separateness and uniqueness. Their culture knowingly blocks the diffusion of ideas and goods from entering their society, and rejects "new innovations" to preserve the old way of life. The Amish culture in America refuses to use electricity or any machinery, still making their clothes and buildings by hand using home-grown products. Saudi Arabia still places heavy restrictions on women; only in 2018 were Saudi women allowed to drive a car.

CONCLUSION

The concepts surrounding space are critical to Human Geography and are the foundation of human existence. Thus, the concepts of how objects are distributed, displayed, organized, analyzed, and diffused through space will be essential components within each unit of Human Geography. Think of them as tools to be used to better understand and explain each aspect of humanity that will be analyzed in future units.

Skill Builder: Timed Management
How long did it take for you to read & take notes this chapter? Take the amount of time and divide it by the number of total pages (Time/Total # Pages). This will tell you your average time per page. Use this as a guide for planning and budgeting how much time you will need in future units for readings to get them accomplished.

Brainstorm in your notebook what you felt went well during this unit.
What did you struggle with?
What do you need to improve upon?

STOP Close your eyes and recall the headings, main ideas, etc from memory.

SUPPLEMENT

About Standards

Every navigator uses a map to guide their journey. In education, that journey is defined by the Course Standards. For AP Human Geography, the College Board defines the standards required to be learned in preparation for the AP Human Geography exam. If a concept is expressed in the standards, it is liable to be tested on both unit exams as well as the AP Exam.

Standards are most useful to students as a review and reflection. It is good to go through and look at the words/terms/phrases and create a list of terms and ideas you do not know or feel comfortable with. Then go back to the section(s) that relate to each standard and re-read your notes and/or the text. If extra support is needed, ask the teacher for assistance or research further at the library or with YouTube/Google.

	Objective	Knowledge
	Geographers use maps and data to depict relationships of time, space, and scale.	
1.1 Intro to Maps Ch 1b	Identify types of maps, the types of information presented in maps, and different kinds of spatial patterns and relationships portrayed in maps.	Types of maps include reference maps and thematic maps.
		Types of spatial patterns represented on maps include absolute and relative distance and direction, clustering, dispersal, and elevation.
		All maps are selective in information; map projections inevitably distort spatial relationships in shape, area, distance, and direction.
1.2 Geographic Data Ch 1b	Identify different methods of geographic data collection.	Data may be gathered in the field by organizations or by individuals.
		Geospatial technologies include geographic information systems (GIS), satellite navigation systems, remote sensing, and online mapping and visualization.
		Spatial information can come from written accounts in the form of field observations, media reports, travel narratives, policy documents, personal interviews, landscape analysis, and photographic interpretation.
1.3 Power of Geo Data Ch 1b	Explain the geographical effects of decisions made using geographical information.	Geospatial and geographical data, including census data and satellite imagery, are used at all scales for personal, business and organizational, and governmental decision-making purposes.
	Geographers analyze relationships among and between places to reveal important spatial patterns.	

	Objective	Knowledge
1.4 Spatial Concepts Ch 1a	Define major geographic concepts that illustrate spatial relationships.	Spatial concepts include absolute and relative location, space, place, flows, distance decay, time-space compression, and pattern.
1.5 Human-Environmental Interaction Ch 1a	Explain how major geographic concepts illustrate spatial relationships	Concepts of nature and society include sustainability, natural resources, and land use.
		Theories regarding the interaction of the natural environment with human societies have evolved from environmental determinism to possibilism.
1.6 Scales of Analysis Ch 1a	Define scales of analysis used by geographers.	Scales of analysis include global, regional, national, and local.
	Explain what scales of analysis reveal.	Patterns and processes at different scales reveal variations in, and different interpretations of, data.
	Geographers analyze complex issues and relationships with a distinctively spatial perspective.	
1.7 Regional Analysis Ch 1c	Describe different ways that geographers define regions.	Regions are defined on the basis of one or more unifying characteristics or on patterns of activity.
		Types of regions include formal, functional, and perceptual/vernacular.
		Regional boundaries are transitional and often contested and overlapping.
		Geographers apply regional analysis at local, national, and global scales.
	The interaction of people contributes to the spread of cultural practices.	
3.4 Types of Diffusion Ch 1d	Define the types of diffusion.	Relocation and expansion—including contagious, hierarchical, and stimulus expansion—are types of diffusion.

