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LEARNING PLAN 1: THE BASIC CONCEPTS OF CRITICAL THINKING

COMPETENCY

APPLY BASIC CRITICAL THINKING TERMS AND CONCEPTS

This Learning Plan addresses the following learning objectives to help you master the competency:

a. Identify basic critical thinking skills.
b. Distinguish argument from non-arguments.
c. Identify issues in a written passage.
d. Distinguish factual from non-factual issues.
e. Distinguish between relativism and subjectivism.

OVERVIEW

In this Learning Plan, you will explore the following questions: What is critical thinking? How does it differ from other kinds of thinking? You will also explore areas in which critical thinking can be most effective in your daily life.

BASIC CRITICAL THINKING SKILLS

You are a college student who is regularly required to conduct academic research. When you have a question, the first place you will likely consult is the internet. How do you know that the webpage you find is credible? Are you able to identify potential bias?

Let us now consider political election cycles. We are bombarded with advertisements that seek to inform us about the political positions of the candidates; or we see advertisements supposedly revealing the unsavory aspects of an opposing candidate. Which advertisements are true? Is there bias present based upon the sponsor of the advertisement? Finally, let us consider published scientific research that is reported by various media outlets. How do we know that the research is valid? Do we simply believe what is reported because we see the words ‘scientific research’? In this instructional material, we will explore the various methods of critical thinking that will arm us with skills to evaluate such advertisements objectively.

The first topics covered are the basic skills required to be a critical thinker, such as focusing on a topic and demanding objective clarity in the answers found. You will then explore the five basic steps that will ensure your critical thinking process is rigorous and that you arrive at objective decisions. These steps include Achieving Critical Distance, Identifying the Issues, Distinguish Facts from Opinions, Sorting out Arguments from Non-Arguments, and Identifying Relativism and Subjectivism. The critical thinking concepts learned will be applied to examples so that you can better understand them and see how they are used to solve real-world problems.
IDENTIFYING BASIC CONCEPTS OF CRITICAL THINKING

Today we live in a technology age where we are bombarded with images, advertisements, editorials, opinions, and propaganda on a daily basis. We are exposed to nearly 5,000 advertisements every day! Think about this number in practical application:

- How many times do you close the window for an advertisement that pops up while watching a YouTube video?
- Do you use Google mail? Google mail data-mines its users email accounts to search for key words. These key words then produce advertisements tailored to what are determined to be the user’s preferences. If you wish to test this, send yourself an email with the word ‘lawyer’ written numerous times in the message. You will quickly notice that local attorney’s advertisements will populate in the horizontal and vertical advertising areas.
- How many billboards do you see on your regular commute to work or school?
- Are you aware that companies regularly use product placement in movies and sitcoms? If you notice a name brand soda or snack in the scene, it means that the company paid for the placement.
- Do you notice the number of advertisements in magazines? Many magazines are now more than 50 percent advertising in content.
- Do you receive junk mail and/or phone call solicitations? Your name and address are sold to various advertising companies; in turn, you receive ‘junk’ paper mail and phone call solicitations.
- Do you read the political bumper stickers on cars while at a stoplight?
- Have you purchased a smartphone application simply to avoid the pop-up advertising that is bundled with the ‘free’ version?

Companies, politicians, corporations, and media reporting want your attention. They are in constant competition to lure you to purchase their product, adopt their viewpoint, or vote for a particular candidate. They are not reporting with neutrality because objective advertising does not yield consumer purchases-emotional (subjective) advertising does. This is accomplished by playing on emotions such as fear, love, and security. For example, home alarm commercials want you to identify with the innocent families who have been burglarized. Politicians always discuss hot-button issues, such as gun control. Make-up commercials seek to convince the viewer that they can be more attractive if the product is used. Emotion is subjective, yet it is proven to sell products and viewpoints. You will learn basic critical thinking skills that allow you to rise above such subjective claims and objectively evaluate the advertisement.

We make decisions when we encounter advertisements. We decide what captures our attention and this is based upon personal preference. Do you accept the messages you encounter, disagree with, reject them, or ignore the messages? Before arriving at a decision about the information, you follow a thought process; you will either make snap judgments (this is Cognitive Heuristics), or take time to process the information and arrive at a reasoned
decision. If you choose the latter approach and follow a rational process, you are engaging in critical thinking.

Critical thinking is a term used to describe a purposeful, reflective thought process. This involves time. Rather than employing cognitive heuristics, critical thinking requires you to engage in a process of questioning before a decision is made.

Critical thinking is not negative thinking. We all know people who are critical of nearly everything they encounter. We need to reframe this concept and remove critical thinking as a term association because these people are judging what they encounter, not engaging in a rational thought process to arrive at an objective decision. Judging is very easy because it is a surface and shallow snap decision. The following two statements illustrate the difference:

- That celebrity is useless! Why do people pay attention to her?
- That celebrity does not produce a viable service, or product, for greater society. She promotes a lifestyle image. People pay attention to her because the media promotes her rich lifestyle as luxurious and stress-free. Many people struggle financially and have a lot of stress. Therefore, people pay attention to her because she is a fictional escape from the stresses of daily life.

Can you identify which statement is a judgment and which employed critical thinking steps?

The majority of judgments that we make every day are automatic rather than through the application of critical thinking skills. This is because we simply do not have the time, or mental energy, to reflect upon every decision and walk it through the steps of critical thinking. Consider the following:

1. Driving a car, at first, requires cognitive thought and particular attention to operating the motor vehicle. Experienced drivers easily operate the vehicle and navigate traffic often while distracted by music or a cell phone conversation.

2. Chuck wanted to have the most powerful roundhouse kick in his country. He initially had to concentrate on technique, balance, and delivery when learning the lethal kick. After thousands of kicks, Chuck can deliver the most powerful roundhouse kick in his country without any concentration regarding technique, balance, and delivery.

These two examples illustrate that engaging in any activity, with repetition and consistency, results in less mental energy being required to execute the activity. This same model is applicable to mental decisions we make on a daily basis. Consider the following examples:

1. Ben now owns his third Galaxy (a car model). The first two Galaxies were reliable and mechanically sound for years. This is why he purchased a third Galaxy. When Ben decides to purchase a new car, he will likely purchase another Galaxy.

2. Doug has always found the lowest grocery prices at Roses after patronizing every grocery store in town. Doug needs to go grocery shopping today, so he automatically drives to Roses.
3. Courtney listens to a political talk radio show daily because she initially agreed with the host. After listening for months, Courtney begins adopting all of the viewpoints held by the host without evaluating them through a critical thinking process.

4. “She has purple hair—she must be dumb. You know those purple-haired girls…they have more fun because they are airheads. My previous girlfriend had purple hair and didn’t have any common sense. She thought everything was funny.”

Not all snap judgments lead to mistaken judgments or biases. Consider example two above; Doug conducted research and found the lowest grocery prices at Roses. His automated, or snap judgment, is based on a previous evaluative process. However, stereotypes, such as found in example four, are mistaken and biased.

COGNITIVE AND STEREOTYPING HEURISTICS

Cognitive heuristics are decision-making shortcuts that we rely upon daily to expedite our judgments in what to believe or what to do. They could be based upon previous use of the critical thinking process or based upon stereotypes and bias. A critical thinker evaluates issues and arrives at a rational decision. This decision can then be trusted in future encounters with the same issue because of the rigorous critical thinking process previously used. In other words, the critical thinker says, “This is a settled issue—I already figured this out”. This allows the critical thinker to employ cognitive heuristics with confidence that objectivity has previously been met so a decision can be expedited. In turn, this frees up mental energy to evaluate a new issue.

By contrast, example four is a stereotyping heuristic. This example illustrates how an individual can make a judgment about an entire group of people or products based upon a single experience. This judgment is considered mistaken and biased when applied to people and cultures yet can beneficial when making purchases. For example, I once ate the Grilled Burrito at Taco Shack and loved it. Therefore, I frequent Taco Shack, wherever I am, to eat Grilled Burritos.

These are only a few brief examples. There are books dedicated to heuristics. We now understand that the majority of our daily decisions are snap judgments because we are confronted with thousands of claims, advertisements, arguments, issues, and decisions. The next section addresses what is necessary to move away from cognitive heuristics towards evaluative critical thinking.

THE PRIMARY CHARACTERISTICS OF A CRITICAL THINKER

Critical-thinking skills are considered higher-order intellectual skills essential for anyone seeking an advanced degree or a position with responsibility and leadership. Below are some of the primary characteristics of a critical thinker:

- **Curiosity and Courage**: Critical thinkers have a desire to be well informed. They want to understand, ask questions, raise objections, and seek root causes. In addition, they will explore unpopular ideas and are unafraid to go against the mainstream.
• **Drive for Competence and Accuracy**: Critical thinkers show a desire to deal with everything in an orderly fashion. They maintain rigorous standards and take great care to focus their attention on the issue they are analyzing. They do things with precision and always demand clarity in answers.

• **Desire for Truth and Self-Honesty**: Critical thinkers are willing to face and overcome their own biases and prejudices, however painful this process might be. The best critical thinkers today, and throughout history, have been willing to consider all viewpoints dispassionately and with objectivity.

• **Willingness to Reason and Reflect**: The most efficient critical thinkers build ‘wait time’ into their schedules when making decisions. They do not rush to make decisions because they need to analyze issues from all aspects. Their goal is to come to reasonable conclusions. In order to complete tasks, they recognize the need for thoughtful effort. Have you heard the phrase, ‘Sleep on serious decisions’? This is the acknowledgement that reflection is a process of patience.

• **Open-Mindedness and Empathy**: Critical thinkers are open-minded and nonjudgmental. They search out alternatives to problems and admit error when necessary. They demonstrate empathy toward others by being fair-minded, ready to listen, and open to consider the thoughts and ideas of others.

### THE FIVE STEPS IN CRITICAL THINKING

There are no rules about the process you must follow to engage in critical thinking; however, the steps below are commonly involved in critical thinking.

#### STEP 1: ACHIEVING CRITICAL DISTANCE

You need to be in the right frame of mind to engage in critical thinking. In particular, it is important to have a certain mental distance from the item that you are thinking about. For example, if you are in a gas station when you are hungry, it is more likely that you will make an emotional decision to buy an over-priced, unhealthy snack. This is because it is more difficult to make rational decisions when the biological call of hunger is present. If you were not hungry, you would likely not purchase anything. If you were hungry while in a supermarket, you might peruse the selections closely and purchase a snack that is reasonably priced and nutritious. If you were not hungry while in a supermarket, you might plan out meals for the upcoming week and select a variety of foods to meet nutrition requirements. In other words, if you are not hungry, you have **critical distance** from the items you are purchasing, and you are more likely to engage in critical thinking.

Let’s now consider a more complex example: political advertising. We live in a democratic society where you are given the opportunity to vote on a candidate based on your assessment of his or her record and position on a variety of issues that are important to you. Voters must consider information about the candidates from a variety of media sources: newspaper, television, in-person events, and word-of-mouth discussions with friends and family. Candidates rely on paid political advertisements to communicate a message because they rely on established advertising techniques that appeal to a voter’s emotions.
Examples of how advertising is designed to appeal to voters’ emotions can be found in every election whether at the local, state, or national level. A primary issue commonly debated is the economy; however, rather than debating complex economic theory, candidates try to bring their economic platform down to a personal and emotional level. An advertisement for one campaign might suggest that Candidate A’s economic plan will cut taxes for the middle-class. This campaign ad would clearly be designed to appeal to middle-class voters who feel that they pay too much in taxes. In this advertisement, Candidate A offers a simple, positive economic message that would make targeted voters feel good about voting for him or her because the candidate understands their tax complaints.

Yet Candidate A’s opponent, Candidate B, will undoubtedly deliver a different economic message in his or her campaign advertisements; perhaps by stating that Candidate A’s risky tax scheme would balloon the deficit, threaten our livelihoods, and lead to increasing hard times for all of us. In this message, Candidate B’s campaign will criticize Candidate A’s platform and try to scare voters into thinking A’s plan would harm the economy in unexpected ways. There is nothing more politically powerful than an unpredictable ‘boogey-man’ who cannot be predicted to strike and acts impulsively.

Both ads are specifically designed to appeal to a voter’s emotions. However, how do you process these political advertisements? If you respond on an emotional level, you are very likely to agree with whichever message that feels right to you. If you achieve critical distance, you are likely to analyze the message before you make a decision. The ultimate goal of critical distance and the critical thinking process is to help you exercise sound judgment when you are presented with an opinion or idea. If you do, you are less likely to be manipulated by unsupported claims or arguments, however emotionally compelling they may seem.

**STEP 2: IDENTIFY THE ISSUE**

The second step is to identify the issues presented in the information. An issue is a claim or assertion that calls upon you to decide its validity. Issues can be restated as questions. For example, the primary issue in Candidate A’s ad is, ‘Why should I vote for Candidate A?’ A secondary (implied) issue is, ‘What can Candidate A do for me personally?’ Candidate B’s primary ad issue is, ‘Why should I not vote for Candidate A?’

An issue can be factual or non-factual. A factual issue can be answered by an objective test. The following are factual issues, because they have objective, verifiable answers:

1. What year was the Federal Reserve established?
2. What was the exact date that Britney Spears shaved her head?
3. Will Candidate A’s tax plan lower my taxes?
4. Are the claims made by Candidate B verifiable by economic studies?

Although each of these issues can be answered with a fact, this does not mean that the answers cannot be disputed. For example, in the third issue above, are the economic studies put forth to prove the claim produced by campaign contributors or economists that support the candidate? In the fourth issue, we ask the same questions as we did for the third issue. However, very few of us understand economics well enough to critically evaluate the plans set
forth by each candidate. All we can look for is potential campaign support or party alignment, and bias by the authors of the studies. Then we do our best to understand the numbers.

A non-factual issue cannot be proven by experiment and the answers to the issues are not facts. Non-factual issues require value judgments, such as the following:

- Who is a better rapper, Nas or Jay-Z?
- Is it appropriate for employees to make personal calls during working hours?
- Do animals have souls?

All of these questions will have different answers, depending on the values, opinions, and beliefs of the person answering them.

**STEP 3: DISTINGUISH FACTS FROM OPINIONS**

To analyze persuasive messages, it is essential to distinguish between factual information (objectivity) and information based on the writer’s opinion (subjectivity). A fact is something that can be proven through objective tests or research. Conversely, opinions cannot be proven because they are, by definition, subjective. Opinions are ideas that are formed in a person’s mind and reflect what he or she believes or thinks. Critical thinkers are always analyzing information and sorting fact from opinion when reading and writing. Below are a few simple examples to help you distinguish between fact and opinion and to help with your critical-thinking skills.

**Fact**

- The Big Lebowski was directed by Ethan & Joel Cohen.
- Grover Cleveland was inaugurated in 1893 as the 24th President of the United States.

**Opinion**

- The Big Lebowski was the best movie ever made.
- Grover Cleveland was the best President to hold office.

Although these examples are fairly straightforward, it is important to recognize that the line between fact and opinion is sometimes blurry. This is because facts can sometimes be untrue, and opinions can reflect a true state of affairs. For example, a public opinion poll that is administered badly can produce incorrect statistics and can therefore be wrong or misleading.

Likewise, facts can change over time. For example, 40 years ago, the idea that smoking was not harmful to your health was widely considered a fact. It is now known that smoking is very harmful. Conversely, opinions are sometimes unverified facts. There was a time in medical history when doctors expressed the opinion that smoking was harmful. This opinion or hypothesis led researchers to study the issue and collect evidence that eventually turned their opinions into fact.
STEP 4: SORT ARGUMENTS FROM NON-ARGUMENTS

Identifying an issue is not the same as developing an argument; therefore, you will need to sort arguments from non-arguments. An argument can be defined as a series of statements that support a final assertion or claim. An argument relies on reasoning or evidence to show that the final claim is true. If you consider the previous political advertisements, neither candidate makes an argument supported by evidence. Candidate A claims that his plan will cut taxes for the middle class; however, the ad provides no supporting evidence or logical arguments to support this claim. Based on the advertisement alone, voters would have to take it on faith that Candidate A applied sound reasoning to arrive at his plan or voters would have to research the claim themselves.

Candidate B’s advertisement claims that Candidate A’s risky tax scheme would balloon the deficit, threaten our livelihoods, and lead to increasing hard times for all of us; however, the ad provides no explanation as to how this would happen. The audience must fill the holes in these arguments themselves. The vast majority of us are not educated in economics, so a heuristic judgment is made. The audience must have enough information to understand the arguments, achieve critical distance, identify the issues, and then sort out the arguments from the non-arguments so they can arrive at thoughtful, objective decisions about either candidate’s claims. Therefore, both campaign ads contain non-arguments and the audience cannot engage in critical thinking based upon the face value of the advertisements.

Be wary when you encounter issues that contain non-arguments. Such issues rely on emotion, bias, or other approaches not rooted in fact. Before responding to an issue or making a decision about it, a critical thinker engages in the primary characteristics of a critical thinker (above) as a vehicle to walk through the steps we just learned.

STEP 5: LEARN TO SPOT RELATIVISM AND SUBJECTISM

Just as issues can be factual or non-factual, arguments can rely on objective fact or subjective opinions to support a claim. A critical thinker should not rely on evidence that may be tainted with the personal bias of the person making the argument. You must be aware of the subjective opinions that may manipulate the evidence in particular ways. Two common traps affect arguments and block objective analysis: relativism and subjectivism. Although it is nearly impossible to avoid them when moral and ethical arguments are made, it is important to be able to identify these types of arguments when you are employing critical-thinking skills.

The goal of critical thinking is to be as objective as possible. What does this mean? In philosophy, objectivism is the theory that reality exists independently of one’s perception and thoughts about the world. It is a suspension from immediate cognitive perception in belief that there is an omnipotent point of view that sees the truth. Consider this famous philosophical question: If a tree falls in the forest, and there is no one there to hear it, does it make a sound? An objectivist would emphatically answer ‘yes’ because science has proven that objects in movement create sound waves that are decoded by other inanimate objects, as sound, through the form of vibration. A human being is not required to be in the forest to ‘hear’ the tree fall because, objectively, the sound waves are present regardless of whether a human ear is present or not.
**Subjectivism** is the opposite of objectivism. It is a theory that states that reality is created by an individual’s perception of that reality. In other words, there is no such thing as a stable, objective reality. Reality is fluid and based upon how the individual processes the symbols, culture, language, and objects within their five-sense abilities to decode them (hearing, sight, touch, smell, and taste). Subjectivists focus on experiences that require interpretation of sensory data; they tend to focus on qualitative information, or information that cannot be counted or measured but rather felt or experienced. For example, instead of studying measurable phenomena objectively, a subjectivist would study how the world makes people feel. A subjectivist would answer the tree falling question (above) with a 'no' because there is not a human present to hear the fall.

**Relativism** is the theory that truth is different for different people because each person makes judgments based on his or her cultural experiences and point of view. Like a subjectivist, a relativist would argue that there is no objective truth. The following is an easy method of understanding the differences:

1. A subjectivist states that reality is filtered through the individual. Jon believes that it is immoral and unethical to hunt animals because they have souls.

2. A relativist states that reality depends on how an individual perceives and filters the culture in which they live. Willie believes that hunting animals is not immoral or unethical because, if he did not hunt then his family would not have meat to eat.

It is impossible to be objective all of the time. There are subjects that lend themselves to more objective analysis than others. For example, any time you are presented with quantitative evidence (evidence that can be counted), it is easier to be objective. However, other subjects are nearly impossible to approach objectively. Questions of religious belief, by their very nature, are impossible to answer with objective evidence. They require faith to answer them. It is less important for a critical thinker to take a philosophical stance as an objectivist or relativist. It is much more important to understand these different points of view exist so you can engage in discussion and dialogue about them.

We have now learned what cognitive heuristics are, identified the primary characteristics of a critical thinker, and learned the steps in evaluative critical thinking to arrive at an objective decision. What do we do with the objective decision once we find it? We must organize the information to effectively deliver it through a communicative medium that our audience will understand. Critical thinking is useless if we cannot communicate our decisions to others.
## COMPETENCIES

### APPLY ORGANIZING PRINCIPLES AND CONCEPTS.

This Learning Plan addresses the following learning objectives to help you master the competency:

- a. Identify the principles of organization.
- b. Identify the principles of clear writing.
- c. Identify the principles of persuasive writing.

### EVALUATE THE CREDIBILITY OF CLAIMS AND SOURCES.

This Learning Plan addresses the following learning objectives to help you master the competency:

- a. Identify the principles of persuasive writing.
- b. Assess the credibility of a claim’s source.

### OVERVIEW

How can you use critical thinking to improve your own writing and to assess the writing of others? First, you will explore the characteristics of organized, clear, and persuasive writing. You have already learned the proper evaluative method to assess claims, arguments, and issues in Learning Plan 1. In the weeks to come you will move on to more complex analytical devices that will help you assess arguments and create persuasive arguments of your own. You will learn how to apply organizing principles and concepts, assess claims, and identify rhetorical devices and fallacies. Once you get into the habit of using your critical-thinking tool set when you approach writing, you can analyze more ephemeral types of information, such as radio and television programs, live speeches, and debates.

### EFFECTIVE WRITING

An *effective* writer is also a critical thinker. I emphasize the word *effective* because this denotes that the writer has conveyed the argument to the audience through a method that the audience understands. Have you found yourself frustrated while speaking with a doctor, or a lawyer, because they are using jargon that you do not understand? Effective communication is not speaking a foreign language with the expectation that the audience understands. We use non-verbal communication to communicate our love and affection to babies before they can speak. Conveying information through a method that your audience understands is the key to opening the door of *effective* communication.
Persuasive writing must be effective. Why do we argue our positions in written discourse? We argue because we desire to persuade the audience to adopt, or at least recognize, our position. We desire the same when engaging in spoken arguments. Spoken arguments are often reduced to both positions spouting their points and not listening to other. This form of arguing is not effective and akin to throwing dry pasta on a wall to determine if it is cooked. Regardless of whether the argument is spoken or written, an effective argument is persuasive. We must open up the audience to listen to our position. We open up the audience by utilizing a communication method the audience understands. Once this rapport is established, the audience is malleable and will consider our position. Persuasion is then employed by use of various written or spoken devices proven to persuade a listening audience. This will be studied in Learning Plan 3.

Effective writing requires the writer to do the following:

1. **Achieve critical distance** (we learned this in Learning Plan 1)
2. Step outside the **frame of reference** (Objectivity; we learned this in Learning Plan 1)
3. **Consider the audience**
4. Determine the proper delivery method for the audience to understand and be persuaded by the arguments or ideas contained in the writing. This is accomplished by reviewing the communication for **vagueness, ambiguity, contextual errors**, and **considering the audience**.

We will focus on the last two steps in this Learning Plan.

Writing begins as a very subjective, internal process: an idea forms, and you **brainstorm** about it for a while. You may write notes or ideas randomly on a page. If you are only writing for yourself, the process may end there, because you may not need any more information to understand your ideas. However, if you intend to write for someone else, someone who is possibly unfamiliar with your thought process and the terminology (jargon) used, you will need to add more structure and information to make your writing understood.

Consider the following basic example: you are in the break room of your office and you pick up a slip of paper with the following words written on it: markers, cardboard, apple, glitter, supermarket, bubble bath, drugstore, and gift wrap.

What could this list of mostly unconnected items possibly mean? In order to figure this out, you will have to ask yourself a series of questions. Who wrote this and for what purpose? Are these words related in some way? Is there any structure or organizing principle? Based on the first two words, one might conclude that the writer is a protestor who plans to make protest signs. But how do the other words fit in? Perhaps the author is shopping for a gift?

You obviously need more information to understand how the items on the list are connected. You ask around your office to see who wrote the list, and a colleague says, “I’m so glad you found this — it’s my shopping list!” With this information, you can organize the information to decipher most of the list: your colleague needs to go to the supermarket to buy an apple, and then to the drugstore to get markers, cardboard, glitter, gift wrap, and bubble bath. But why is she buying some items that go together—markers and cardboard, for example—and others that do
not make sense together? Your colleague further explains that her daughter’s teacher is celebrating 20 years of teaching and that her daughter is going to make and decorate signs for the party. The apple is an apple for the teacher, of course, and the bubble bath is her daughter’s gift.

Your colleague wrote the list for personal use so there was no need to add any more information to decipher the list. However, if your colleague’s spouse were doing the shopping, the list would need to be reorganized and more information added to make sure the exact items are obtained.

**To Do List**

1. Go to the drugstore and buy a set of five primary color markers, poster boards in several colors, gold and silver glitter, lavender-scented bubble bath, and gift wrap.

2. Go to the grocery store and buy a red apple.

In this revised list, your colleague has added several basic organizational structures to ensure the reader will understand what to do. The heading at the top of the list ensures that your colleague’s spouse will know this is a list of things to do. The list is organized by location, so it is clear where to get what. Finally, your colleague has anticipated the following potential questions: How many markers are needed? What kind of bubble bath is the right one? In revising the list, your colleague has used the two most fundamental tools of good, clear writing: **organization and an awareness of one’s audience**. This level of organization and abstract thinking requires keen critical thinking skills that allow you to see beyond the surface of your information to underlying structures.

Clear writing also requires that you think critically about the purpose of your writing and the audience reading it. The primary objective of clear writing is to be understood. Therefore, the standards of effective writing depend largely on who the readers are (this is an example of **relativism**). Let’s study this in detail.

**THE PRINCIPLES OF CLEAR WRITING**

**PROBLEMATIC VAGUENESS**

Suppose that you were working on the political campaign for Candidate A found in the example in Learning Plan 1. The Candidate tasks you to create a commercial that shows a middle-class family happy that their taxes have been cut. They are then to go and purchase a product with the implied money that they saved. How would you go about completing this task? The following is a list of questions that you would ask based upon the **vagueness** of the instructions:

1. What is the income spread of middle-class families? Is it 40,000 dollars annual salary, for a family of four, or are single adults counted? At what dollar figure does the middle-class become the upper-class?
2. What is a middle-class family? The nuclear family has eroded since the 1970’s. Only a minority of families are comprised of a mother, father, and children. Do we include single-parent families or couples that are cohabitating and consider themselves a family? If you are going to select a ‘family’ for purposes of the commercial, you would want to family to visually represent the majority of targeted voters in the middle class so they can identify. What factors do race, ethnicity, and culture account for in the targeted demographic?

3. Is the family living in a house, an apartment, or in a mobile home? There are many families who are middle-class, by definition, yet live in apartments and mobile homes.

4. What product is the family going to purchase? Does the family purchase a car, thus implying that the tax money saved is a large amount; or does the family purchase a flat screen television? What message is the Candidate attempting to communicate with this purchase?

Laws are, in theory, to be written so that an average person with reasonable intelligence can understand them. There is a legal term called void for vagueness when the language of a law is subject to various interpretations to a level that an average person with reasonable intelligence would not be able to understand it. This is commonly found in challenges to laws that implement the First Amendment. Freedom of Speech laws must be clear enough to be understood yet not content-specific (naming specific types of speech, such as hate speech) unless there is a compelling government reason. There have historically been criminal laws written to punish those who use ‘opprobrious’ language in public forums. The law would read something like the following: "It is a punishable offense, by First Degree Misdemeanor, to use opprobrious language in the confines of public parks in the city of Tampa."

I am sure you are thinking of the relevant question to this law; what is ‘opprobrious language’? Do commonly understood ‘swear’ words fall under this definition? If so, which words? Do the words have to offend another person before the speaker can be arrested, or is a police officer hearing the words enough? Who defines ‘opprobrious’ language?

Laws proscribing the use of ‘opprobrious’ language have been struck down by the Supreme Court because they are void for vagueness. In the same manner, the task you received from Candidate A exemplifies problematic vagueness because the instructions (or use of the term ‘opprobrious’) results in imprecision sufficient to cause problems in interpreting the terms or instructions.

**AMBIGUITY**

Ambiguity is when a word, expression, or statement has more than one meaning. The English language is rife with ambiguity. We are not confused with such ambiguities because we understand the context in which the word is spoken. Consider the following examples:

1. “You are sick” as spoken by a teenager versus being spoken by a medical doctor.

2. The words there, their, and they’re.

Example 1 is an example of a slang term commonly used. It is also something that a doctor might say to a patient. Example 2 demonstrates that the same sounding word (spoken) has different meanings depending upon the context in which it is used.
CONTEXTUALIZING

The context in which words are spoken provides us understanding for their meaning. For example: If someone says that they are joining AAA, does that mean that I am joining the AAA motor club, the American Anthropological Association, or the American Arbitration Association? This would clearly depend on whether the speaker is a motorist, a professor of Anthropology, or a lawyer.

Critical thinkers seek intellectual integrity and the truth when they de-contextualize the words of others. Accuracy of interpretation is important, yet so it truthful interpretation of the speaker’s intent. We are doomed to mistake interpretations when we do not understand the context.

Critical thinkers review their writing to ensure that it does not suffer from vagueness, ambiguity, and that the context is understood by the targeted audience. This is accomplished by ‘sitting in the seat’ of the audience detached from your frame of reference; would you clearly understand your own communication?

CONSIDER THE AUDIENCE

We have already provided the foundation for communication delivery by identifying the previous issues of vagueness, ambiguity, and context. You certainly would not want to confuse the audience that you are aspiring to inform and persuade. To be effective, writing must be clear. Clarity in writing is further enhanced when an author applies certain principles as they compose their work: clarity of argument and clarity of expression.

Clarity of Argument. Perhaps the most important factor influencing clear writing surrounds authors’ approach to relating the topic they are intending to address. As authors compose their work, they should consider what it is they are attempting to describe and how each part of the work serves to advance their position. This is why it is important for the thesis to be declared at the beginning of a paper so that readers do not have to wonder what the piece is about. In like fashion, a speaker needs to provide a brief introduction as to what he or she is speaking about. Subsequent paragraphs and dialogue should serve to support the thesis in a progressive manner. If a paragraph or dialogue point does not build upon the original premise, it should be discarded so it does not muddle the argument and confuse the audience.

Clarity in Expression. A good practice to check for clarity of expression is to read the work aloud and listen for ambiguous and vague passages. It is of substantial benefit to have someone else review your work—preferably one who represents your target audience.

The following considerations should be considered when reviewing for clarity:

1. Precise wording: Does the wording effectively convey what is intended? Is anything vague or ambiguous? Are the words appropriate for the context in which they are delivered? Are there gaps in clarity of expression or clarity of argument?

2. Concise and Consistent: Are unnecessary words being used? Is verb tense and sentence structure the same throughout? Are transitions between themes apparent?
3. *Keeping it Simple*: Does the work make sense to the audience? Would it make sense to you if you suspended your *frame of reference* and sat in the audience? If you continue to reach for a thesaurus, it can be an indication that the writing might be unnecessarily difficult to comprehend.

**ORGANIZE THE INFORMATION**

Once you determine who your audience is and what information they need to understand your writing, the next step is to organize the information so that the audience will understand the main ideas you are attempting to convey.

You help your readers follow the argument when you organize thoughts and ideas. This demonstrates your mastery of the material and instills confidence in the audience. Conversely, when you read a disorganized piece of writing, you might question the abilities of the writer.

A writer begins an essay with a main point (or thesis statement) and then supports it with paragraphs that organize information into meaningful sub-arguments. The outline below illustrates the basic structure of most essays:

I. Introduction

   a. *Problem*: The purpose of an introduction is to orient readers to the topic and get them interested. An effective way of engaging readers is to present them with a problem that the essay will solve. The problem introduction will be explored later in more detail.

   b. *Thesis Statement*: The thesis statement is the main point, or argument, of the essay. It should appear somewhere near the beginning of an essay, often at the end of the introduction. A thesis statement helps orient the reader and brings focus to the entire essay.

II. Supporting Paragraphs

   a. *Topic Sentence*: Each paragraph begins with a topic sentence that states the main idea of the paragraph and provides a transition from the prior paragraph. Because the topic sentence plays this dual role, it is sometimes called a *transition sentence*. To test how well your topic sentences are written, try the following: highlight the topic sentence in each paragraph. Does this provide a clear outline of the paragraph? If not, consider revising your topic sentences.

   b. *Supporting Evidence and Themes*: Once you have established your topic sentence, each sentence within the paragraph should support the point in the topic sentence. An easy way to ensure that a paragraph coherently develops its topic sentence is to repeat themes throughout the paragraph. *Themes* are related words and concepts that recur throughout a paragraph.
III. Conclusion

A conclusion should summarize main ideas of the essay, restate the thesis, and reiterate how the essay proved the thesis. A conclusion should not state new ideas. However, to avoid simply restating the main points of your essay, consider some of the following strategies:

a. Discuss future areas of research that might support your claim.
b. Discuss wider context for the application of your ideas.

BASIC PRINCIPLES OF PERSUASIVE WRITING

Following is a step-by-step method of reviewing your writing to ensure that it has the basic principles of persuasive writing and thus achieves effective writing:

1. **Achieve Critical Distance**
2. Step outside your **Frame of Reference**
3. **Consider the Audience**
4. Write using the Introduction, Supporting Paragraphs, and Conclusion format
5. Review your writing as if you were sitting in the audience. Identify the following delivery issues:
   A. **Problematic Vagueness**
   B. **Ambiguity**
   C. **Context**
6. Correct the mistakes identified in Step 5 and review the writing again. Identify the following errors relevant to **considering the audience**:
   A. **Clarity of Argument**
   B. **Clarity in Expression**
7. Revise the writing again
8. Provide the writing to someone who is a member in your target audience. What do they think? Does the person

   a. Understand the problem to be solved?

   b. Understand the thesis statement?

   c. View each paragraph as building arguments in support of A and B?

   d. Agree that the conclusion summarizes the main ideas of the essay, restates the thesis, and reiterates how the essay proved the thesis?

9. If your writing passes Step 8, then you have achieved effective writing. If any subparts of Step 8 fail, identify where the issue is located using Steps 5 and 6 as a guide. Finally, repeat Step 8 until you meet the requirements set forth in the first sentence of Step 9.

EVALUATING CLAIMS FOR TRUTH, BIAS, ERROR, OR FALSETY

Critical thinkers are inquisitive truth seekers. They have a healthy sense of skepticism, do not naively accept every claim made, and use their knowledge and skills to assess the credibility of a source. We now turn to learning tools that the critical thinker may employ to determine the credibility of a source and claim.

To determine if an argument is true, first assess the content of the claims within it. A claim is a statement that asserts something is true. For example, the following is a claim: “I can swim faster than you can.” The speaker is asserting the ability to swim faster, but this does not mean the claim is true. A critical thinker must assess all the evidence a writer presents to determine whether the claim is true. However, at the outset, you can quickly assess a claim by asking the following simple questions:

1. Is the claim clear and understandable? If you can’t understand a claim, it is impossible to assess it.

2. Is the claim precise? Is the claim focused enough to be able to assess it? Claims that are too broad may be impossible to prove.

3. Does the claim have the depth and breadth to address the complexity of the issue being discussed?

4. Is the claim reasonable? Would reasonable people agree?

5. Is the claim logical? Does the claim follow logically from the evidence presented?

Next, you will learn the various components of a claim, assess the credibility of the speaker, and how you can use the above questions as a guide to assess the credibility of any claim.
CLAIMS WITHOUT REASONS

The majority of claims we encounter are provided without reason. These are frequently propagated by those with subjectivist and/or relativist perspectives (see Learning Plan 1). The following are examples:

1. A car salesman tells me that I look ‘manly’ in a Hummer.
2. A Republican candidate: “The Democrats’ tax stimulus plan is a flop.”
3. A doctor says to a patient: “The MRI results came back positive for a herniated cervical disk.”

The first question a critical thinker must ask is whether the source of the claim is reliable. In Example 1, the salesman would likely tell anyone anything he thought that they might want to hear if it would result in a sale. This source is not credible. Example 2 is credible depending on your subjective beliefs about the Democrats. If you are a Republican, you likely believe the claim and source to be truthful. If you are a Democrat, you likely immediately discount the claim because a Republican candidate makes it. Note that the truth about the statement is not discussed here; we are discussing how subjective beliefs influence our heuristic judgments. Why would we not trust the doctor, as a credible source, in Example 3? Doctors have a title that connotes the objective practice of medicine. However, do we trust the doctor or seek a second opinion? We likely trust doctors because claims they make concern the well-being of your body and are not biased by external influences (other than pharmaceutical companies), unlike the sales person motivated by the external influence of money or the Republican candidate motivated by winning your vote for the election.

AUTHORITY AND EXPERTISE

We are conditioned to understand that the word authority refers to a person who is a trustworthy source for claims and evaluations. We learn that elders, parents, grandparents, and teachers are authorities when we are young. Authority can also refer to a person that has the rightful control to the behavior of another. Examples of this are police officers, correction officers, and your boss at work. People often mistake authority with knowledge; the authority might have control over a particular aspect of your life, but this does not mean that the authority is more knowledgeable than you are on a given topic.

An expert carries a different social meaning. An expert is one who has extensive knowledge or ability in a particular area. This could be a Constitutional Law Professor or a Pediatric Surgeon. These two of have one thing in common-an official title recognized, as such by society, accompanied by a subsequent title conferring practice in a particular sub-field. Experts have initials before their names, such as Dr., or have titles after their names, such as Esquire. The difference between an authority and an expert is that society refers to experts as those with authority and practical experience in their field. We assume that experts, when challenged, can thoroughly explain why their claim or advice is good. Consider the following examples:

Dr. Tom is a General Practitioner. Dr. Jon is a reconstructive hand surgeon. Dr. Tom is an authority on general medical practice, yet Dr. Jon is an expert practicing medicine as a reconstructive hand surgeon.
Larry Jones, Esq. owns a general law practice and takes cases involving everything from personal injury to landlord/tenant disputes. Don Smith, Esq. is an Assistant U.S. Attorney specializing in prosecuting ‘too big to fail’ banks for packaged derivative trading in international markets. Larry Jones, Esq. is an authority on general law, yet Don Smith, Esq. is an expert on the laws relevant to packaged derivative trading in international markets.

Critical thinkers must learn to discern claims made by authorities and experts. How many years of experience and what types of education do they have? Do they belong to professional associations? Does the claim provided make sense or do you have a suspicion that the person is hiding behind the title that makes them as an authority or expert?

**ASSESS THE CREDIBILITY OF A CLAIM’S SOURCE**

To be credible, a source should be objective, accessible, free, current, and it should have the required expertise. You cannot rely on a source to be fair and unbiased if he/she consistently portrays only one side of an issue. If a source is providing information that is generally accessible to the media, the story is more likely to be true. Conversely, if a source consistently has exclusive access to information, it will be difficult to independently verify; therefore, it will be difficult to assess the source’s credibility. The following sections explain some other characteristics of credible sources.

A credible source has journalistic freedom. Information coming from countries that censor the media is not likely to be credible. Likewise, publications that seek to please their advertisers at the expense of their readers are less free to report information fairly and accurately. Keep this in mind as you write research papers. Your arguments will be stronger if you use credible sources to support them.

Sources must also be current to be credible. When reading a five-year-old guidebook, you may question whether the information in it is still accurate. Finally, sources of information should have the expertise in the field they are discussing. Otherwise their claims and conclusions are not credible. For example, when you are writing an argument about global warming, evidence you get from a climatologist will be much more credible than evidence you get from a college student.