Skill Builder: How to Study

Congratulations on completing the first major group of readings for the course! Now it is time to transition to preparing for the Unit 1 Exam. This exam will contain some vocabulary, however, the bulk of the exam consists of examples requiring you to apply course knowledge to a scenario to determine the correct answer. The following are the recommended steps for studying in a way that works with your brain.

Pay attention to how much time it takes to truly "master" the information and which tool(s) work best with your brain. Learn how you *learn best to revolutionize your academic future.*

Refresher on Studying. Use this to guide to determine how much time to dedicate to preparing for future unit tests:

1) ***Fill out the Content Matrix.*** If the information is listed on the Content Matrix, it will be on the exam. Make sure to put definitions and examples, where applicable.

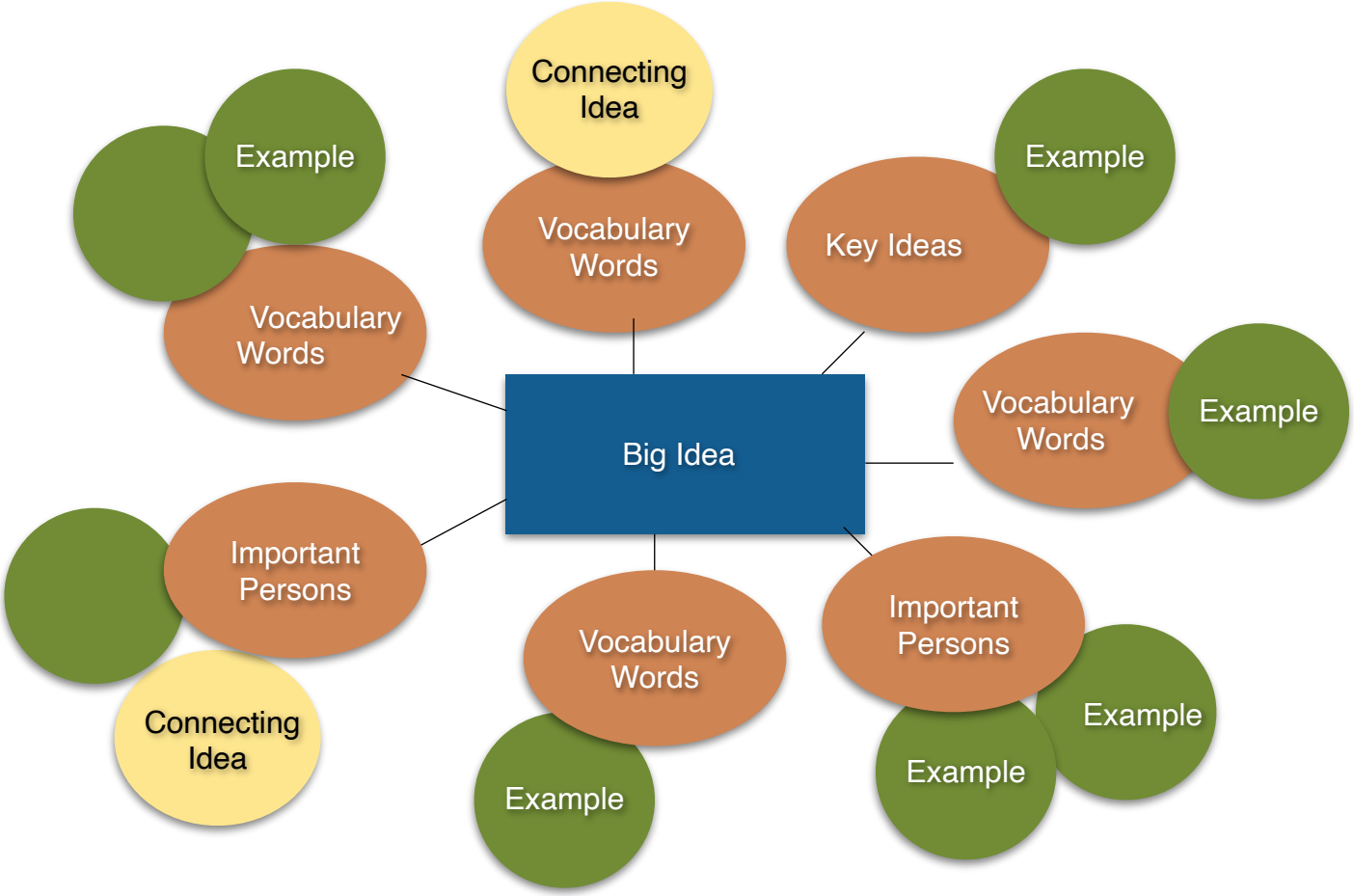
2) ***Use the 4 Levels of Learning*** (from the Skill Builder C) to evaluate how well you know each piece of knowledge on the Content Matrix. Focus first on the knowledge that you feel you "Don't know" or "Kinda Know." *Knowing which concepts you already understand and where the gaps in your knowledge are will help you focus your studying efforts.*