Individuals are more likely to be persuaded if the person doing the persuading is viewed as being credible, reliable, trustworthy, an expert, or holding authority. But one needs to remember that expertise is relative. Critical Thinkers are able to rely on strategies to validate the credibility of the source.

The actual means by which a critical thinker can assess the credibility of a source varies. Perhaps the best way is to ask a series of questions about the source. The questions should be formatted to help judge trustworthiness. Questions designed to determine the credibility and reliability of a source might include:

1. Who (an individual) or what (an organization) is the actual source of the information?
2. Where and when did the source gain the knowledge? What qualifications support their expertise?
3. Is the competence of the source evident? What credentials lead you to believe their credibility?
4. Is the source considered trustworthy? By whom?

5. By what means was the knowledge collected? Over what period of time?

6. Does the source benefit from influencing others to believe their argument? Does the source have a motive for wanting you to think a certain way? Consider the previous car salesman and Republican candidate examples.

7. Can the sources’ information be validated through multiple sources?

8. Are differing points of view considered?

We concluded this Learning Plan by learning the methods by which to assess the credibility of a claim and the author of the claim. In Learning Plan 3, we will learn how oration can be used to persuade audiences through **rhetoric** and various fallacies that evoke emotions for quick acceptance of a claim.
LEARNING PLAN 3: RHETORIC AND FALLACIES

COMPETENCY

EVALUATE RHETORICAL DEVICES AND FALLACIES

This Learning Plan addresses the following learning objectives to help you master the competency:

a. Identify rhetorical devices.

b. Identify logical fallacies.

c. Identify psychological fallacies.

OVERVIEW

Thus far, you have explored several techniques for thinking critically about persuasive arguments.

1. Assess the content of the claims made by a speaker or a writer.

2. Assess the credibility of the source.

3. Distinguish the difference between factual information and information based on opinion.

We will now study rhetorical devices and how they can be used ethically and responsibly.

Writers aim to be more than clear. They also want to be convincing. They want to persuade their readers to do something—to buy a product, to believe an idea, or to vote for a candidate. One might think that persuasive writing produces genres such as advertising and propaganda. It does, but persuasion also exists in most other forms of writing: research papers, proposals, and college essays, to name a few.

Writers must persuade people to read their writing. No one has to convince college professors to read their students’ papers. Professors are paid to read their students’ papers, no matter how badly they are written. However, once you leave college, your readers will not have so much patience. In the professional world, if you turn in unclear writing or fail to communicate the importance of your writing, your colleagues will do what they do with most of the paper that comes across their desks: scan it quickly and throw it away. To prevent this from happening you must think critically about your audience and understand what will persuade them that reading your document will be worth their while.
The art of persuasion is called rhetoric. The term itself and the related systems developed from rhetoric in ancient Greece, which had a strong culture of oratory. (The Greek term ‘rhetor’ means ‘orator’, or public speaker.) Greek thinkers and philosophers conveyed their ideas by using elaborate strategies to make their speeches memorable and convincing. Today, rhetoric is sometimes used as a pejorative term because people believe rhetorical devices obscure the truth. However, classical philosophers believed rhetoric helped listeners discover the truth by organizing and clarifying arguments.

**RHETORICAL DEVICES**

Greek philosophers Plato and Aristotle studied the techniques of public speakers and developed a classification system that described these techniques. Aristotle, who lived from 384 to 322 B.C., wrote the first book on the topic, *Ars Rhetorica*, which can be translated as ‘The Art of Rhetoric’ or ‘Treatise on Rhetoric’. Later, the Roman rhetoricians Cicero (106-43 BC) and Quintillian (35–100 AD) built on the work of Aristotle and other Greek philosophers to develop a field of study that continued through the Renaissance to today. Below are samples of the rhetorical devices defined and developed by critical thinkers over the centuries. The devices covered in this Learning Plan are by no means exhaustive. There are scores of terms that make up the entire system of rhetoric.

**Expletive:** An expletive is a word or phrase that interrupts the flow of a sentence and adds emphasis to particular ideas in the sentence. The following are examples:

- Wow, she is so beautiful!
- Get this: he actually said that aliens took his homework!

**Understatement:** An understatement downplays the emotions the writer or speaker is trying to convey. The following is an example:

- The fans were somewhat happy when their team won the championship.
  
  Understatements can also be used to diplomatically disagree with someone. For example, instead of saying, “That’s the most ridiculous idea I’ve ever heard”, an understatement could be used: “I think I might disagree with that last point”. The idea behind this understatement is to passively persuade, not offend.

**Hyperbole:** Hyperbole is the opposite of understatement; it is an exaggeration. The following is an example:

- I wouldn’t give you water if you were stranded in the desert!

**Antithesis:** Antithesis is a device that uses a parallel sentence structure to establish a contrasting relationship between two ideas. The following are examples:

- Yes, it’s legal, but is it right?
- To err is human; to forgive, divine.
**Rhetorical Question:** A rhetorical question is a question that does not need to be answered because the answer is assumed to be obvious. This device provides writers with another way to convince someone of a point of view without alienating him or her. For example, instead of saying, “I refuse to discuss that issue again”, one could rather say, “Do we really need to revisit that issue again?”

**Metaphor:** Metaphors are comparisons that show how two things that are not alike, in most ways, are similar in one important way. Authors use metaphors to enhance descriptions of a point they are conveying to make their writing more interesting. The following are examples:

- I am so mad that my blood is boiling!
- That linebacker is steam train.

**Procatalepsis:** Procatalepsis is a device writers use to anticipate and address possible objections to their arguments. It is a rhetorical device used to disarm the opposition. This device can show that you have considered counter-arguments and it is much more effective than leaving yourself open to those objections in the future. The following is an example:

- My opponent argues that the average American worker has not seen a wage increase, accounting for inflation, since 1982. However, this does not take into account how our lifestyles have improved. The majority of Americans have cell phones, big screen televisions, and air conditioning in their homes; only a minority of Americans enjoyed these in 1982.

**Simile:** A simile is a rhetorical device in which two different things are compared. Simile can be a subtle way of criticizing an opponent without seeming too hostile or direct. The following is an example:

- “My opponent is like pancake because he flip-flops constantly.”

These rhetorical devices, as well as many others, can provide you with a variety of effective tools to make your writing more interesting and persuasive.

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**ETHICS IN PERSUASIVE WRITING**

As previously discussed, Greek philosophers believed rhetoric was a tool for uncovering truth because it helped organize and clarify arguments. However, many people today are rightly suspicious of rhetoric because it provides tools for persuasion without regard to the veracity of the information it conveys. Throughout history, politicians, chief executive officers, and many figureheads motivated by external influences have used rhetorical devices to persuade others to believe false information. Consider the infamous example of Enron, the energy company. Enron’s executives convinced shareholders that their company, which was quickly becoming bankrupt, was actually profitable. This was accomplished with the complicity of their auditors, Arthur Anderson, who falsified financial reports. Other famous examples of using rhetoric to conceal the truth include U.S. President Bill Clinton’s relationship with White House intern Monica Lewinsky and U.S. President Richard Nixon’s involvement in the Watergate scandal. All of these instances were attempts to use rhetoric to obscure the truth. They were ultimately unsuccessful.
Persuasive language influences beliefs, attitudes, and actions. Rhetoric is extremely powerful; you must learn to analyze the veracity of the information you are presented regardless of how convincing it sounds. In the same manner, as a writer you must learn to use your information wisely and ethically. Your main purpose may be to change someone’s viewpoint, but this end goal does not give you license to use non-factual information, or potentially even more damaging factual information, out of context. As a writer you must think critically about the content of your arguments. You must be certain your most critical readers will find your arguments plausible and the information you provide reliable.

**IDENTIFY FALLACIES IN REASONING**

You will now learn about a process for assessing the reasoning used to arrive at a conclusion, claim, or fact: the process of **logic**. Logic was the brainchild of ancient Greek philosophers who attempted to create a system (called logic) for categorizing all types of arguments and flaws in arguments. (You will remember from the section on rhetoric that Greek philosophers also created systems to categorize for figures of speech.) This Learning Plan explores some of the most common flaws in reasoning. Later Learning Plans will discuss the process of reasoning in much more detail. For now, however, your objective should be to understand some of the basic fallacies that can be used in persuasive writing to manipulate the truth.

**LOGICAL FALLACIES**

A fallacy is an error that weakens an argument. A **logical fallacy**, also called a **formal fallacy**, is an error in the structure of an argument. In logic, arguments must be organized in such a way that each statement within the argument supports another statement that, in turn, builds up to a final claim. The argument is invalid if some link in the process is broken.

**Logical fallacies** occur when the formal structure of the argument is flawed. Ideally, a logical argument will have a certain formal structure that allows one piece of evidence to support another. Below is Aristotle’s famous **syllogism**, an argument with two pieces of evidence (also called premises) and a conclusion. This syllogism shows the most basic structure of a logical argument:

<table>
<thead>
<tr>
<th>All men are mortal</th>
<th>Premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socrates is a man</td>
<td>Premise</td>
</tr>
<tr>
<td>Therefore, Socrates is mortal</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>
This type of syllogism is also sometimes expressed as a mathematical formula called Transitive Equity. For example:

If all are A and B  
Premise

All C are A  
Premise

Then C is B  
Conclusion

However, what happens to this same argument when the logical structure is violated? Consider the following example:

Socrates is a man  
Premise

Socrates is brilliant  
Premise

Therefore, all men are brilliant  
Conclusion

The conclusion is obviously not true because everyone knows men who are not brilliant. You can also determine that the syllogism is not logically true. The fact that Socrates is brilliant provides very little information about other men. This conclusion is too broad and general to be supported by the premises.

Keep in mind that a final claim can be true even if the process for arriving at that truth is flawed. If you are suspicious about the conclusion you can look to the process leading up to the conclusion to help you understand where the argument went awry.

You will likely not have the time to write out and analyze the syllogisms that comprise arguments you encounter daily. However, if you are aware of the general structure of logical arguments, you are more likely to write convincing arguments and spot flaws in the arguments of others.

**PSYCHOLOGICAL FALLACIES**

**Informal fallacies** are arguments where problems lie in areas other than the structure of the argument. The most common type of informal fallacy is **psychological fallacy**, which is an argument that manipulates psychological associations to prove a claim or point. Below are examples of psychological fallacies:
Attacking the Person (*ad hominem*): Blaming the person instead of the situation or issue. For instance, an *ad hominem* argument is a person’s exclamation, “The President is responsible for the economic collapse.” This particular person does not personally know if the President unilaterally made the decisions that led to the collapse. Instead, the speaker should address the specific actions or policies of the president that he or she disagrees with and provide support for those beliefs.

**Appeal to Force (*ad baculum*):** The use of threats to support a conclusion.

- “I must go to the party. If I can’t, I’ll never talk to you again!”

**Bandwagon Fallacy:** There is strength in numbers. People will often believe a claim if there is a supporting group of people. The cognitive heuristic thinking is, “Well, if that many people believe it, then it must be true.” Nothing could be further from the truth. It is much easier to follow the crowd than to engage in critical thinking. What if you discover that the crowd is wrong? Would this result in the crowd ostracizing you or treating you differently should you voice your decision?

We can think of bandwagon mentality likened to mob mentality. Mobs gain strength as the wave of discontent spreads throughout a large group of people. All it takes is one person to commit the first act of civil disobedience (the spark) and, very quickly, a crowd can turn into a violent mob because others see the initial act and follow in likeness. Another metaphor is thinking of a tsunami; the spark is the shifting of the ocean floor plates and the tsunami gains strength as it travels. Who wants to be the water that jumps out of the way and is not swept up by such a powerful force? The same force in a bandwagon fallacy sweeps up human minds as it gains strength. The group that propagates it to be true verifies the ‘truth’ of the claim. Common examples are racial stereotyping and rhetoric used by political candidates that is adopted by their supporters.

We sometimes use the bandwagon fallacy to justify our actions or give ourselves permission to do something that is either social taboo or disapproved by those that hold authority over us. There is a common phrase that parents say to their children to discourage them from following a crowd (when the results are harmful): “If everyone was jumping off of the bridge, would you jump as well?” Conversely, the bandwagon fallacy, as used to justify our actions, would result in the following statement: “I want to jump off of the bridge. Look-everyone around me is doing it.” The difference between the two statements is that, in the first statement, the jumper is doing so only because everyone else is jumping off of the bridge. In the second statement, the jumper is using the actions of the other jumpers to justify his or her decision to jump.

**Wishful Thinking:** Arguing a claim is true or false because it is *hoped* to be true or false.

- “The claims of torture must be false because soldiers are held to a high ethical standard.”
OTHER TYPES OF FALLACIES

Either/or Fallacy: This is perhaps the most common fallacy in student writing-oversimplifying a topic to only two positions. Even commonly divided issues, such as abortion (pro-choice, pro-life), usually have multiple perspectives and arguments. Politicians use this as well.

- “You are either for us or against us.”
- “The universal health care plan will turn us into Socialists.”

Slippery Slope: This fallacy makes the assumption that once one decision is made in a particular direction that it will have a domino effect and lead to additional, more extreme decisions.

- “If we allow for assault weapons to be banned, then we will wake up one day and all firearms will be illegal to own.”

Hasty Generalization: This fallacy happens when a writer does not have enough evidence to support his or her claim.

- “Anyone who carries a pager is a drug dealer.”

Causal Fallacy (post hoc, ergo propter hoc): This fallacy inaccurately assumes that because one thing happened before the other that it must have caused the other. In other words, it falsely assumes a causal relationship.

- “Because Eastern Indians liked to use incense, they caused the revival of the use of incense in the 1970s.”

Many of you read this and believe that the theories and concepts are common sense. If so, then why are they proven to be so effective in persuading people? We fall for rhetoric, logical, and psychological fallacies every day because we want to believe. We find what we are looking for in life and gravitate towards others, or belief systems that reinforce our thoughts and beliefs. This does not leave open the option of engaging in critical thinking because the person believing is convinced they regularly engage in critical thinking…when they are only following what is comfortable psychologically. Critical thinking is dangerous because, once initiated, everything is open for debate. What would you do if you discovered that your core beliefs are wrong?
LEARNING PLAN 4: INDUCTIVE AND DEDUCTIVE ARGUMENTS

COMPETENCY

EVALUATE THE VALIDITY OF DEDUCTIVE ARGUMENTS

This Learning Plan addresses the following learning objectives to help you master the competency:

- Distinguish deductive from inductive arguments,
- Distinguish valid argument from invalid arguments.
- Identify unstated premises.
- Translate ordinary language statements into truth-functional notation.
- Evaluate the validity of deductive arguments by the application of truth table techniques.
- Apply the rules of deduction to deduce conclusions from sets of premises.

OVERVIEW

In Learning Plan 1, you learned the basic skills of critical thinking. Learning Plan 2 explored terms and tools of logic that help you write persuasive arguments and analyze the arguments of others. Learning Plan 3 explored the logic and philosophy that underpins argumentation in more depth. This Learning Plan will define two major categories of argumentation, deductive and inductive reasoning, and discuss strategies for determining whether these arguments are valid or invalid. The study of logic and reasoning is challenging; it is particularly challenging to learn how to spot specific flaws in reasoning, especially when a speaker or writer is adept at using rhetorical devices to make his or her writing more compelling. It is tempting to get caught up in the emotional pull of skillful argumentation. However, the critical thinking tools you acquire in this course will, over time, help you make logical decisions about which arguments to believe and of which to be skeptical.

This Learning Plan discusses several methods for analyzing and evaluating arguments. First you must understand what it means to analyze and evaluate. Analysis requires that you organize the information for whatever you are studying. Analytical thinking does not always come naturally because it requires you to stop your normal thought process and pause to consider how a particular thing is structured or organized. You cannot simply listen to the argument when analyzing it. You first must break the argument down into component parts and organize those parts in such a way that you can see how they work together to create the argument as a whole. As this Learning Plan progresses, you will learn several specific methods for analyzing arguments as well as their validity.

DEDUCTIVE AND INDUCTIVE ARGUMENTS

As you learned in Learning Plan 2, the study of logical reasoning developed in ancient Greece; its originator was Aristotle, a renowned philosopher. Aristotle developed his system of logic in two books, On Interpretation and Prior Analytics; in them, he described detailed methods for
classifying, analyzing, and validating arguments. The most basic tool he uses for analyzing arguments is the **syllogism**. A **syllogism** is a formal argument that has three component parts: two **premises** and a **conclusion**. We discussed the basic structure of a syllogism in Learning Plan 3. Several examples of syllogisms are discussed below. The Greek word for syllogism, *sullogismos*, means ‘deduction’. Aristotle was primarily concerned with deductive reasoning.

**Deductive reasoning** is a method of argumentation that allows one to establish that a statement or fact must be true based on other statements or facts that are already known to be true (or accepted as true). You may recall Aristotle’s famous example of deductive reasoning, which was first mentioned in Learning Plan 3:

<table>
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</thead>
<tbody>
<tr>
<td>Socrates is a man</td>
<td>Premise</td>
</tr>
<tr>
<td>Therefore, Socrates is mortal</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>

In this syllogism, you begin with two related statements of fact (premises) from which you can deduce a third statement of fact (the conclusion), which must be true.

By contrast, **inductive reasoning** is a method of argumentation that allows one to draw *general conclusions* from limited examples. An inductive reasoning example can be made about crows. You have probably seen thousands of crows in your life. If someone asked you what color crows are, you would likely answer black. It would even be reasonable, based on your experience, to say that all crows are black. This is an example of **inductive reasoning** because you do not absolutely know that all crows are black. Because you have not seen every crow in the world, it would be impossible for you to validate this argument. If there were even one blue crow somewhere in the world, or perhaps an albino crow, then the statement would be false.

Notice that **deductive reasoning** is only effective in this situation if the both of the underlying premises are true. So you might say, after observing thousands of crows:

<table>
<thead>
<tr>
<th>All crows are black</th>
<th>Premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>My sister saw a crow</td>
<td>Premise</td>
</tr>
<tr>
<td>Therefore, the crow my sister saw was black</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>

If, however, there are in fact some blue crows out there, then your premise was false and your conclusion would also be false. Because one of the premises is false (your sister may have seen a blue crow), this **syllogism** would be an example of an **inductive argument**. This is because one of the premises is a general conclusion drawn from limited examples.
Let’s look at one more example that will help clarify the difference between inductive and deductive reasoning. Imagine that it is Groundhog Day, a holiday celebrated in some U.S. regions, and you want to know if your bank is open. Groundhog Day is not a federal holiday. Based on this limited information, deductive reasoning fails you:

- All banks are closed on all federal holidays (premise)
- Groundhog Day is not a federal holiday (premise)
- Therefore … what?

Nothing can be concluded from the first two premises, so deductive reasoning does not help. Inductive reasoning, however, could help you collect a few pieces of evidence and arrive at a reasonable conclusion. You might notice that all the banks you pass are closed even though it is noon on a weekday. Using inductive reasoning, you may conclude that banks in your area observe Groundhog Day, and that your bank will be closed as well. The more banks you see that are closed, the more data points you have, and the stronger the evidence will be that your bank is closed.

You may be wrong. Yet as you weigh the risk of wasting the trip against the risk of missing an opportunity to get to the bank, it is reasonable to assume (based on your inductive reasoning) that it is a greater risk that you would waste the trip. Therefore, you head back home and play television instead. This type of reasoning, while efficient, is not valid in the strict Aristotelian sense of term because the validity of the conclusion cannot be guaranteed. Such reasoning can help you make decisions based on reasonable interpretations of the available data.

DEDUCTIVELY VALID ARGUMENTS

A deducively valid argument is an argument (in syllogism form) where it is impossible for the premises all to be true and the conclusion false. There is no way that the premises are true and the conclusion false. The following is a general template:

<table>
<thead>
<tr>
<th>If not A, then B</th>
<th>Premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not B</td>
<td>Premise</td>
</tr>
<tr>
<td>Therefore, not A</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>
The following are examples of deductively valid arguments:

<table>
<thead>
<tr>
<th>Premise</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you have been promoted to the rank of Major, then you have served for at least 8 years</td>
<td>Therefore, you have not served for at least 8 years</td>
</tr>
<tr>
<td>You have not served for at least 8 years</td>
<td></td>
</tr>
<tr>
<td>If you graduate with honors, then you have a 3.5 GPA</td>
<td>Therefore, you will not graduate with honors</td>
</tr>
<tr>
<td>You have below a 3.5 GPA</td>
<td></td>
</tr>
<tr>
<td>If you are a practicing attorney, then you have passed the Bar Exam</td>
<td>Therefore, you have not passed the Bar Exam</td>
</tr>
<tr>
<td>You are not a practicing attorney</td>
<td></td>
</tr>
</tbody>
</table>

THE POWER OF ONLY

Only’ is an interesting word in the English language. It has the power to change the entire meaning of a sentence depending upon where it is placed. Consider the following simple sentence example:

- Some objected to being ordered to leave.

Note how the meanings change depending upon where the word ‘only’.
<table>
<thead>
<tr>
<th>Location of ‘Only’ to Change Meaning</th>
<th>Interpretation of New Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Only</em> some objected to being ordered to leave.</td>
<td>Others did not object.</td>
</tr>
<tr>
<td>Some <em>only</em> objected to being ordered to leave.</td>
<td>They did not object to other orders.</td>
</tr>
<tr>
<td>Some objected <em>only</em> to being ordered to leave.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>Some objected to being ordered <em>only</em> to leave.</td>
<td>They wanted another order as well.</td>
</tr>
</tbody>
</table>

Be careful with using the word *only* because it could change the entire meaning of the sentence. This might change the writer’s intent. When analyzing a syllogism to determine if it is **deductively valid**, note that ‘*only*’ is a queue that it is not. Deductively valid syllogisms almost always follow the ‘if-then’ format in the first premise, a factual statement refuting the qualification after ‘then’ (from premise one), and then a conclusion marrying premise B and the ‘if’ statement from premise (one). The following is a visual example:

<table>
<thead>
<tr>
<th>‘If’..., ‘then’...</th>
<th>Premise 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factual statement refuting the qualification following the ‘then’ statement from Premise 1</td>
<td>Premise 2</td>
</tr>
<tr>
<td>Combining Premise 2 with the ‘if’ statement from Premise 1</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>

### IDENTIFYING THE UNSTATED PREMISES

You must have a complete **syllogism** to analyze the validity and truth of a syllogism. However, sometimes you may encounter arguments in which one of the premises is **unstated**. This may occur when the person making the statement *assumes* that the audience will automatically understand and supply the **unstated premise**. For instance, a member of a group that condemns smoking might say, “Jon enjoys smoking. Thus, Jon is a bad man.” Logically, this person is making the following argument:

<table>
<thead>
<tr>
<th>All people who smoke are bad</th>
<th>Premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jon smokes</td>
<td>Premise</td>
</tr>
<tr>
<td>Therefore, Jon is a bad person</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>
Although this syllogism is logically valid, the conclusion is only true if the premises are true. In this example, the premise that people who smoke are bad is a subjective, non-factual statement that cannot be shown to be objectively true.

### TRUTH-FUNCTIONAL NOTATION

One tool that will help you determine the validity and truth of a deductive syllogism is a truth table, also known as truth-functional notation. As indicated above, a valid syllogism has a conclusion that can be drawn from two premises that are assumed to be true. The premises may, or may not, actually be true and therefore the conclusion may or may not be true. It is possible to make a simple truth table showing the various possibilities. Below, the first premise is denoted as A and the second premise is denoted as B. T and F stand for true and false. Below is a truth table for one simple statement:

<table>
<thead>
<tr>
<th>Truth Table: One simple statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>F</td>
</tr>
</tbody>
</table>

This truth table says that statement A can either be true or false. As statements are added, the truth table becomes more complex, as shown below:

<table>
<thead>
<tr>
<th>Truth Table: Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>F</td>
</tr>
</tbody>
</table>

The truth table above indicates that there are four possible outcomes for the premises in our syllogism. Both statements could be true, Statement A could be true, Statement B could be false, and so on.
This notation system can be applied to a written syllogism as well, as shown below:

<table>
<thead>
<tr>
<th>Truth Table: Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jon is a man</td>
</tr>
<tr>
<td>Jon is unethical</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>F</td>
</tr>
</tbody>
</table>

The real value of truth tables lies in their ability to determine the truth of the conclusions, *not just the premises*. A complete truth table will allow you to determine whether or not the conclusion is true based on the information you have about the premises—assuming you also know what type of deductive syllogism you are dealing with. For example, the basic syllogisms in this section are all **conjunctions**. The conclusions of the syllogisms were created by *conjoining or combining* the information from the first and second statements. In a syllogism that uses **conjunction**, the conclusion can only be true if both premises are true (note the use of the word ‘only’ here). This is reflected in a truth table as shown below:

<table>
<thead>
<tr>
<th>Premise</th>
<th>Premise</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>A + B</td>
</tr>
<tr>
<td>T</td>
<td>All men are mortal</td>
<td>T Therefore, Socrates is mortal</td>
</tr>
<tr>
<td>T</td>
<td>Jon smokes</td>
<td>F Therefore, Jon is a bad person</td>
</tr>
<tr>
<td>F</td>
<td>Pepsi is the best soda</td>
<td>F Therefore, Bob drinks the best soda</td>
</tr>
<tr>
<td>F</td>
<td>Dogs look like cats</td>
<td>F Therefore, dogs have no hair</td>
</tr>
</tbody>
</table>

Note it is applied to construct the table to further visualize whether the argument is **deductive**, or whether it is more likely to be **inductive**. The following is another example:

<table>
<thead>
<tr>
<th>The flu makes people sick</th>
<th>Premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rima has the flu</td>
<td>Premise</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Therefore, Rima is sick because she has the flu</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
The truth table below illustrates the validity of the conclusion based upon the truth of each premises:

<table>
<thead>
<tr>
<th>The flu makes people sick</th>
<th>Rima has the flu</th>
<th>Rima is sick because she has the flu</th>
<th>A</th>
<th>B</th>
<th>A + B</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>T</td>
<td>Deductive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>F</td>
<td>Possibly Inductive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>T</td>
<td>F</td>
<td>Possibly Inductive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>F</td>
<td>F</td>
<td>Possibly Inductive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These examples may seem rather obvious; however, truth tables can be very useful for complex deductive arguments. In these cases, a truth table can be used to determine whether or not you know if the premises are true and whether the conclusion is valid so you can determine the type of argument it is.

**APPLYING THE RULES OF DEDUCTION**

**Deductive reasoning** can be applied in many real-life situations. You should be able to draw logical conclusions if you have a set of premises to work from. For instance, when deciding which car would be the best choice for you, choose the criterion most important to you and create a syllogism. If you lived in the Rocky Mountains and were most concerned with how your car will handle in the snow, your syllogism might look like this:

<table>
<thead>
<tr>
<th>I want a car that handles well in the snow</th>
<th>Premise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front wheel drive vehicles perform better in the snow than rear wheel drive vehicles</td>
<td>Premise</td>
</tr>
<tr>
<td>Therefore, I want a front wheel drive car</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>

You can then continue working through your requirements in this logical manner until you have chosen the car you want. Of course, such decisions are not entirely rational, because on some level, you must like the car you purchase (**subjective**).
This is very difficult material to understand. You might read some of the examples and disagree with what is labeled as a false or true premise. This is because we are subjective in our interpretations. Our beliefs are a sum total of our life experiences, culture, and preferences. Many people believe that there is a clear right and wrong. This is a suspect method of analysis because there is far more ‘gray’ area than there is defining what is right or wrong. ‘Right/wrong’ thinking is better left for raising children until children can grasp abstract concepts.

Remember the either/or fallacy from Learning Plan 3? This is akin to ‘right/wrong’ thinking. A critical thinker suspends belief from this adversarial thinking and evaluates the ‘gray’ area to determine a rational and reasoned conclusion. This is what it is important to achieve critical distance and consider each premise from a position of objectivity to determine whether it is true or false.
LEARNING PLAN 5: INDUCTIVE ARGUMENTS

COMPETENCIES

EVALUATE THE STRENGTH OF INDUCTIVE ARGUMENTS

This Learning Plan addresses the following learning objectives to help you master the competency:

a. Identify different types of inductive argument.
b. Distinguish formal inductive arguments from informal inductive arguments.
c. Factor sample size and random variation into inductive argument evaluations.

EXAMINE FALLACIOUS INDUCTIVE ARGUMENTS USING THE PRINCIPLES OF INDUCTIVE REASONING

This Learning Plan addresses the following learning objectives to help you master the competency:

a. Distinguish strong inductive arguments from weak inductive arguments.
b. Apply informal error margins and confidence levels to evaluate generalizations.
c. Apply informal error margins and confidence levels to evaluate analogical arguments.
d. Identify self-selected sample and slanted question fallacies in inductive arguments based on polls.

OVERVIEW

We have now come to learn Inductive Reasoning. In the previous Learning Plan, we studied Deductive Reasoning. Deductive Reasoning is effective for ‘proving a factual point’. The following scenario is where I put my mind when creating deductive syllogisms:

You are a Prosecuting Attorney and are about to begin closing arguments. The judge, old and tired of hearing so much fluff, informs you that you are only allowed to use a deductive syllogism in closing arguments to the jury. You must provide two facts (premises) that lead to a conclusion. This is all the jury has to use in deliberating the validity of your closing argument. What is your syllogism?

Your case will succeed or fail based upon the validity and strength of the deductive syllogism. This is very difficult, no doubt. However, in practical application, this would obviously never work. There is a lesson to be learned for you future lawyers reading this class text-brevity is paramount in legal work. I have made numerous closing arguments before judges and juries and they only want the highlights of the case. I always stuck to my primary points that proved the case in chief (corpus delicti) and found this to be very effective. I never lost a criminal trial. Conversely, we rarely have the factual premises to provide an indisputable conclusion. We are then left to use Inductive Reasoning to draw a rational conclusion.
INDUCTIVE REASONING

Effective Inductive Reasoning is the most widely used form of argument because it permits arguments to be made even if all the facts of the argument have not been proven and do not fit into a logical syllogism. Inductive arguments can use any evidence that may seem relevant to the question at hand; therefore, they can take many different forms. Below are examples of commonly used inductive reasoning techniques:

1. **Generalization**: A generalization is an argument that uses information about a sample, or the part of the total population being observed, to make a conclusion about the entire population. For example, perhaps you are considering adopting a watchdog, and you want to choose an aggressive breed.

   Below is an example of a decision-making process that involves generalization:
   
   - I’ve seen a lot of aggressive Pit Bulls.
   - Therefore, all Pit Bulls must be aggressive.

   We obviously know that not all Pit Bulls are aggressive. The speaker here is levying a heuristic stereotype based upon limited experience with Pit Bulls.

2. **Statistical Syllogism**: A statistical syllogism is an argument that applies a statistical generalization about a sample population to arrive at a conclusion about an individual member of the population. It is the inverse reasoning of the Generalization example above. Continuing the above example, say you go to an animal shelter and talk with the director, who says 4 of every five Pit Bulls that come to the shelter are aggressive. The rest are very docile. You decide to adopt from this shelter using the following statistical syllogism:

<table>
<thead>
<tr>
<th>Premise</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four out of every five Pit Bulls received by this shelter are aggressive</td>
<td>Therefore, the Pit Bull I adopt from this shelter is most likely to be aggressive</td>
</tr>
<tr>
<td>I want to adopt an aggressive dog</td>
<td></td>
</tr>
</tbody>
</table>

3. **Prediction**: Similar to statistical syllogism, prediction tries to anticipate the characteristics of future members of the population. For example:

   - Four of every five Pit Bulls received by this shelter are aggressive.
   - Therefore, the next Pit Bull the shelter will receive is likely to be aggressive.
4. **Simple Induction**: A simple induction is an argument that begins with a premise about some members of a population and ends with a conclusion about some other member of the same population. The following is a very basic example: You are close to adopting a very cute Pit Bull. Below is a syllogism that describes your decision making process:

<table>
<thead>
<tr>
<th>Premise (Sample)</th>
<th>Premise (Generalization)</th>
<th>Conclusion (Simple Induction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most Pit Bulls I have known are aggressive.</td>
<td>Almost all Pit Bulls must be aggressive.</td>
<td>Therefore, this Pit Bull is likely to be aggressive.</td>
</tr>
</tbody>
</table>

The conclusion arrived at using simple induction is similar to the conclusion you arrived at using statistical syllogism; however, with simple induction, you do not need to make a statistical statement that is a generalization about Pit Bulls.

5. **Argument from Analogy**: An argument from analogy is an argument that tries to prove that something is true by comparing it to something else. Below is a syllogism using analogy:

<table>
<thead>
<tr>
<th>Premise</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dobermans were originally bred from German pinschers.</td>
<td>Therefore, Dobermans must be aggressive.</td>
</tr>
</tbody>
</table>

6. **Causal Inference**: A causal inference is an argument that tries to prove there is a causal (or correlative) relationship between two things. This type of argumentation is very common in science because scientists often try to prove that something (e.g., smoking) causes something else (e.g., cancer). Going back to the Doberman example:

- Dobermans were originally bred from German pinschers.
- Therefore, aggressive genes from German pinschers must cause aggressiveness in Dobermans.

**VALIDATING INDUCTIVE ARGUMENTS**

Inductive arguments can be much more complex than deductive arguments because the latter start from premises that are already proven to be true. As a result, the process for validating inductive arguments is very complex and time consuming. In general, inductive arguments fall into two major categories: formal and informal. A formal inductive argument confirms or refutes a hypothesis using a scientific process by gathering evidence and applying mathematical formulas to analyze the evidence. An informal inductive argument, on the other hand, relies on analogies and less mathematical forms of evidence. Any of the six types of
inductive arguments described above can be formal or informal depending on how rigorous the arguer is about supporting his or her argument. Some mathematical and statistical techniques, if used well, can be used to create formal inductive arguments.

STRONG AND WEAK INDUCTIVE ARGUMENTS

The discussion on inductive reasoning began with an example about crows. A person can confidently make the statement ‘All crows are black’ if they have observed nothing but black crows during the person’s lifetime. However, if there is even one crow in the world that is not black, then that statement is false. This is the core difference between deductive and inductive premises. The former requires two premises that are universally true and, if there is one exception (such as one blue crow), then the syllogism can only be inductive. However, the statement ‘Most crows are black’ is true even if there are some blue crows in the world. This is because ‘all’ is replaced with ‘most’ when comparing the two statements.

Now imagine that even though most crows are black there are, in fact, millions of blue crows. If six of every ten crows observed in a given random sample were blue, one who views the results might remark that most crows are blue. This is an example of a weak inductive argument because it is based on viewing a very small sample.

SAMPLE SIZE

A strong inductive argument would be based on more data. For example, imagine that you spent time over a few days counting crows and, after you were finished, you found that 120 of the crows were blue and 80 were black. You would then probably feel more comfortable predicting that most crows are blue. But what if you counted 102 blue crows and 98 black crows? Your confidence in the previous prediction would probably dissipate and you might be more inclined to say that blue and black crows occur with the same frequency.

What constitutes a strong or weak inductive argument can change based on the context. Common sense is a good guide to the relative strength of an inductive argument. Translating the above example into statistical terms, you would be talking about sample size (the number of observations), confidence interval (the margin of error), and confidence level (in this example that would be the probability that the real ratio of blue crows to black crows falls around where the argument claims it does). The larger the sample size, the narrower the margin of error, and the higher the confidence level.

<table>
<thead>
<tr>
<th>The larger the sample size =</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>The narrower margin of error =</td>
<td>…results in</td>
</tr>
<tr>
<td>A higher confidence level in the results</td>
<td>(Valid statistical conclusion)</td>
</tr>
</tbody>
</table>
The inverse argument illustrates the example concerning a random sample of 10 crows:

<table>
<thead>
<tr>
<th>The smaller the sample size =</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>The higher margin of error =</td>
<td>…and results in</td>
</tr>
<tr>
<td>A lower confidence level in the results</td>
<td>(Invalid statistical conclusion)</td>
</tr>
</tbody>
</table>

For example, if there were 10 million crows in the world and you observed 1,000 of them, 600 of which were blue (60 percent), your confidence interval, or margin of error, would be 4 percent. This means that, accounting for the margin of error, you could be 99 percent certain that if you observed all 10 million crows, between 56 and 64 percent of them would be blue.

Statisticians may use a statistics confidence interval chart to determine how large a sample size they will need to reach a certain margin of error at a certain level of confidence. Typically, researchers will choose between a 95 percent to 99 percent confidence level. The 95 percent confidence level is usually chosen. In the example above, a statistics confidence chart indicates that for a confidence level of 99 percent and a sample size of 1,000, our margin of error would be 4 percent.

The larger the sample size, the more precise a prediction can be. Think about it—there are a finite number of crows on earth. The more you observe, the closer you get to observing all crows (which would result in a fictitious 100 percent confidence level). The closer you get to observing all crows on earth results in a less likely chance that the statistics, based upon the results you have at any given number of crows, are inaccurate (margin of error). The margin of error essentially states that not all crows have been observed so there is a 4 percent chance (in our example above) that predictions, based upon the given set of statistics, is inaccurate. This is why is it reported as ‘between 56 and 64 percent:’ so the language informs the audience that the 4 percent could move in either direction of error from the base observation of 60 percent of the crows observed being blue.

Intuition about the strength of arguments, based on sample size and size of the observed differences, can be viewed as informal error margins and confidence levels. This intuitive reaction is likely to be sufficient when dealing with situations that are often encountered in everyday life, such as when choosing a breed of dog to adopt.

Imagine that of 200 people, who apply to work at a particular company, 50 percent are men and 50 percent are women. 100 are hired. If everything else were equal, it would seem that 50 percent of the individuals who were hired should be men and 50 should be women. However, if only 39 percent of the hires were women, the probability of this being the result of random chance is 1 in 100. The shortfall of women hires is rather striking: only 78 percent of the women in the applicant pool were actually hired.

Now imagine a large firm where, over time, there are 200,000 applicants, all of whom are equally qualified. Of the applicants, 100,000 are men and 100,000 are women.
Exactly 100,000 of the applicants are hired, but only 49,390 of them are women, compared with 50,610 men. This result appears to be fairly close to what one might expect: 49.39 percent actual versus the expectation of 50 percent, which is nearly 99 percent of the expected hires. However, the probability of this outcome being the product of random chance is less than 1 in 1,000.

**RANDOM SAMPLES**

The sample must be random for any of this to be a meaningful predictor of the real world. If all the crows observed in the predominantly blue crow sample were located in one park, it might be possible that blue crows are simply locally dominant in that area. Maybe the observer prefers the color blue and only pays attention to the blue crows. Perhaps black crows predominate in other areas of the world. This park observation sample is not random and the crows that are seen are not representative of all the crows in the world.

Polling organizations go to great lengths to determine where their samples should come from. They consult census data to ensure that the individuals in their samples reflect the nation as a whole in terms of factors such as age, gender, income level, and education level. When polling on behalf of businesses, they must ensure their samples include people who use or are likely to use the products in question. For example, it would not be of much use to a fast-food chain to discover a poll revealed that most people want smaller hamburgers if the pollster’s sample consisted almost entirely of those on diets who are reducing portion size.

It is necessary to sample likely voters when political polls are conducted. People who do not vote, or are not registered to vote, are a poor choice for political poll samples. Some critics of campaign polls claim that pollsters have incorrectly predicted how frequently Democrats and Republicans actually show up to vote resulting in their samples being improperly weighed.