   - **Level 1 - I Don't Know**. Strategies: Get familiar with the knowledge
     - Reading & Note taking. Finding or Drawing pictures of the topic in the notes. Creating a graphic organizer.
     - Listening to lectures, podcasts. Talk to an expert and ask questions (ex: fellow student, teacher, etc)
     - Watching videos. Look at maps, charts, graphs
   - **Level 2 - I Kinda Know.** Strategies: Memorize & Recall
     - Flashcards or Quizlet. Being quizzed by a friend repeatedly
     - Connect the information to something you already know, and repeat the connection again. And again. And again. And again.
     - Covering up notes and reciting the information, then checking to see if correct. Write down which topics you get wrong. Look them back over, and repeat. Again. And again. And again.
     - Creating a song or poem, and singing it over and over and over and over and over.
     - Any of these strategies can have movement applied to them: walking, dancing, biking, jumping jacks…

3) ***Create Concepts Webs*** for each of the big ideas from the back of the content matrix.

   - Put the big idea in the center of the page.
   - Connect any important ideas or vocabulary words from the Content Matrix to that Big idea.
   - Add in any examples.
     ****These concept webs will be extremely valuable for preparing for the midterm, final, AND the AP Exam. Do them with each unit, use them to study. The "You" in May will be very grateful that these webs are already done to prepare for the AP Exam.****

4) ***Live Like a Champion.*** Do the little things. Eat well. Sleep right. Exercise. Prepare your mind and body for success. It takes time and effort, especially if you are not used to it. However, you will reach a point in your academic career where you will NEED these skills. Develop them now.



Skill Builder: How to Take Multiple Choice Tests

High School vs. College Testing. High school tests are built to allow students to show that what they have learned and for a large percentage of students to pass. High School tests typically have 4 multiple choice options; 1 clearly right answer, 1 maybe answer, and two clearly wrong answers. The questions are typically straight forward; if the student skims the question to get the general idea, they can find the right answer from the four choices. If there is a passage to read or a map to look at, the question can typically be answered even if the prompt or map is not there, as long as the student paid attention in class. Being familiar with knowledge is good enough.

College & AP tests are built for students to fail.

That is worth repeating: College & AP level tests are built for students to fail. Once out of the comforts and safety of high school, testing is a game to determine who is successful and will get the prize (college credit, money, job license, promotions…) and who does not. They are ok with student failure as it weeds out the "less qualified" students from the ones who should be given more opportunities. Some professors even take pride in how many students fail and how few "A" grades are earned. Additionally, if a student fails a course in college, they must pay to take it again. Finally, no one wants the Doctor operating on them to be the student who received the "D" in anatomy class. Tough testing eliminates the "weak" and "incapable" from the field of study.