An applicable example of the influence of polling results can be found in the 2004 U.S. presidential election with Republican George Bush’s victory over his Democratic opponent, John Kerry. It proves to be an historical example of how polls can affect outcomes even though the election took place some years ago. In this election, the victory ultimately depended on Ohio’s electoral votes. In the days leading up to the election, most polls showed that Bush would win the state; however, most of those polls also showed his lead to be within the margin of error. In other words, if a poll showed that Bush had 50 percent of the vote with a 3 percent margin of error, the poll was really predicting that Bush would get between 47 and 53 percent of the votes. Thus, a result in which Bush only got 49 percent of the votes (and therefore lost the state) would, in a sense, also have been predicted by that poll.

Exit polls from Ohio initially indicated that John Kerry had won the state with a little more than 52 percent of the vote. If Kerry had been awarded Ohio’s electoral votes, he would have become president. The official vote total, however, showed Bush receiving about 51.5 of the total in Ohio. Kerry’s vote total in the official tally was outside the margin of error of the initial exit polls. This led some observers to suspect that electronic voting machines had been tampered with to give Bush more votes and, ultimately, the election. Others, however, countered that the apparent discrepancy between the exit polls and the official outcome could be simply explained. They suggested that more Kerry voters were more willing to answer the survey questions than Bush voters. This is an example of self-selection. The pollsters were trained to approach voters in such a way as to produce a random sample. But if there is correlation between cooperation with the poll and political preference, the accuracy of the poll is likely to suffer. This is a potential
problem in almost every poll. Poll results rarely point out the number of people who refused to answer compared with those who agreed to answer. To some extent, this can be controlled for in the margin of error, but, by definition, it can never be known what the results would have been had 100 percent of those polled actually participated. Some suggested that the surveyors approached women (who were more likely to vote for Kerry than men) at a rate higher than their actual rate of participation in the election. In other words, if 50 percent of all voters surveyed were women, but women only accounted for 53 percent of all voters, then the results of the poll could be biased toward Kerry.

**SLANTED QUESTIONS**

How a polling question is asked may also have a significant impact on the outcome. Imagine the results you might obtain using the following questions:

1. Should the U.S. government be able to intercept telephone calls and e-mails between terrorists in the United States and their associates overseas without having to first obtain a warrant from a judge?

2. Should the U.S. President, without authorization by any law, be allowed to decide whether or not to intercept the phone calls or e-mails of U.S. citizens without first obtaining a warrant?

It can be argued that these are slanted questions and each is likely to skew the results in the direction desired by the pollster. When a poll is being conducted to obtain accurate information, rather than to solicit a response that will bolster an argument, the surveyor typically asks questions in a variety of ways to avoid results that are skewed by unintentionally slanted questions. They may also vary the order in which questions are given, the order in which multiple choice answers are given, and so on. You find the same method of approach on tests taken. Read the following example and note that they all ask the same question:

**Do you agree or disagree with the following statements?**

1. Stealing is wrong.
2. I have never stolen anything.
3. Stealing is okay in certain circumstances.
4. I have only stolen necessities.
These questions would be randomly scattered through a series of 100 questions with the same directions-“do you agree or disagree with the following statement?” The concept is that the test-taker should provide the correct answer, for each question, after being distracted on different questions. Read the following chart:

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stealing is wrong</td>
<td>Agree</td>
</tr>
<tr>
<td>2. I have never stolen anything</td>
<td>Agree</td>
</tr>
<tr>
<td>3. Stealing is okay in certain circumstances</td>
<td>Disagree</td>
</tr>
<tr>
<td>4. I have only stolen necessities</td>
<td>Disagree</td>
</tr>
</tbody>
</table>

The above answers mean that the test-taker has answered consistently on the theft questions and is not a thief (or so reported). Note the difference in the following set of answers:

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stealing is wrong</td>
<td>Agree</td>
</tr>
<tr>
<td>2. I have never stolen anything</td>
<td>Agree</td>
</tr>
<tr>
<td>3. Stealing is okay in certain circumstances</td>
<td>Disagree</td>
</tr>
<tr>
<td>4. I have only stolen necessities</td>
<td>Agree</td>
</tr>
</tbody>
</table>

The answer to number four should give the evaluator concern because all of the answers, in theme, were not consistent. It is possible that the last question is an unintentionally slanted question or, in fact, the test-taker is a thief.

Another method is to provide a fair summary of competing positions and then ask a respondent to provide an opinion. A pollster might ask the following:

“Some members of the U.S. Congress have stated that wiretapping phone calls to U.S. citizens violates current law. They say that the President has the ability to wiretap when necessary, but then must inform a secret court established for this type of case of what it has done. The President has responded that he already has the authority to engage in such wire-tapping through powers given to him by the Constitution as Commander-in-Chief of the armed forces; and that when Congress authorized him to use force to fight terrorism it also; therefore, gave him the authority to use what may be unwarranted wiretaps. Do you believe the President has the legal authority to tap phone calls received by Americans, without a warrant?”

When considering what weight to assign to poll results, consider factors like sample size, possibilities of self-selection among respondents, and whether questions were framed in such a way as to suggest a particular response.
We have reviewed a variety of common methods for analyzing and evaluating inductive arguments. As an astute critical thinker and problem solver, one must be able to analyze and evaluate information that is intended to shape your perception of what is true. The ability to properly analyze and evaluate information requires the skill to consider how particular evidence is collected, structured, organized, and represented. A critical thinker cannot simply accept the argument as fact. Instead, a critical thinker must break the argument down into component parts and organize these parts in such a way that can further discriminate the argument’s reliability, statistical analysis model, and publication of the results.
LEARNING PLAN 6: MORAL AND LEGAL REASONING

COMPETENCIES

APPLY THE CONCEPTS OF MORAL, LEGAL, AND AESTHETIC REASONING.

This Learning Plan addresses the following learning objectives to help you master the competency:

a. Distinguish the major perspectives in moral reasoning from one another.
   b. Identify the principles of legal reasoning

Learning Plan 3 discussed the process for identifying and analyzing inductive and deductive arguments that form the basis for many of the arguments you will encounter in your daily life. However, there are many other approaches to reasoning-many of which will be explored in this Learning Plan.

First, this Learning Plan will explore the basic systems of moral reasoning which assists you in deciding between right and wrong and provide guidance on evaluating correct moral behavior. It will examine several philosophical traditions that provide basic guidelines for applying moral reasoning and analyzing moral arguments. We will then move on to a discussion on legal reasoning, a system of critical thinking and analysis that attempts to fill in the gaps left by moral reasoning. Several legal traditions will be discussed and applied to real court cases.

PRINCIPLES OF MORAL REASONING

Logical reasoning can produce certain statements that can be proven true such as ‘Gandhi is moral’. But can you definitively prove that Gandhi is moral? No, not really. Questions of morality remain highly subjective. If you cannot make definitive moral statements, then what is the point of exploring moral reasoning? Many of the arguments you encounter will have moral overtones or components. It is useful to learn how to approach moral arguments in a critical, as opposed to a merely emotional, way.

Consider the following syllogism from Learning Plan 4:

All people who smoke are bad         Premise
Jon smokes                           Premise
Therefore, Jon is a bad person       Conclusion

This clearly is a moral argument and should require a reasonable defense of that argument. This is the key difference between moral claims and preferences. For example, the statement ‘I do not like smoking’ is a statement of personal preference; it does not need to be defended or proven. Some people like to smoke, some do not. Another statement: ‘people who smoke are bad’ is a moral claim that makes a statement about the world in general. One would expect a person who makes a claim of this nature to be able to support the claim.
Smoking causes various cardiovascular conditions and cancers. This is an argument that one can at least subject to a logical analysis. One might respond:

a. Not all people who smoke die from smoking-related illness.

b. Obesity is the primary correlate to cardiovascular diseases, not smoking.

c) There are numerous good, moral leaders, now and throughout history, who smoke.

If the argument, ‘smoking is prohibited by religious writings; therefore, smoking is bad’ is made, one still has some basis for engaging logically. One might reason ‘smoking is not in fact prohibited by religious writings; therefore, the conclusion is false’ or ‘not all things prohibited by religious writings are considered bad’. The unstated premise that all things prohibited by religious writings are bad is false; and therefore, the conclusion itself is false.

In the examples above, critical thinking was used to show flaws in a moral claim. It has been much more difficult for philosophy to use logic to prove moral claims. Again, the goal is to find moral principles that could have universal application and to create rules that can be shown to be more than mere preference or opinion. This is harder than it may appear despite people believing that they have healthy moral intuitions.

**THOU SHALT NOT KILL**

This is how the King James Bible translated the Sixth Commandment. It is a very broad, simple, and powerful moral statement. What it actually means, though, is subject to great debate. Some believe it clearly dictates that eating meat is immoral, to others that war is immoral, to others that capital punishment is immoral, and to yet others that abortion is immoral. Holders of any one of these beliefs may not, and often do not, agree with any one of the others.

The medieval Jewish scholar, Rashbam, asserted that the King James Version is actually a mistranslation of the Hebrew Bible, and that the Sixth Commandment should be read ‘Thou shall not commit murder’. The Roman Catholic philosopher (and theologian), St. Augustine, argued that the Sixth Commandment did not prohibit wars and capital punishments as commanded by God. On the other hand, another famous Jewish scholar of the Middle Ages, Isaac Abarbanel, pointed out that the Hebrew word in question is used in other places in the Bible to mean types of lawful killing that would not be considered murder, and that therefore, the translation ‘Thou shall not commit murder’ would be too narrow. And yet another Jewish scholar, Maimonides, taught that every instance of a human being taking another human life constituted a violation of the Sixth Commandment even if the killing occurred in circumstances in which the killing was necessary.

Clearly, even a seemingly straightforward prohibition like ‘Thou shalt not kill’ becomes problematic when it is presented without any logical or reasoned support. This is because people’s ‘logic and reasoned support’ when evaluating religious edicts is inherently subjective because it is based in faith (something intangible and not quantifiably measurable). Therefore, logic is not needed when contemplating subjective, moral values found in religion. This is because every person is correct in his or her interpretation because one cannot disprove the validity of another’s interpretation of the Sixth Commandment.
One goal of Western philosophy has been to develop moral commandments, such as ‘It is wrong to murder.’ These are commandments based on valid logical arguments. Volumes of books have been written describing claims philosophers have made about how people ought to behave. This Learning Plan will focus on how certain philosophers have made attempts at devising means of looking at morality objectively.

**IMMANUEL KANT**

Perhaps the philosopher best known for trying find an objective or *a priori* (something that is universally true without requiring testing) basis for moral claims was the German philosopher Immanuel Kant. Kant purported that the purpose of following a moral course of action was *not* to achieve a good outcome. Instead, he believed that moral action should be an end goal, and that people should be moral simply because it is the right thing to do.

Therefore, Kant developed a set of moral laws that would always be appropriate to follow, no matter what context they were applied in. These laws were to be universal (*a priori*).

Kant stated that the highest form of moral rule was the categorical imperative. This is a moral rule that is universally applicable. Under this theory, one would strive to live to the greatest extent possible by categorical imperatives. Kant proposed the following test for moral rules:

Kant’s Categorical Imperative:

“Act only according to that maxim whereby you can at the same time will that it should become a universal law.”

In other words, only do things that would be considered moral in all circumstances.

Think of this example: You are in a store and see something you want yet cannot afford. You contemplate stealing it. You contemplate the (fictitious) moral rule ‘People should take what they want if they cannot afford to pay for it’. If everyone took what they wanted when they could not afford to pay and believed they were acting morally in doing so, there would presumably be no punishment for doing so and theft would become normal. The cost of goods would rise in consequence. That would lead to more theft and higher prices in a continuing cycle. Eventually, the exchange of goods would break down. The example fictitious moral law is internally contradictory after following the previous reasoning. Kant, therefore, would propose the contrary categorical imperative: one ought not steal simply because one wants something one cannot afford.

Critics of Kant point out that his categorical imperatives created situations where one might end up with a result that clearly offends moral sensibilities. For example, should a person allow himself or herself to starve to death before violating the categorical imperative not to steal (which might, in any case, violate the categorical imperative against suicide)? It also appears that Kant’s categorical imperatives have limited application and cannot give us direction in all situations. If you see a person drowning, must you try to save him or her, if doing so means risking your own life? If you universalize the impulse not to risk one’s life to try to save another, there does not appear to be a breakdown, or internal contradiction, in that law.
In the mid-nineteenth century, a school of philosophy developed in England known as utilitarianism. It addressed some of the shortcomings of moral philosophy found in the writings of Kant. Two leading exponents of utilitarianism were Jeremy Bentham and John Stuart Mill. Bentham helped popularize the base following utilitarianism idea:

Utilitarianism’s Base Concept:

The greatest happiness of the greatest number is the foundation of morals and legislation.

Mill is best known for his theories of liberty; specifically, the idea that an individual should be allowed to engage in whatever activity he or she wishes as long as doing so does not harm another person. Mill also modified Bentham’s view of utilitarianism to create a hierarchy of forms of happiness. Thus, reading would be a higher form of happiness than playing video games.

An example of utilitarianism in practice could be the following statement: ‘One should give to charity.’ Under the edicts of utilitarianism, this statement could be proven true by showing that giving to charity increases the total happiness in the world. Imagine units of happiness (UHs) and calculations that use these units to determine how an action affects total happiness. If you give 100 dollars to a food pantry for the homeless, you will provide a good dinner to 20 people. Each person who eats a dinner purchased with your 100 dollars gains two UHs. Thus, the contribution equals 40 UHs.

If you had gone out to dinner with 4 friends and spent the same 100 dollars, you would have gained two UHs each, or a total of eight UHs. Giving 100 dollars to charity resulted in a total gain of 40 UHs and taking friends out to dinner resulted in a total gain of eight UHs. Therefore, giving to charity increases total happiness more than taking friends out to eat.

One obvious problem with this method is that the assignment of UH values is arbitrary. Effectively determining how many UHs are gained or lost in a situation is a persistent challenge. Would you have to survey the diners at the food pantry and ask them to rate their happiness about the meals on a scale of one to ten? Would it matter that some people would be hard graders and others easy? Would you survey the workers in the pantry as well and include the satisfaction they got from serving the meals? These questions result in non-quantifiable increments of measurement because each person would determine the UH, so there is no operational definition for consistent application. UH is best applied to personal situations where you can determine the UH value and then apply it consistently among situations that call for decisions, such as the donating to charity versus dinner with friends example.

Critics have also claimed that utilitarianism creates a morality whereby a person could be murdered or tortured for the greater good because any act is good that increases total happiness. Bentham and Mill anticipated these criticisms by positing certain rules that restricted what could be done to promote the greater good. Bentham’s view of justice held that individuals should be free from certain harms, such as murder and torture, and that, consequently, one could not violate these rules of justice when promoting the general happiness. Another answer is that people gain happiness by certain expectations about their lives, for example, that they will not be murdered or tortured. Thus, if everyone had to live in a state of anxiety that they might be murdered or tortured if it seemed to promote the greater good, overall happiness would likely be reduced as a result, not increased.
Utilitarianism can be tested with the hypothetical situation of a drowning person. Should you try to save that person? When you jump in the water, your overall happiness may be greatly decreased by displeasure and anxiety; but doing so may increase the happiness of the drowning person if he or she sees the attempt and is given hope. This assumes that the drowning person does not want to drown. If you begin to drown during the attempted rescue there will be a drop in happiness for both yourself and the other person. What if you save the person, but both of you live diminished lives because of injuries sustained during the drowning and rescue? It seems that utilitarianism does not give much practical guidance on whether one is morally obligated to attempt to save a drowning person.

JOHN RAWLS

A modern American philosopher who sought to find a way of developing universal moral principles was John Rawls. Rawls is perhaps best known for his idea of the original position, which was explained in his book, A Theory of Justice. Simply put, the original position is a thought experiment. Imagine that human souls determine the rules that govern the earth before they are placed in bodies. Some bodies will be strong but are intellectually challenged, others will be weak but intelligent, some will have artistic talent, and so on. The souls do not know which bodies they will be put in. In that situation, Rawls argues, the souls would develop rules that would protect all people regardless of type and ability, gender, ethnicity, strength, talents, intelligence, etc. This is premised in the approach that none of the souls know what bodies they are going to inhabit, so providing basic protections for all souls works in favor of each soul in this realm of unpredictability.

Can Rawls’s theory help determine if there is a moral obligation to try to save a drowning person? The souls might decide that if they were ever in danger that they would want to live in a society where others would be morally obligated to try to save them. But they might also fear that they would end up in the body of a person called on to make a rescue and might thus perish in the attempt. They might decide that the reassurance that others would try to rescue someone in harm’s way was greater than the anxiety that one might be called on to try a rescue. They might decide that one is only morally obligated to attempt a rescue where one is reasonably confident that doing so would not imperil one’s own life.

As you can probably see, Rawls’s notion of the original position is a useful tool in pondering these issues, but it does not necessarily resolve any questions. Different people will obviously be able to make different claims about what the souls in the original position would decide about the rules that would govern them.

Universal laws of morality that can be objectively proven remain elusive, but by keeping this goal in mind you gain a tool by which you can critically view moral claims. Without this goal all morality, it could be argued, is reduced to relativism. Or worse, as Oscar Wilde claimed in An Ideal Husband, “Morality is simply the attitude we adopt towards people we personally dislike.”

The human race has developed legal systems to determine appropriate punishments various immoral behaviors or crimes. In what follows, you will explore some of the basic principles of legal reasoning which can help us in ways that moral reasoning cannot.
The life of the law has not been logic; it has been experience.”

– Supreme Court Justice Oliver Wendell Holmes in The Common Law (1881, p. 1)

What does it mean to think like a lawyer? Some empirical evidence suggests that it means you think it is acceptable to be arrogant, obnoxious, and abusive in public. Lawyers do not have a positive public perception, yet it is still what parents commonly say that they want their children to grow up to be (or a doctor). Lawyers maintain high social status. People that criticize lawyers are not so critical when they need one. Other empirical evidence indicates that to think like a lawyer means to be able to think critically and to pay close attention to the use of words. In this way, the skills of a lawyer are very similar to the skills of a student of literature.

Certain modes of argument and reasoning have developed that are associated with the law. The most important of these is reasoning by analogy. No set of laws is able to account for every possible occurrence or dispute. Lawyers and judges use analogy to fill in the gaps that the existing laws and regulations leave.

The legal system of the United States (with the exception of the state of Louisiana) is a Common Law system. The U.S. Congress and individual state legislatures pass laws that set broad outlines of how a law is to operate. The specifics are filled in by courts through rulings (holdings) in lawsuits. The prior rulings of courts on a particular legal issue are called precedents and generally will have the force of law when the same issue arises in future disputes. This system is in distinction to the Civil Law system in Europe where legislatures develop very detailed legal codes that provide specific guidance on as many occurrences or disputes as possible. Civil Law courts must still sometimes fill in gaps in the code, but the judges look primarily to the code itself rather than to other judicial rulings (case precedent) when determining how they should rule on cases. The state of Louisiana uses a Civil Law system.

Lawyers argue by analogy when they make arguments for how a court should rule on a case in litigation. They claim that the facts presented by the current case are close enough to the circumstances present in previous case rulings (holdings) that the outcome in that prior circumstance should be applied in their case (case at bar). For example: A lawyer is prosecuting a case where the defendant is charged with robbery where there is a positive eyewitness identification and circumstantial evidence. A previous case (in the same jurisdiction) had evidence similar to the case at bar and the Defendant was found guilty, so the prosecutor cites that case before the court as precedent that the current court should rule in the same manner.

You have encountered logical analogies in many standardized tests: foot is to shoe, as hand is to what? An analogy is a type of simile. Most schoolchildren learn that a simile is a type of comparison often using the word ‘like’, such as ‘Your eyes shine like emeralds.’

When making informal arguments (and sometimes even when making formal ones), an analogy will often be introduced with a phrase such as ‘It would be like’. For example, music executives who are opposed to Internet-based music file sharing might make the following argument:
‘We are in the business of selling music. To let people download music on the Internet without paying for it would be like letting them go in to record stores and shoplift. There is a penalty for shoplifting, so there should be a penalty for illegal downloading as well.’

Customers who object to security devices on compact disks that prevent them from being copied onto computers might argue this way:

‘Once I buy a compact disk, it is mine to do with as I want. Preventing me from copying the music I own on to my computer would be like selling me a couch and then telling me I could only place it my living room and not in my den. Once I buy a couch, what I do with it is my business. I can chop it up for firewood if I want. Once I buy a compact disk, what I do with it is my business, too.’

The flaw in the latter argument is that one buys a *license* to the music when a compact disk (or iTunes song) is purchased. The purchaser owns a license to enjoy the music. This is why the iTunes agreement, and general law for compact disks, allows for the music to be downloaded on a limited number of devices (usually three). The purchaser does not *own* the music or the rights thereto because of intellectual property law; the purchaser owns the right to copy the music, in entirety, onto a limited number of devices (computers, iPods, MP3 players, etc.). Conversely, a couch is owned entirely by the purchaser and he or she can do what they want with it—chop it up, sell it, move it, or let as many people as they want sit on it for enjoyment. Thousands of similar couches are not sold with the implicit agreement that only three people can ever sit on the couch for enjoyment.

As previously stated, analogies are used in actual litigation from different areas of law. Title VII of the Civil Rights Act of 1964 states, in part:

“It shall be an unlawful employment practice for an employer to fail or refuse to hire or to discharge any individual, or otherwise to discriminate against any individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual’s race, color, religion, sex, or national origin.”

If a person was not hired for a job due to his or her race or gender, or was fired, paid less money, or denied a promotion due to race or gender, he or she could use the language of this statute for clear support of the argument that he or she had been subjected to illegal conduct. The cause of action would likely be a Tort (a civil wrong) and the federal statute would be cited as the cause of action for recovery. There would likely be previous cases with facts similar to the *case at bar* that the plaintiff’s attorney would cite as precedent to argue in their client’s favor.

Lawyers for victims of workplace harassment argue that things like training, expense accounts, or bathrooms are typically incidental and not central to employment, but they should still be regulated by the statute. They argue that being subjected to harassment could have a great impact on an individual’s ability to perform in and derive benefit from a job. Therefore, reasoning by analogy, they claim that when a workplace is *hostile* to a particular group, Title VII is violated.
One of the first courts to agree with this argument was the U.S. Court of Appeals for the Fifth Circuit in 1977. In *Rogers v. EEOC*, the court found that the employer’s discriminatory treatment of its Hispanic clientele polluted the working environment for Hispanic employees and thereby deprived them of equal terms, conditions, and privileges of employment. Other courts extended this ruling to include harassment on the basis of race, national origin, and religion.

In the 1986 case of *Meritor Savings Bank v. Vinson*, the Supreme Court took up the issue as it applied to women. By that point, the Supreme Court had a body of law developed by lower courts that it could look to for guidance (case precedent). In ruling that Title VII’s terms and conditions language did outlaw sexual harassment, the Court cited (with favor) a lower court’s opinion that very clearly uses an argument by analogy to arrive at the decision finding that racial and ethnic harassment was unlawful.

Sexual harassment, which creates a hostile or offensive environment for members of one sex, is every bit the arbitrary barrier to sexual equality at the workplace that racial harassment is to racial equality. Surely, a requirement that a man or woman endure sexual abuse in return for the privilege of being allowed to work and make a living can be as demeaning and disconcerting as the harshest of racial epithets. (*Henson v. Dundee* (1982))

In addition to using analogies, lawyers and judges can also turn to a body of logical or linguistic principles in interpreting statutes. For instance, the Latin phrase *expressio unius est exclusio alterius* provides a common argument used in statutory interpretation. It means that when a law gives a list of things that are specifically covered or excluded then it is reasonable to assume that the list was meant to be exhaustive. Any item not appearing on the list is, therefore, not covered or excluded. An example would be if Congress passed a law stating that all goods imported into the United States except bananas, strawberries, and apples would be subject to a two percent import tax. One might argue that mangos should be included as it could be considered a fruit, yet mangos are not on the list. One must assume that if Congress wanted to include mangos then it would have named them in the law.

Lawyers and judges certainly look to principles of logic and reasoning to fashion their arguments and opinions. But whole schools of legal theory point out the inherent limitations of these neutral principles in determining outcomes. Human beings are simply too unpredictable for complete neutrality and language is too porous for complete clarity of meaning for that to be true. The beginning of this section quoted Justice Holmes on the life of the law. The full quote is instructive, and an excellent example of the view that the reasonableness of the law is limited:

> The life of the law has not been logic; it has been experience. The felt necessities of the time, the prevalent moral and political theories, intuitions of public policy avowed or unconscious, even with the prejudices which judges share with their follow-men, have had a great deal more to do than the syllogism in determining the rules by which men should be governed. The law embodies the story of a nation’s development through many centuries, and it cannot be dealt with as if it contained only the axioms and corollaries of a book of mathematics. (1881).

This Learning Plan swam in the abyss of philosophy. Identifying universal truths is difficult because this means that the ‘truth’ is applicable to all cultures throughout all of history. It is similar to identifying crimes that are universal because, throughout history, some society has been identified to allow for behavior that we label as criminal. We claim that they are wrong yet
they were ‘right’ in their time and place. Universal truths are akin to deductive syllogisms because even one exception (one blue crow) would render the syllogism an inductive argument.

This is the danger in critical thinking because the vast majority of people accept what society tells them as a universal truth. This is found in religion, adherence to a political philosophy, or the content of laws. Critical thinking calls upon the thinker to question the base of any belief or belief system and this is a threat to reality. What is considered true today could be the lie of tomorrow, yet people today swear that their truth is universal. The fallibility in this thinking is that it is egocentric and allows for historical mistakes to be repeated. Historical leaders were commonly subject to cruel criticism and even death, yet their teachings are now base truths in our society—consider Jesus and Dr. Martin Luther King. The only universal truth is that society will change.
LEARNING PLAN 7: IDEOLOGICAL, EMPIRICAL, AND AESTHETIC REASONING

COMPETENCY

APPLY THE CONCEPTS OF MORAL, LEGAL, AND AESTHETIC REASONING

This Learning Plan addresses the following learning objectives to help you master the competency:

- c. Identify the principles of aesthetic reasoning.
- d. Apply the principles of aesthetic reasoning to determine aesthetic value.

OVERVIEW

This Learning Plan will address ideological and empirical reasoning. You learned moral and legal reasoning in Learning Plan 6. You will now learn the differences between ideological and empirical reasoning, how to recognize them, and how to apply them in daily life. Finally, this Learning Plan will explore aesthetic reasoning, a system of analysis that can help you perform careful readings of moral and legal arguments. All of this will come together, in practice, when you learn how to create an argument in Learning Plan 8.

IDEOLOGICAL REASONING

Ideological Reasoning begins with abstract arguments and then narrows them to specific issues; this is why it is commonly called a ‘top down’ approach. It is akin to brainstorming the solution to a broad problem and then identifying a series of smaller problems. It is a widely used form of reasoning and is commonly employed by lawyers. Let’s consider an example of it in use to better understand it.

In Bowers v. Hardwick (1986), the Supreme Court upheld a Georgia sodomy law that criminalized oral and anal sex, in private, when applied to consenting homosexual adults. The Court held that such activity is not a fundamental right under the already-established fundamental right to privacy (Griswold v. Connecticut, 1965).

This created a conflict between the state and the people. The state had a sodomy law that affected homosexual couples through law enforcement. Homosexual couples argued that the ruling was incorrect because people have the right to engage in consensual sexual conduct of their choosing and the state should protect that right; in fact, the state proscribed a law against it that made the act punishable by incarceration.
Abstract Argument: Homosexuals should be allowed to engage in consensual intimate sexual conduct.

Specific Issue: The right to privacy.

Specific Issue: The right to determine what one does sexually without fear of reprisal from the state.

The Supreme Court revisited the constitutionality of a Texas sodomy statute years later. In *Lawrence v. Texas* (2003), the Supreme Court overturned the *Bowers* case and held that intimate consensual sexual conduct is a liberty interest protected by the 14th Amendment. The Court did not distinguish between homosexual or heterosexual conduct; the holding was a blanket ruling that protected all intimate consensual sexual conduct. States could no longer prosecute sodomy laws.

The *Lawrence* case created controversy through various interest groups that were against homosexuality. These groups argued that the Supreme Court was activist (judge created law) in finding such conduct as a protected liberty interest in the Constitution. They argued that homosexuality is against the will of God and that the holding is a step in further eroding traditional values. However, groups in support of the holding had a different argument. They argued that there is a separation of church and state and that religious doctrine should not influence the Constitution. They argued that two people have the right to engage in consensual sexual acts in private and they that they were not hurting anyone. The following chart illustrates how ideological thinking begins with an abstract concept and then narrows down to specific issues.

<table>
<thead>
<tr>
<th>Support Lawrence Holding: Support the Right of Sexual Choice (abstract)</th>
<th>Against Lawrence Holding: Against Homosexuality (abstract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Separation of church and state (specific)</td>
<td>* Court activism (specific)</td>
</tr>
<tr>
<td>* Right to engage in consensual intimate acts in privacy (specific)</td>
<td>* Against the will of God (specific)</td>
</tr>
<tr>
<td>* Nobody is hurt (specific)</td>
<td>* Further erosion of traditional values (specific)</td>
</tr>
</tbody>
</table>
FEATURES OF IDEOLOGICAL REASONING

There are two fundamental characteristics of ideological reasoning:

1. The argument uses rhetoric and psychological fallacies to recruit members.
2. The argument maker takes the ideology to be true primarily on faith.

The term ‘ideological’ is meant to be value-neutral. Many people associate the term with value-laden packaged belief systems that are dogmatic. It is true that some ideologies are dangerous and when we encounter those that we are against we thus associate the term negatively. Rather, ‘ideology’ refers to how arguments are constructed beginning with abstract concepts and moving from such abstractions to their specific application.

USE OF RHETORIC AND FALLACIES TO RECRUIT MEMBERS

Ideologues look for information that supports their position and usually tune out, or immediately discredit, anything that conflicts with their ideology. The only time that scientific fact, research, or data is included is when it supports the author’s position. The conclusions presented by ideologues are rarely premised as uncertainties, such as ‘probably’ or ‘maybe’, but rather presented as certainties and as ‘the truth’. They commonly use the psychological fallacies ‘Attack the Person’ and ‘Either/Or’ to gain followers. The listener might not agree with the entire ideology, yet agreement with the fallacy statement gains the attention of the speaker for further consideration of the ideology. Consider the following examples:

- ‘Attack the Person’
  - “John Kerry is unpatriotic”
  - “I hate Ron Paul”
  - “Ted is a sociopath”

- ‘Either/Or’
  - “You are either for us or against us”
  - “You believe that life begins at birth or you don’t”
  - “If you don’t support our government’s foreign policy, then you are a terrorist”

Ideologues use rhetorical devices and various fallacies that are broad and based in faith. The general population likes catch phrases and simple approaches to complex issues because they are easy to process. People tend to believe the rhetorical devices and various fallacies as a means to identify with the larger group for membership. These statements then unify the group against the identified opponent. Employing critical thinking techniques often reveals the nature of such statements and thus separates the person from the mainstream. Who wants to truly question their beliefs? Nobody because of the underlying fear that they could be wrong.

THE ARGUMENT MAKER: TAKES THE IDEOLOGY TO BE TRUE PRIMARILY BASED ON FAITH

The argument maker sees the principles of his or her argument as self-evident and that it requires no demonstration. To them, it is something so obvious that any person who does not agree must be unintelligent. The ideologue often gets frustrated and angry with anyone who disagrees with his or her position. They believe that their beliefs are immune from
disconfirmation, even in the presence of evidence that absolutely disconfirms the ideology. This is where ideologies can be dangerous and the following is an example that stains the pride of our history.

African-Americans were emancipated in 1863 during the famous Emancipation Proclamation executed by President Abraham Lincoln. This executive order declared that slaves held in the ten rebelling states were free. The Civil War ended in May of 1865. The ‘Reconstruction Amendments’ (13th, 14th, and 15th) followed in the subsequent five years; they provided freedom from the badges & incidences of slavery, made the Due Process and Equal Protection Clauses of the 5th Amendment applicable to the states, and provided (in effect) African-American men the fundamental right to vote. (NOTE: that women were not provided the right to vote until the passage of the 19th Amendment in 1920).

However, the law did not meet with reality. Many Southern states refused to recognize the constitutional rights of the freed slaves. Some Southern states passed ‘Black Code’ legislation to control the labor, migration, and other activities of freed slaves. The Supreme Court case Plessy v. Ferguson (1896) upheld the constitutionality of state laws requiring racial segregation in public facilities, thus supporting the Jim Crow laws that had existed since 1876. Many states enacted various methods to stop African-American men from voting, such as a literacy test or a poll tax. The law did not catch up to reality until the Civil Rights Act of 1965 and arguably the struggle continued for years afterward.

Very few freed slaves were literate because it was against the law for them to become so under the previous regime. African-Americans, for the years following the Civil War, were denied equal access to education and many other social basics. Schools were racially segregated until the landmark Supreme Court case Brown v. Board of Education (1955). In summary, African-Americans were not provided access to necessary education due to the ideology of that time. that African-Americans were genetically inferior human beings.

In 1965, nobel laureate in psychics and professor at Stanford University William Shockley made a public statement concerning genetics and African-Americans. He stated that African-Americans were in ‘genetic enslavement’ and the best remedy was sterilization, not improved education. If this does not shock the conscience, nothing will! An ideologue with a professional title is the true danger to society. There were also numerous studies, around that time, correlating low IQ scores with African-American test takers. Do you see the fallacy in Shockley’s statement and the IQ test results?

The fallacy is that African-Americans were systematically oppressed from gaining an education for years following the Civil War. How can an IQ test, designed to supposedly measure the intelligence of those who have had access to life-long education, determine the IQ of a group of people who were oppressed by the very system that designed the IQ test? Longitudinal studies have since easily debunked the ideological theory of genetic inferiority.

Be careful about the statements you believe. Stereotypes are wrong as applied to an entire identified population. Ensure to evaluate the authority of the speaker and engage in effective critical thinking. Determine whether you simply believe the statement in faith or if your decision is rational. Look for rhetorical and fallacy statements. Dangerous ideologies were the base of all mass murders and the most dangerous, that garnered social support, were supposedly based in scientific ‘fact’…from the systematic slaughter of Native Americans to the Holocaust.
EMPIRICAL REASONING

We are biologically programmed to survive. This is our base instinct. This includes protecting our children and the others we associate with that bring function to our survival (such as family). Part of survival is the ability to recognize problems, or threats, and then take measures to solve the problem or avoid the threat. For example: Cro-Magnon man was exposed to environmental elements and recognized this as a problem. Exposure to rain, storms, and sunlight can create hardship on the body. Archaeologists have discovered mammoth bone huts that Cro-Magnon man built to avoid exposure. The primary concern of early Homo-Sapiens was avoiding exposure, avoid being prey, and getting enough to eat. We move forward to modern times and we no longer have these concerns. We have supermarkets, housing, and no threat of being prey to wild animals. However, our minds still utilize the process of recognizing problems and providing solutions. Every new cell phone released supposedly remedies the problems of the previous model.

**Empirical reasoning** is solving a problem with data that is objective. The process involves forming a testable hypothesis, gathering data by observation and experimentation, and using the data to confirm or disconfirm the hypothesis. It is a process of trial and error where numerous hypotheses are tested until a workable solution is produced. In analogy, it is doubtful that Cro-Magnon man created a mammoth bone hut perfectly the first time attempted.

Empirical Reasoning is a ‘bottom up’ approach because it identifies a base problem and then works the scientific method to solve the problem. Remember that Ideological Reasoning begins with general statements and then provides specific arguments that are narrowed in support of the general statement. This is a ‘top down’ approach and is how these two reasoning methods differ. Think of it as a pyramid:

The main characteristic of Empirical Reasoning is that it open to self-corrective revision and the argument maker takes the problem and solution to be true on the basis of personally verifiable experience.

**EMPIRICAL REASONING USES STATISTICS**

Scientists use observations and statistical analysis to draw inferences with various levels of confidence. Let’s assume that a scientist wants to test the hypothesis that ‘less than five percent of crows are blue’. Recall the crow example from Learning Plan 5? In the example, we determined that for a confidence level of 99 percent and a sample size of 1,000, our margin of error would be four percent. This is verifiable because the scientist observed a certain number of crows and counted which were black and which were blue. The number observed is the
sample size. The larger the sample size, the more accurate the statistical results because more crows (of the finite number on earth) were counted. The sample size, once large enough, can be used to determine the confidence level and margin of error.

This illustrates the process of Empirical Reasoning. The scientist had a testable hypothesis. The scientist did not know what the results of the initial crow observation were going to be. He or she objectively approached the issue to collect data and then tested that data against a statistical confidence chart. This provided the confidence level and margin of error. The data either proves or disproves the hypothesis.

**EMPIRICAL REASONING IS SELF-CORRECTIVE**

Scientists formulate a testable hypothesis and then create a research design to collect data. The data stands alone and either proves or disproves the hypothesis. No research design is perfect and scientists often discover the flaws inherent in their research design as they conduct research. This is very much the case in sociological and psychological experiments. The scientist must account for the flaws and either discontinue the experiment or revise the research design. This is why Empirical Reasoning is self-corrective; the scientist would produce flawed results if the process was not self-corrective, and therefore the results would be of no use. Ideological Reasoning is busy defending the subjective belief held and is not concerned with external information that could disprove the belief. Therefore, by the inherent nature of Ideological Reasoning, subjective ideas are flawed; the only method of validation is faith, which does not follow the scientific method in approach.

**EMPIRICAL REASONING USES STATISTICS**

Unbiased scientists scrutinize arguments, the research design, data collected, hypotheses, results, and statistical analysis with fine detail. Scientific results gain confidence when these elements are evaluated and verified as accurate, or when the research design is used again and the same results are produced. The latter is what truly proves that the results are objectively verifiable. Think about it; if one could use the same research design and produce the same results in different places in the world, then the research design and results produced are verified. Sociologists cannot do this because they study human behavior, which is influenced by culture and environment.

It is difficult to publish in academic journals. This is because the would-be publisher must submit the research and results to a ‘peer review’ board where other academic professionals (in the same discipline) scrutinize every little detail looking for errors. The submission must survive peer review to be published. This is what independent verification is. There are far more submissions rejected than accepted; which is why academic journals are considered to be a reliable source.

**PRINCIPLES OF AESTHETIC REASONING**

Moral and legal reasoning rely on the judgment of individuals such as judges, lawyers, religious leaders, and criminals. Their judgment is shaped by guidelines promulgated and cultural assimilation set forth in social, religious, and legal institutions. Ideological reasoning is based in subjectivity and rests on rhetoric and fallacies. Empirical reasoning is strictly science-based.
However, these reasoning methods are not specific enough to help you make judgments in every circumstance you encounter. Another layer of analysis is required.

Much of what a lawyer does requires literary analysis. Judges and lawyers must read through written case law, analyze it, and determine if it applies to the particular situations they are dealing with (analogy). Lawyers read through the case law and look for analogies and other clues to help them argue their cases. They will also look for similar case law that supports the opposition’s position so they can anticipate counter-arguments. Finally, they will use intuition to determine if, in general, the arguments seem relevant, reasonable, and recoverable. Lawyers and moralists use aesthetic reasoning for these interpretive activities. Aesthetics is a branch of philosophy that concerns beauty and taste, and aesthetic reasoning is the process by which people attempt to interpret and judge writing and other works of art.