THE GAME OF TESTING

Testing is a game, and as with any game, there are rules. When there are rules, there are strategies for how to win the game. AP and college exams are no exception, and the following strategies can be used any time you are tested:

1) **Study & be prepared.** This was addressed above, but is worth repeating. It is difficult to pass a college level test by just showing up and hoping for the best.

2) **Relax**. The more you stress, the more cortisol released. Cortisol shuts down the "thinking" part of the brain. Find a relaxation technique that works for you (close eyes and breath through nose, etc).

3) **Read the question carefully.** Make sure to understand what the question is asking. Most importantly, look for the words "Except" or "Not" since these words completely change the question being asked.

4) **Answer all the questions "you know that you know" first.** If you feel "stuck" on a question, move onto the next one. There is no penalty for jumping around. There is no rule that says Question 2 must be answered after Question 1. There is no guaranteed pattern that the early questions are easy and the later questions are hard. So answer the ones you know that you know. This allows you to use your "fast thinking" part of the brain and allows you to get all the points you are confident in getting.

5) **Mark Your Questions.** If you skip a question, put a "M" next to the question if it is of medium difficulty (if you are on the fence between two answers). Put an "H" next to the question if it seems especially hard or you do not have a clue.

    - There is nothing magical about M & H. If you have a quick symbol you want to use for "medium" and "hard," do what works for you. Just be consistent.

6) **Go back and answer the "M" questions.** These were the questions you felt confident about, but didn't feel you had the time to confidently decide between two "good options." These are the next "most likely" points to earn.

7) **Spend the rest of your time on the "H" questions.** At this point, you know that you have gotten all the easy and medium difficulty points you can get. Now, you can dig in and focus (or guess) to finish the test. Allow your brain to go into full slow-thinking mode.

    - **When stuck, focus on what you DO know.** *If you feel clueless and focus on feeling clueless, nothing will come up in your brain.* However, since the brain is like a spider web for making connections, focusing on the parts of the question or unit you DO know will trigger other things in your brain that you DO know, and may bring up more ideas and possibilities.

    - **If truly stuck, and all other points have been earned, close your eyes, put your head down and breath deeply for 2-3 minutes (20-25 deep breaths).** Unfocus your brain. Allow it to wander. Then reengage with the test. This helps you to relax, rejuvenate your brain, and to see the information in a new way. This ties back into step 1: your brain can only access what you have stored in it. You must have first studied and learned the material for any of these strategies to work. (For more on this topic, refer to Skill Builder: Section C)

8) **After the test, LEARN from your mistakes.** Go over the test thoroughly. Find out which ones you got wrong and find out WHY you got them wrong. Was it because you didn't know the information? Didn't read the question correctly? Missed a "Not" or "Except"? Went against your original gut decision? Once you know the why, then you can focus on what to do next time so you will not make the same mistakes again.

Trademarks of College Tests

There are some differences between high school and college level tests to be aware of in order to be successful in higher education:

• **Mastery.** Students can no longer be "familiar" with the content, they must have MASTERED the content: know the definition, causes/effects of the idea, examples and interrelated ideas… from memory.

• **Knowledge Application.** Questions use examples or scenarios that require students to read carefully and apply the knowledge from the course to find the correct answer; even asking students to apply knowledge from previous units or courses.

• **More Choices.** There are 5 answer choices instead of 4.

• **Prompt Complexity.** Question prompts use "all of the following EXCEPT…" or "which example is NOT…"

• **Answer Complexity.** They frequently use as answer choices: "all of the above", "none of the above", "A & B", "A & C."

• **BEST ANSWERS.** Most importantly: College tests want students to choose the BEST answer. This means that out of 5 options there will be 2-4 good options, and one that is considered the BEST answer. And, it is the professor who decides what is considered the best answer (and they don't like to be told they are wrong).

It's ok to be wrong, it is not ok to stay wrong. Life is not about how many times you fall down, it is about how many times you choose to get back up… and then figuring out why you fell so you don't do it again.