Aesthetic reasoning is, by its very nature, a contradictory enterprise. Art and artistic expression exist in a very different realm than science and reason. There is a long-standing debate between artists and critics who often view each other with suspicion. Artists believe their work should not and cannot be reduced to a series of rational judgments because their work needs to be experienced, not analyzed. By contrast, critics believe their efforts can enhance the experience of art by putting the work of artists into a meaningful context.

There are no rules for aesthetic reasoning. The field of aesthetic reasoning has existed for thousands of years and over time it has developed numerous ways to analyze and study art. The following section is an exploration of the ideas of three major philosophers who have helped define and shape the study of aesthetics: Plato, Aristotle, and Kant.

**PLATO**

Plato believed everything in human experience, such as people, trees, animals, and objects, have a related archetype or perfect form that is beyond human perception. This archetype is the model for all the items in reality (which are copies of the original). Things are perceived as beautiful if they closely match the archetype and as ugly if they are substandard copies. This concept makes sense if you think of geometric forms. For example, an archetypal circle is geometrically perfect, which means that the radius (distance from the center to the rim of the circle) all the way around the circle is exactly the same, regardless from what point on the rim you choose to measure from. Human beings cannot draw technically perfect circles without the assistance of some sort of device such as a protractor. According to Plato, an artist who can draw something close to a perfect circle has created something aesthetically pleasing or beautiful.

**ARISTOTLE**

Aristotle developed a different approach to aesthetic reasoning. However, he did develop one concept that followed from Plato’s idea of archetypes: the golden mean. The golden mean is the middle point between extreme behaviors. An ideal person will not be prone to excess in either pleasure or deprivation. Instead, he or she will be calm, balanced, and reasonable. In art, the golden mean has been used to describe art that is symmetrical, well proportioned, and harmonious. According to Aristotle, such artwork is, by its very nature, beautiful. Aristotle’s taste was certainly influenced by the art forms of his day: classical art, writing, and sculpture, all which sought balance and harmony.
Aristotle developed a system of aesthetic judgment that would help identify the specific elements that make up a harmonious work of art. He was particularly interested in literary forms; *Poetics*, the book in which he lays out his system of criticism, is usually cited as the world’s first work of literary criticism. Although *Poetics* was written in about 350 B.C., many of the terms and aesthetic principles developed in it are still used by literary critics today. Below are some of the concepts that Aristotle developed to help analyze and judge works of art:

**Genre**

The basic categories into which literature is organized, such as comedy, tragedy, poetry, and song.

**Plot**

The story line or sequence of events in a piece of writing. Aristotle laid out the basic rules of plot: it must have a beginning, middle, and end, and it must be unified enough to tell a coherent story.

**Character**

The people represented in the work, including their personality traits, flaws, and so on.

**Language**

Language refers to the words that a writer chooses, and diction refers to the way those words are put together in patterns that add meaning to the language. Aristotle categorized letters, syllables and sound patterns, and defined the various types of meter (rhythmic patterns of syllables) used in poetry.

**Style**

The unique voice a writer achieves through the interplay of character, language, diction, and other figures of speech, such as metaphor.

**Audience**

Aristotle acknowledges that literature requires readers and that it should evoke emotions in those readers. For example, some scenes evoke pathos, or strong emotions. Aristotle also argues that stories must be plausible in order for audiences to get caught up in them.

Aristotle’s goal was to create a system of analysis that would allow readers to understand the tools a writer uses and determine if those tools work together to create a coherent message. Although he did outline rules of good writing such as plausibility, rationality, and coherence; he also acknowledged that bad writing could be used to good effect. For example, a writer might create an awkward speech for a character in order to reveal a flaw in that character. In other words, Aristotle was less concerned with how well a writer conformed to accepted artistic rules than how well a piece of writing works together in the service of a larger message or theme.
KANT

Immanuel Kant also created a very influential theory of aesthetics in *Critique of Judgment*, a two-volume work written in 1790. In it Kant attempted to describe precisely how a person’s faculty of judgment applies to beauty in art and in nature.

According to Kant, when a person judges the beauty of something, this judgment is based on an emotional (subjective) reaction. If a person thinks that something is beautiful, it is because he or she feels pleasure when looking at it. Conversely, if a person thinks that something is ugly or inartistic, it is because he or she experiences feelings of repulsion upon viewing it. Kant attempted to analyze all of the possible sensations that go into creating these feelings, such as color, shape, and taste.

Kant also recognized that aesthetic judgment assumes some degree of objectivity. People are not simply satisfied with experiencing beauty themselves; they want others to share their assessments of beauty. In fact, the process of judgment itself assumes that one can use an objective cognitive process. Much of Kant’s aesthetic philosophy tried to explain this contradictory impulse in aesthetic reasoning as he encouraged free play between emotion and understanding.

AESTHETIC VALUE AND SOCIETY

Another preoccupation of aesthetic philosophy is determining the ultimate value of art. This is a question that has inspired debates throughout the centuries. It is beyond the scope of this Learning Plan to explore these debates in detail; however, below are some of the major themes that emerge in philosophical writings about the purpose and value of aesthetic artifacts:

**Art for Art's Sake:** This phrase was popularized in nineteenth-century France by Theophile Gautier who believed art served no other purpose than to be beautiful.

**Art as a Medium for Truth:** Many philosophers, including Aristotle, believed art is valuable if it teaches people about the human condition in a more effective way than everyday experience.

**Art as a Revolutionary Tool:** Marxists and others believe art is valuable if it can inspire political change. For example, Upton Sinclair’s 1906 book, *The Jungle*, helped inspire greater regulation in the Chicago meat packing industry. This use of art is somewhat controversial, however, because many believe art in the service of politics is propaganda, not art.

**Art as a Medium of Values and Traditions:** Many believe art is valuable if it provides an accurate historical record of the period in which it was created. This belief is widely held by anthropologists who study artwork of past civilizations for clues about the values and traditions of those cultures.
Art as Instructor: Many believe art is valuable if it can teach its audience to look at the world in a new way. Art can teach people to see issues they could not see in everyday life. It can also teach its audience to achieve a critical distance, which is difficult to achieve in daily activities. For example, Bertolt Brecht, an early twentieth-century playwright and critic, attempted to create new art forms that would teach audiences to become critical thinkers. His hope was that they would become more actively engaged in political life after they left the theaters.

Art as Entertainment: It is widely believed, by entertainers rather than philosophers, that art is valuable if it gives its audience pleasure.

Ideological, Empirical, and Aesthetic reasoning are very different. Ideological reasoning is subjective and is used to persuade people of ideas without the use of scientific data. Empirical reasoning rests solely on scientific evidence and seeks objectivity through the process of using the scientific method. Conversely, Aesthetic reasoning is a matter of personal taste that historical philosophers have attempted to categorize. You have learned various types of reasoning throughout this class. Each serves its own purpose. Application depends on which reasoning is employed to evaluate a claim.
LEARNING PLAN 8: CREATIVE THINKING AND THE CREATIVE PROCESS

COMPETENCIES

USE CREATIVE PROCESS TECHNIQUES

This Learning Plan addresses the following learning objectives to help you master the competency:

a. Apply the stages in the creative process to problems.
b. Solve problems using creative thinking techniques.
c. Distinguish novel problems from other problems.
d. Solve novel problems using self-modified creative thinking techniques.
e. Apply free association techniques to generate new ideas.
f. Construct pro and con arguments.

evaluate written passages using the techniques of critical, moral, and creative thinking

a. Organize the information contained in factual scenarios.
b. Identify possible moral issues embedded in factual scenarios.
c. Generate creative proposals to resolve any moral issue embedded in a factual scenario.
d. Critically evaluate proposed resolutions to moral issues embedded in factual scenarios.

Learning Plan 6 introduced the traditions of moral and legal reasoning and demonstrated how these approaches can help solve a variety of problems. Learning Plan 7 addressed ideological, empirical, and aesthetic reasoning. In this Learning Plan you will learn to create a work of art or an argument. You will learn several methods for getting your creative juices flowing: creative thinking, mind mapping, brainstorming, and others. Ultimately, you will use these techniques (as well as other skills that you have developed during the course) to prepare for your final exam. The techniques you learn in this Learning Plan will serve you well in work environments where you may be required to come up with innovative ideas or solve difficult problems in creative ways.

CREATIVE THINKING AND THE CREATIVE PROCESS

CREATIVE THINKING

"Genius is one percent inspiration, ninety-nine percent perspiration."
— Thomas Edison, 1932.

The most powerful and profitable companies in the world today know how to leverage creativity. Computer companies like Apple do more than sell computers. They sell new designs and new software that people 20 years ago could not imagine. Apple provides user-friendly products with
aesthetically pleasing designs that result from the creativity of their engineers. Their products are also visually distinguishable from other products—such as the white earbuds.

Traditional industries, like automobile and clothing manufacturers, rely on creativity to remain competitive. They are always looking for new designs, new materials, and new ways to market their products to increasingly diverse and global customers. This is why there are constantly new fashions and car designs; these are the creative product of designers. In general, the world economy is transitioning from one based on raw materials and industry to one on knowledge and information. The modern-day workforce must know how to engage in creative thinking to be successful.

THE CREATIVE PROCESS

Creative thinking process requires that you temporarily turn off your critical thinking skills. Critical thinking requires you to be objective, critical, and analytical. Creative thinking requires that you be subjective, open-minded, and intuitive. However, in other ways, creative thinking and critical thinking require a similar approach: curiosity, risk taking, constructive questioning, and perseverance.

There are no rules for being creative. Creativity, by definition, is the process of generating something new including a new idea, a new solution to a problem, or a new product or work of art. The process leading up to creative output is always undergoing innovation. Each person must find his or her own method of arriving at a mental harmony where creative thinking can flow. Some people ride a motorcycle, exercise, or play video games. Elias Howe, the inventor of the sewing machine, put a hole in the tip of the sewing needle after having a dream about it. Otto Loewi won the Nobel Prize in medicine (1936) for his work on chemical transmission of nerve impulses, which was inspired by a dream. Many techniques have proven successful in inspiring creative work. Keep in mind, however, that some of the most interesting innovations throughout history were discovered or created by people who broke all the rules. This Learning Plan will provide you techniques that can be used to induce creative thinking by outlining the five general steps to creative thinking and problem solving.

Recognize the Problem: You must have a problem to solve to begin the creative thinking process. For example, the inventor Alexander Graham Bell was inspired to create a telephone system because he saw the problems inherent in the predominant communication system of his time, the telegraph. Telegraph systems sent encoded messages (dots and dashes) over electrical wires and required users to learn, use, and translate Morse code into real words. The process was labor-intensive and prone to mistakes, and Bell was looking for a way to improve the speed and accuracy of electronic communication. His solution was to transmit actual speech, instead of code. As a result, he created the telephone.

Modern automobiles are a result of solving problems with previous models. Current cars have airbags to solve the problem of passenger injury. If you look at products that are newly advertised—especially by infomercials—they seek to solve problems or improve upon already existing products. However, remember that a problem has to be identified or the creative process has no compass.
We previously learned that writers also begin with a problem as the starting point for a creative work. A novelist is likely to begin with a central dramatic problem that is explored throughout the novel. Academic writers begin with a problem that inspires them to contribute to their field of study. For example, Henry Louis Gates, Jr., a professor at Harvard University, has spent his career confronting the problem of racism in the United States. Throughout his many writings and lectures, he tries to solve this problem by educating people about the important contributions African-Americans have made to U.S. culture.

Acknowledging and solving problems also drive most creativity in the business world. The primary problems that businesses try to solve are economic: a company is losing market share to a competitor and it must create something new to attract customers. For example, in 2005, as gas prices spiraled up, U.S. automotive manufacturers Ford and General Motors saw a dramatic slowdown in sales of their sport-utility vehicles (SUVs). They grew increasingly concerned that further instability with gas prices would continue the trend. To solve this problem, these companies have experimented with two creative solutions. The first is to produce SUVs with hybrid gas-electric engines, which provide much better mileage than conventional internal-combustion engines. The second is to innovate new lines of smaller, more fuel-efficient cars which may contribute to the larger SUVs going out of style altogether.

Identifying the problem will narrow your focus from all of the possible ideas in the universe to a set of ideas that will help you or your organization solve a single problem.

**Adopt the Right Attitude**: Just as critical thinking requires that you approach the world with a critical eye, creative thinking typically requires a creative frame of mind. What does this mean? Creative thinkers try to eliminate any negative, self-censoring ideas that are likely to inhibit creativity. For example, writers often do not edit their work until one draft is complete. This is because editing is a critical, self-censoring activity, and it tends to prevent the natural flow of writing. It tends to contribute to writer’s block because the writer is stuck critically evaluating what has already been written.

**OVERCOMING NEGATIVE ATTITUDES**

This section will explore some of the most common negative attitudes that can stall the creative process. It will be easier to follow through with the rest of the creative process if you can learn to identify and overcome these attitudes.

**Do Not Accept Defeat**

The fastest way to stop the creative process is to become discouraged in belief that the problem is too difficult. If you begin with a positive attitude that assumes you can solve the problem, you are much more likely to persevere and find solutions you did not see at the outset of the process. Large problems are nothing more than a series of smaller problems that, once solved, resolve the larger problem. It is good practice to break down the larger problem to smaller problems and begin with the easiest, smallest problem to solve, gradually working your way through the remainder. This technique is effective as analogous to riding a bicycle: You will maintain balance and move forward if you continue pedaling. Solving the first smaller problem is getting on the bike; solving subsequent problems is pedaling.
Do not be Afraid to Fail

Historically, some of the most creative thinkers have been told that their ideas were ridiculous. Orville and Wilbur Wright, inventors of the airplane, were repeatedly told that their idea would not work; the idea that people could fly was preposterous. However, such attitudes did not discourage them. Taunts can be inspiring as they encourage an inventor to prove themselves right. Another famous example is Susan B. Anthony, who helped lead the women’s suffrage movement in the United States. This movement’s goal was codified in 1920 with the passage of the 19th Amendment (women gained the right to vote). Anthony was ridiculed for her ideas, was arrested, and was threatened with physical harm by people who thought her ideas were illegal and immoral. However, she preserved and refused to accept failure.

Failure is endemic to success. You should welcome failure because it is a chance to learn something new in your mission to succeed. There are only so many mistakes that you can make in pursuit of a solution, so one more made is one less to make in the future. The true measure of a person is what they do when they fail—not how they handle success.

There is Always More than One Solution

Problem solving can be an arduous process with many wrong turns and dead-ends. If you begin the process with only one idea and assume that this is the only solution, you are likely to get discouraged if your idea proves to be misguided. You must remain open to many different approaches as you try to solve the problem. Bamboo is strong because it will bend to survive adverse weather conditions; it remains rooted because it is flexible. Let your mind bend and be flexible to new solutions as you discover them.

The Wright brothers experimented with several glider planes that did not fly as designed. These failures led the brothers to consider other solutions, one of which eventually worked. Consider this quote from Albert Einstein, who was also a master of creative problem solving: “I think and think for months and years. Ninety-nine times, the conclusion is false. The hundredth time, I am right.”

Have a Sense of Humor

Creative problem solving can be a difficult process with wrong turns and not enough encouragement from those around you. One of the best ways to maintain focus and composure is to laugh about it. Laughter releases endorphins (feel good chemicals) into the brain and increases blood flow. This will help you put a current frustration in perspective and also fuels the process of creative thinking due to endorphin release and the mental relaxation that humor produces.

Generate Ideas and Options:

At this stage of the creative problem solving process, you begin to focus on possible solutions to your problem. Brainstorming is a creative technique designed to help a group or individual generate several solutions to a problem. Alex Osborn, who was an advertising executive, invented brainstorming; he believed that developing imaginative and innovative solutions would produce better ideas than the typical evaluation and criticism of solutions.
The key to make brainstorming work is that the generation of ideas is separated from the evaluation of ideas. The rule for a brainstorming session is that there are no bad ideas. Thoughts are not censored or criticized. Instead, give serious consideration to anything that comes to mind; the more outrageous, the better. What might have been the most ridiculous idea could be the solution.

In 1888, a man named Henry thought he could become rich by investing in a 600-acre cucumber farm. He went bankrupt a year later. Instead of quitting, he engaged in brainstorming sessions as to what to do with the land and available resources. He decided to plant tomatoes. You may know his name now—Henry Heinz. He eventually created 57 different products. Brainstorming can unleash creativity that keeps the process pedaling to success.

Nominal-Group Technique

This is a procedure that uses some of the principles of brainstorming but has members write their ideas down individually before sharing them with the group. The nominal-group technique gets its name from the principle that the group is in name only (nominal) because members work on providing solutions individually rather than in sustained group interaction. This technique uses silent brainstorming to overcome some of the disadvantages researchers have discovered in exclusively spoken group brainstorming.

Free Association

Have you encountered problems getting ideas to flow (get on the bike to start pedaling)? Try a technique known as free association. Free association is a method originally developed by Sigmund Freud in his practice of psychology. He gave his patients a word and then asked them to say the first thing that came to their minds. The hope was that they would eventually reveal a deep or hidden memory. This technique has been modified over the years in a variety of fields and can sometimes involve words or pictures to prompt the association. For example, if you see a picture of a car and say the first thing that comes to mind, you might say ‘big’ or ‘expensive’. In a free association session, the actual association you make matters less than the speed with which your reactions come. This is because the first thing said does not filter through logic before it is said. This could reveal a solution to a problem that has been known to you yet you have been unable to express. Additional techniques for leading effective group brainstorming sessions will be covered later in this Learning Plan.

Create a Climate of Freedom

Individuals and groups of people engaging in brainstorming need to have the freedom to express ideas without fears of being ridiculed. This is difficult for individual brainstorming sessions because we tend to ridicule outrageous ideas before we write them down. Be playful to encourage creativity. For example, this could be the group engaging in a wiffle-ball game while discussing possible solutions as the game moves forward. Individually, consider playing with Play-Doh as you verbally talk through ideas and create solutions.
See Things from a Different Perspective

“Thinking outside of the box” expresses the power and ability to see facts, issues, and problems from a new vantage point. Consider taking on the role of a different person when analyzing a problem. For example, rather than thinking as a person who is drowning in credit card debt, imagine you are a credit counselor giving advice. How would the credit counselor view the problem? Try to consider an alternative entry point into the problem. Another way to help group members see familiar problems in a new light is to bring new members into the group. Changing members in the group can spur group creativity because new people bring in new ideas.

Selection

Once you or your team has generated ideas, the next step is to choose the ideas to test and implement. Very few organizations have the time or resources to try every good idea generated in a brainstorming session. The challenge is to know which ideas are the most likely to solve the problem at hand. This section will explore several techniques that can help you select the best ideas for success.

It is very important to gain group consensus. However, it is difficult to arrive at a decision that everyone is completely happy with, especially since it means some of the members’ ideas will be discarded. Therefore, any group decision process must be as objective and fair as possible.

A very simple method for objectively selecting ideas is to construct pro and con arguments for each idea. To mind map pro and con arguments, first write the idea on the medium of choice, and under the idea draw two columns. In one column, list all of the arguments in favor of the idea, and in the second, list the arguments against it. At the end of this process, the group will be able to more objectively assess which ideas are worth testing and which are too risky.

Cost/Benefit Analysis

A related idea-selection method is the cost/benefit analysis. This method weighs the economic costs of testing a particular idea against the potential economic gains if the idea is successful. This type of analysis can be very effective for solving business decisions because it uses financial criteria. It removes the subjective human factor in arriving at a decision.

This method is driven by economics and is completely objective. For example, if a business determines it costs 100 dollars to produce a new lawn mower model and they can sell the product for 200 dollars, then a net profit of 100 dollars is made and the idea can be implemented.

However, not all decisions arrived at by this method are ultimately the best solution. The Ford Pinto was produced between 1970 and 1980. In 1977, allegations came out that there was a known design structure flaw that allowed the fuel tank filler neck to break off and the fuel tank to be punctured in a rear-end collision, thus resulting in fire from the spilled fuel. 24 deaths were attributed to this design flaw. It would have only cost Ford 11 dollars per vehicle to fix the design flaw upon recall. An internal memo revealed that Ford decided not to recall the Pinto because it would be cheaper to pay the lawsuits resulting from speculated deaths than to recall affected Ford Pintos.
KJ Method

Another effective way of selecting ideas is the KJ Method. It is named for Jiro Kawakita, a Japanese cultural anthropologist who developed a method for building consensus and helping groups make reasonable decisions. The KJ Method involves grouping ideas together in an affinity diagram that shows how the ideas are related to each other. This is easily accomplished by using notes with self-sticking adhesive. Once items are collected and connected, the group must come up with words and phrases that describe the cluster of ideas. Then the group votes on the most important categories of ideas and ranks them in order of importance. This method is simple and it has proven to be effective at facilitating group decision making because it breaks the process down into manageable steps. This method has been used with surprising success in Japanese and U.S. businesses.

Reasons for Non-Selection

There are many obstacles to effective individual and group decision-making. The following is a short list of obstacles commonly encountered:

<table>
<thead>
<tr>
<th>Obstacle</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The current situation is not analyzed accurately.</td>
<td>Improper analysis of the current situation results in making a bad decision.</td>
</tr>
<tr>
<td>2. A clear goal is not established.</td>
<td>One cannot shoot at a target blind-folded.</td>
</tr>
<tr>
<td>3. Positive and negative consequences of the alternative ideas are not analyzed.</td>
<td>Groups eager to make a decision often do not take time to effectively evaluate the pros and cons of a course of action.</td>
</tr>
<tr>
<td>4. Not enough people are involved in the decision.</td>
<td>Groups make better decisions when there is equal participation in discussion.</td>
</tr>
<tr>
<td>5. The data is not evaluated critically.</td>
<td>Flawed reasoning, like flawed data, contributes to a bad decision.</td>
</tr>
<tr>
<td>6. There is incorrect information being evaluated.</td>
<td>Bad information is used as the basis of the decision without the group knowing the information is flawed.</td>
</tr>
</tbody>
</table>

Implementation and Evaluation

Remember, problem solving it is an iterative process. A solution often needs to be refined several times before it produces the desired results. Because solutions are rarely perfect the first time they are used, it is helpful to implement them in stages and build in time (and opportunities) to make changes as progress is made. The concept of iterative design and implementation has been effectively used in the software industry where the context into which innovations are introduced is so complex that the software must constantly be revised and re-released. For example, when Microsoft releases a new version of its word processing program Microsoft Word, it always anticipates that there will be problems. It may crash or stop working if
a user installs it on a machine with an older or non-standard operating system. It may do something unexpected when a user runs it with another software package open simultaneously. The personal computer environment is so complex that no company, not even a behemoth such as Microsoft, can anticipate all the possible variables. Instead, when Microsoft, or any other software company, releases a new version of software, it immediately begins work on the next iteration.

The first step in an iterative implementation is to test an idea, solution, or invention as much as possible before it is shared with a larger community. Inventors always test their inventions before they are finalized because of the risk of public humiliation, ruinous expense, or public endangerment. This is especially true of products that are consumed or used by people. Pharmaceuticals, cosmetics, and new food products are rigorously tested before they can be sold to consumers, and many have to be approved by an external testing committee to ensure they are safe for public consumption. Software developers also test their products in a process called quality assurance testing. During this process, a team (usually one that does not include the people who developed the product) will use the software on different types of computers and document any software problems. Some computer and software companies also conduct a second battery of tests called usability tests. These tests investigate whether or not average consumers, not software experts, understand how to use the companies’ products. In other words, ‘Is the product user-friendly?’ Apple is known for producing user-friendly and intuitive products. This is due to their rigorous research, usability tests, focus groups, and feedback.

Usability testers document situations in which a consumer is confused or needs more information; they also provide developers with ideas for making products easier to use. The concept of testing can also be used to try out ideas. Marketers commonly experiment with new marketing concepts by testing new advertising campaigns in small regions or by using focus groups to review campaigns before purchasing advertising space or time. Similarly, writers pitch ideas to editors or film producers before the entire book or screenplay is complete.

An essential part of the iterative process is to collect feedback even after your ideas are implemented and in use. This means that you must set up processes for collecting feedback from your users so you understand what does and does not work.

**Feedback**

One source of feedback is objective data. If your idea culminates in a book, film, or other product, you can observe the amount of product you sold and the amount of profit you made. If your idea culminates in a website, you can observe the number of visitors to your site.

Another source of feedback is subjective data, or users’ opinions of your ideas or inventions gathered through surveys, focus groups, or other means. It is best to collect objective and subjective feedback to get a more complete picture of how your users like the product or invention.

Positive feedback is useful and reaffirming; however, negative or constructive feedback is more helpful because the ultimate purpose of feedback is to help you improve your ideas and inventions (Adopt the Right Attitude). In the realm of business, the concept of improving ideas in this way is called continuous improvement. **Continuous improvement** is a management philosophy that encourages employees to constantly look for ways to improve processes, goods, and services in order to maintain a competitive edge. Some companies take continuous improvement so seriously they implement a very structured management approach to support it.
called Six Sigma. Pioneered by Motorola in 1986, it is a system for measuring defects in business processes and improving the quality of business performance. A Six Sigma company will decide on a target level of productivity and intervene whenever productivity falls below a pre-defined level. The goal of Six Sigma is to achieve near-perfect performance.

If you are doing creative problem solving on your own, it is unlikely you will have the kind of resources required to implement a large-scale quality improvement program, or even to create a very structured feedback loop. However, no matter how small, it is helpful to keep in mind that your project does not have to be perfect from the beginning. Implementing your project will be much less intimidating if you leave room to make adjustments and improvements over time.

**COMMON AND NOVEL PROBLEMS**

This Learning Plan has discussed techniques for solving problems using creative thinking. However, little has been said about problem solving itself. You now know how to brainstorm for solutions to a problem; however, you do not yet know what types of problems you can solve this way. Thus, you have not had a chance to do much critical thinking about problem solving. The following are two different types of problems and different techniques for solving them.

**Common Problems**

There are two basic types of problems: common problems and novel problems. A common problem is a problem that has been worked out by others before. Such a problem has very clear steps toward a solution and plenty of resolutions that have already been implemented, such as most simple mathematical problems. Once you know the rules for figuring out a solution to a simple mathematical problem, you can work it out without too much information. Math problems are not necessarily easy but it is possible to memorize the method for solving a math problem without understanding all of the steps and why they are being done. Most children learn how to perform division problems and are able to divide almost any number into any other number without fully comprehending what it means for one number to go into another, why remainders are carried over, and so on. This lack of understanding does not prevent them from solving division problems correctly.

**Novel Problems**

A novel problem is a problem without pre-defined problem-solving steps. Novel problems require you to understand the function of all of the sub-steps required for the solution because you must use those steps in different combinations to arrive at a solution. Novel problems require a higher order of problem-solving skills because they require you to apply and extend your basic solutions to new situations.

Many of the problems encountered in life are novel problems that require flexibility and the ability to adapt what is learned from experience to each new situation. Creative thinking techniques must be constantly modified to make them work in new situations that pose novel problems. You are likely to be puzzled by the problem upon first encounter. You must rely on the experience you have with other problems.

There are numerous methods of self-modified creative thinking techniques. You might try, for example, to break the problem down into smaller sub-problems to see if you recognize smaller problems that you do know how to solve. Another technique is to problem-solve by analogy.
Think about similar problems you have encountered in different domains and consider importing a solution. For example, Jiro Kawakita (of the KJ Method) solved the problem of group decision-making in his ethnographic studies. Later, when he encountered similar problems in the business world, he adapted the techniques he used in ethnography and found they worked very well.

You have learned the basic steps in using creative thinking to solve problems. This technique may seem arduous at first, yet practice will make perfect. You will quickly find yourself walking through the steps to problems that get your attention. Be aware of the obstacles to effective decision-making previously discussed. The primary obstacle is that you could have flawed information; this creates a shifting foundation upon which a solid decision cannot be made. You will know if you have flawed information because, as you progress through the steps, something simply will not ‘add up’ or ‘feel right’. Do not be in a rush to resolve the issue; rather, back track through the steps to discover where the flawed information exists.

It cannot be emphasized enough to never accept defeat. The majority of people quickly become discouraged upon the first hint of an obstacle or negative feedback. You must have thick skin and believe in what you are doing. These two factors are needed to resolve any issue with success. There was once a man, who at the age of 65, realized that his store failed. He had no money, so collected his first social security check for income. All he had was a great recipe and a desire to bring it to as many people as possible. He drove around the country meeting with ‘mom and pop’ restaurants trying to sell them the recipe and the method of cooking it. He was unsuccessful for years. He often slept in his car. He adjusted his approach, never accepted defeat, and believed in his recipe. Nine years after he set out on the road, he sold his corporation for two million dollars. Who was the man behind the corporation? Colonel Harlan Sanders and Kentucky Fried Chicken.
GLOSSARY

A

Affinity diagram: used in the KJ Method, a diagram that illustrates relationships between ideas.

Aesthetic reasoning: the process by which people attempt to interpret and judge writing and other works of art.

Aesthetics: a branch of philosophy that concerns beauty and taste.

Ambiguity: when a word, expression, or statement has more than one meaning.

Analysis: the process of organizing and examining information in order to draw a conclusion.

Antithesis: a device that uses a parallel sentence structure to establish a contrasting relationship between two ideas.

A priori: originally a Latin phrase meaning—from the former. The meaning here is something that is universally true without requiring testing.

Appeal to Force (ad baculum): The use of threats to support a conclusion.

Argument from analogy: an argument that tries to prove something is true by comparing it to something else.

Attacking the Person (ad hominem): Blaming the person instead of the situation or issue.

Audience: a readership and/or a group of listeners.

B

Brainstorming: a creative exercise in which a person or a group of people attempt to generate as many ideas as possible.

Bandwagon Fallacy: The use of numbers to influence the audience.

C

Categorical imperative: a moral rule that is universally applicable.

Causal Fallacy (post hoc, ergo propter hoc): This fallacy inaccurately assumes that because one thing happened before the other that it must have caused the other. In other words, it falsely assumes a causal relationship.

Causal inference: an argument that tries to prove that there is a causal relationship between two things.

Character: the people represented in a work, including their personality traits, flaws, and so on.
Civil Law: a system of law common in Europe, and used in Louisiana, where legislatures develop very detailed legal codes that provide specific guidance on as many occurrences or disputes as possible. Courts must still sometimes fill in gaps in the code, but the judges look primarily to the code itself, rather than to other judicial rulings, when determining how they should rule on cases.

Common Law: a system of law used in the United States (with the exception of Louisiana), in which legislatures pass laws that set broad outlines of how a law is to operate, and the details are filled in by a combination of executive branch agencies through the issuance of regulations and courts through rulings in lawsuits.

Common problem: a problem that has been experienced and solved by others before.

Confidence interval: the margin for error in an argument.

Confidence level: the probability of an argument’s objective accuracy.

Cognitive heuristics: decision-making shortcuts that we rely upon daily to expedite our judgments in what to believe or what to do

Conjunction: the creation of a syllogism’s conclusion via conjoining or combining the information from the syllogism’s first and second statements.

Context: the manner in which words are spoken provides understanding for their meaning.

Continuous improvement: a management philosophy that encourages employees to constantly look for ways to improve processes, goods, and services in order to maintain a competitive edge.

Cost/benefit analysis: the practice of weighing the economic costs of testing a particular idea against the potential economic gains if the idea is successful.

Creativity: the process of generating something new.

Credible source: a source that is objective, accessible, free, and current, and it has the required expertise.

Critical distance: in writing, an ability to step outside one’s own frame of reference, consider one’s audience, and imagine what needs to be understood and believe the arguments or ideas contained in the writing.

Critical thinking: a term used to describe a purposeful, reflective thought process.

D

Debate: a structured argument about a topic or issue.

Deductive reasoning: a method of argumentation that allows one to establish that a statement or fact must be true based on other statements or facts that are already known to be true (or accepted as true).
Deductively valid argument: an argument that if all the premises are true then the conclusion is true.

Diction: the way words are put together in patterns that add meaning to the language.

E

Either/or Fallacy: Oversimplifying a topic to only two positions.

Empirical reasoning: solving a problem with data that is objective.

Evaluation: a process of comparing and assessing information or ideas and making choices among them.

Executive summary: a short summary of an argument.

Expletive: a word or phrase that interrupts the flow of a sentence and adds emphasis to particular ideas in the sentence.

F

Fact: something that can be proven through objective tests or research.

Factual issue: an issue that can be answered or solved by an objective test or fact.

Factual scenarios: a case based in fact.

Feedback: the process of giving and receiving constructive criticism regarding a project, activity or paper.

Focus group: a group of individuals compensated to provide feedback on a product, marketing concept, or idea.

Formal fallacy: an error in the structure of an argument. Also called a logical fallacy.

Formal inductive argument: a method of argumentation that confirms or refutes a hypothesis using a scientific process, gathering evidence, and applying mathematical formulas to the analysis of the evidence.

Free association: originally developed by Sigmund Freud, it is a process of psychiatry in which the subject is given a word and asked to say the first thing that came to his or her mind; the hope is that the subject will eventually reveal a deep or hidden memory.

G

Generalia specialibus non derogant: a Latin phrase that means a general law will not be read to nullify a specific law.

Generalization: an argument that uses information about a sample, or the part of the total population being observed, to make a conclusion about the entire population.
Genre: the basic categories into which literature is organized, such as comedy, tragedy, poetry, and song.

Golden mean: applied to moral behavior, it is the middle point between extreme behaviors.

H

Hasty generalization: This fallacy happens when a writer does not have enough evidence to support his or her claim.

Hyperbole: the opposite of understatement, it is a statement that conveys the speaker’s message by overstating it.

Hypothetical imperative: conditionally, describes a way of attaining or effectuating a worthy goal.

I

Ideological reasoning: begins with abstract arguments and then narrows them to specific issues; this is why it is commonly called a ‘top down’ approach.

Inductive argument:

Inductive reasoning: a method of argumentation that allows one to draw general conclusions from limited examples.

Informal error margins: intuition about the strength of arguments based on sample size and the size of the observed differences.

Informal fallacies: arguments where problems lie in areas other than the structure of the argument.

Informal inductive argument: a method of argumentation that relies on analogies and other, less mathematical forms of evidence.

Invalid argument -

Iterative process: a staged process resulting in refinement of a product.

K

KJ Method: a method for building consensus and helping groups make reasonable decisions; the method that involves grouping ideas together in an affinity diagram that shows how the ideas are related to each other.

L

Language: the words that a writer chooses.
**Logic**: a mode of reasoning pioneered by the Greek philosopher Aristotle. Logic is a process for assessing the reasoning used to arrive at a conclusion, claim, or fact.

**Logical fallacy**: an error in the structure of an argument. Also called a formal fallacy.

**Metaphor**: comparisons that show how two things that are not alike, in most ways, are similar in one important way. Authors use metaphors to enhance descriptions of a point they are conveying to make their writing more interesting.

**Mind mapping**: a visual tool that helps capture the ideas generated in a brainstorming session.

**Non-factual issue**: an issue that cannot be proven by experiment, and the answers to the issue are not-facts.

**Novel problem**: an unusual problem without pre-defined problem-solving steps.

**Objective data**: concrete evidence. **Objectivism**: the theory that reality exists independently of one’s perceptions and thoughts about the world.

**Opinions**: ideas that are formed in a person’s mind that reflect what he or she believes or thinks.

**Original position**: a thought experiment posited by philosopher John Rawls (1921-2002) in which human souls determine the rules that govern the earth before they are placed in bodies.

**Plot**: the story line or sequence of events in a piece of writing.

**Precedent**: prior ruling of a court on a particular legal issue.

**Prediction**: anticipation of the characteristics of future members of a population.

**Pro and con arguments**: arguments for or against a particular idea.

**Problematic vagueness**: results in imprecision sufficient to cause problems in interpreting the terms or instructions.

**Procatalepsis**: a device in which the writer describes writing that anticipates and addresses possible objections to his or her arguments.

**Psychological fallacy**: an argument that manipulates psychological associations to prove a claim or point.
Random Sample: a quantitative research method of selecting a sample from a statistical population in a manner that gives every element in that population an equal chance of being selected.

Reasoning by analogy: in the law, analogy is used by lawyers and judges to fill gaps between existing laws and regulations.

Rebuttal: a response designed to show imperfections in an opponent’s argument.

Relativism: the theory that truth is different for different people, because each person makes judgments based on his or her cultural experiences and point of view.

Rhetoric: a style of persuasion designed to help listeners discover the truth by organizing and clarifying arguments. The term and the related systems developed in ancient Greece, which had a strong culture of oratory. Greek thinkers and philosophers spread their ideas by using elaborate strategies to make their speeches memorable and convincing.

Rhetorical devices: techniques used to compose rhetorical arguments. They include: expletive, understatement, hyperbole, antithesis, rhetorical questions, procatalepsis, and similes.

Rhetorical question: a question that does not need to be answered because the answer is assumed to be obvious.

Sample: the part of the total population being observed.

Sample size: the number of observations.

Self-selection: a situation in which people select themselves into a group or sample.

Simile: a rhetorical device that compares two different things.

Simple induction: an argument that begins with a premise about some members of a population and ends with a conclusion about some other member of the same population.

Six Sigma: a system for measuring defects in business processes and improving the quality of business performance.

Slanted questions: questions likely to skew results in the direction desired by the questioner.

Slippery Slope: This fallacy makes the assumption that once one decision is made in a particular direction that it will have a domino effect and lead to additional, more extreme decisions.

Statistical syllogism: an argument that applies a statistical generalization about a sample population to arrive at a conclusion about an individual member of the population.
**Stereotyping heuristic:** making a judgment about an entire group of people or products based upon a single experience

**Strong inductive argument:** an argument that is likely to be more successful because it is based on a wide range of observations.

**Style:** the unique voice a writer achieves through the interplay of character, language, diction, and other figures of speech, such as metaphor.

**Subjective data:** evidence based on opinion.

**Subjectivism:** the opposite of objectivism, it is a theory that states that reality is shaped and altered by an individual’s perception of that reality.

**Syllogism:** a formal argument with three component parts — two premises and a conclusion.

**T**

**Test:** in the context of this course, a trial of a solution.

**Themes:** related words and concepts that recur throughout a paragraph and an essay.

**Thesis:** main argument.

**Topic sentence:** a sentence that states the main idea for a paragraph and provides a transition from the prior paragraph—also called a transition sentence.

**Truth-functional notation:** a graphical representation of a syllogism—also called truth-table.

**U**

**Understatement:** a statement that downplays the emotions the writer or speaker is trying to convey.

**Unsound:** a term of logic meaning incorrect.

**Usability tests:** tests run by software companies to see if average consumers, not software experts, understand how to use the companies’ products.

**Utilitarianism:** the English school of philosophy that attempted to address some of the shortcomings of moral philosophy professed by Kant and others. One of the key concepts of utilitarianism is the idea that the greatest happiness of the greatest number of people is the foundation of morals and legislation.

**V**

**Valid argument -**

**Void for vagueness:** when the language of a law is subject to various interpretations to a level that an average person with reasonable intelligence would not be able to understand it.
W

**Weak inductive argument**: an argument that is likely unsuccessful because it is unsupported and based on few observations.

**Writer’s block**: an inability to initiate or continue a piece of writing, primarily due to a psychological factor.
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