



Using the Writing Process to Teach Sensation, Perception and Cognition

Curriculum Unit 09.01.04
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Introduction

All writing is based in the knowledge and experiences of the writer. Writers develop their unique perspectives through a lifetime of sensations and perceptions. This interaction is obvious to writers and teachers, but it is seldom the focus of units purporting to teach the writing process. Units on writing frequently focus on the process of composition and its products. This focus on the writing rather than the writer misses an important aspect of the writing process. Writing is a form of cognition. It is a thought process. Thus a great deal could be gained from studying the psychological concepts that result in writing.

This psychological understanding of writing allows teachers to approach writing from a different angle. Specifically, this unit will be based in the content of sensation, perception and cognition with the goal of using focused writing instruction to help students understand both the psychology of writing and the writing process itself. There is a strong link between the three parts of the writing process (seeing, knowing, and writing) and these three psychological concepts. Furthermore, this link is reciprocal, allowing for a deeper understanding of the writing process and the subject matter.

While it is my intention to use this unit in my Advanced Placement Psychology class, the principles addressed here could also be applicable in writing courses, English courses, and even biology courses. Furthermore, the skills presented in this unit are applicable to any course in which students need to retain information quickly and efficiently or develop their writing skills.

Justification

In recent years it has become increasingly important that social studies teachers be competent teachers of writing. Our standardized tests are often writing tests. Our course content relies heavily on reading and writing, but most of our training ignores the writing process in favor of teaching content. This focus also represents a fundamental misunderstanding of what it means to teach social studies. Unfortunately, this

misunderstanding results in deep and pervasive consequences for curriculum and teaching practice.

In my own teaching, I have experienced the consequences of content--centered social studies in a wide variety of social studies courses. District, state and AP curricula are all measured and paced according to content. This is the nature of the discipline, and in most cases it seems appropriate, but it leaves few social studies teachers with the tools or the time to directly address the nuts and bolts of reading and writing. Instead, we tend to nibble around the edges of reading and writing, teaching how to evaluate sources and how to find a main idea in a paragraph.

This problem is particularly acute in Advanced Placement courses. In addition to the large quantity of material required, the students have presumably demonstrated a high level of academic skill. Ideally, these two factors result in a fast--paced course in which students may have only a few classes in which to master complex topics. Even students with strong literacy skills can find the pace strenuous. As a result, finding meaningful strategies for improving student retention of information without sacrificing the need to cover all the material is a constant challenge.

Furthermore, even when the students retain the material, it is often so complex that many find it difficult to fully explain their understanding in written form. This difficulty arises from the taxing nature of the writing process. Linda Flower argued in her 1979 article "Writer Based Prose: Cognitive Basis for Problems in Writing" that the process of composition places a huge burden on short--term memory. Thus as students are trying to compose sentences that convey their understanding of the material, they are limited by the capacity of their short--term memory. As a result, even students who have relatively high levels of understanding and knowledge might score low on a test because they cannot convey ideas through writing. Flower further argues that practicing the skills necessary for writing can reduce the cognitive burdens of composition. For our purposes, instruction and practice in writing would reduce the percentage of their working memory that is bound up in the writing process. This would free mental resources for use in learning psychological concepts of sensation, perception and cognition. There are, however, benefits to this connection between the writing process and the psychological content that go far beyond simply freeing up mental resources.

All my students have difficulty translating their understanding of psychology into terms that are memorable for them and fully comprehensible and convincing to others. Writing instruction would help students translate their reading into their own words, thereby making the material more memorable. It would also improve students' ability to convince others of their understanding of the material. Unfortunately, it will be difficult to justify taking much time away from content to remediate the students' writing skills. There is simply too much content to understand in a social studies course. This quantity of material does not diminish the need, but it does mean that the writing instruction must be offered through the content in order to ensure student mastery.

This unit addresses writing strategies as they mirror and as they support course material. The skills that are built within this unit will reinforce and be reinforced by the content. This is the basis of the reciprocal relationship between skills and content in most social studies courses. Furthermore, the skills that grow out of this unit will bear fruit throughout the rest of the course. It is my intention to teach this unit in the first two months of the course, allowing the students to assimilate a greater quantity of material throughout the year.

This unit adopts the understanding that writing is based in the process of seeing and knowing. The writing process begins with sensory experience, which for our purposes we will call seeing, even though it could just as easily be hearing or smelling. We take in the world, we see it, and that is the first step toward understanding it. We experience the world in momentary sensations and make split second judgments, which

form the basis for our understanding of the world. This formulation of impressions is necessarily brief, given the number of experiences we have in a given day. It is also necessarily fluid, given how quickly these experiences change. And it is impermanent, given the limitations of our sensory memory. Nevertheless these fleeting images are the beginning of our understanding of everything. As a result, this system of experience lies at the beginning of the writing process.

The relationship between the psychological content and our understanding of the writing process begins with a link between the mechanics of sensation and the concept of seeing. Just as seeing in our writing process involves the formulation of impressions, the process of sensation deals with the ways in which our senses provide us with information from the bits and pieces of stimulation that bombard us every day. They last no more than a fraction of a moment and leave little more than a ghost of an impression on our consciousnesses. They are not even stored anywhere in our memory, as the term sense memory refers only to the split-second transmission of information through the nervous system to the brain. In fact the term sensation itself refers only to the moment when the brain becomes aware of an incoming message from the sense organs.

The next step in our understanding of the writing process is knowledge. Knowledge in this context can be used interchangeably with understanding, and it refers to our accumulated ideas. Though these ideas are also impermanent and fluid, they are more solid and less interpretive than the initial impressions of sight. They can be altered, modified and influenced by new information and new experience. Unlike experiences, they must bend and shift to fit our larger understanding of the world. Ideas are intentionally malleable, allowing us to create a larger picture of the world, rather than a fragmented series of images. Thus, all our ideas and knowledge begin as impressions of the world around us.

The very nature of these ideas, malleable and semi-permanent, makes it possible for us to deal with the real world. This structure of understanding allows us to conceive of a world that is not static. We can therefore interact with one another, interact with objects, and interact with those aspects of our world that we can change. This adaptability also presents a very real problem. In an ever-changing world, ideas are regularly discarded, changed beyond recognition and lost to the ravages of time. Furthermore, protean ideas, which have not yet solidified, can be easily lost in the melee of daily life. Nevertheless, the formation of knowledge with all its flexibility and faults is the second step in our understanding of the writing process.

The relationship between writing and psychology continues with a link between perception and knowledge. Just as knowledge involves the formulation of ideas, the process of perception deals with the ways in which we combine sensations and prior knowledge to create understanding of what is going on around us. When we perceive the world around us, we make split-second judgments about how pieces of data, sensations, and knowledge interact within the confines of our working memory. Our working memory filters these pieces of data. We form malleable ideas about what is going on that can easily be altered based on new experiences. Perception is also the beginning of our ability to tell a story about what is happening.

When we perceive the world, we create an account of what is going on. We combine smells, tastes, sounds and sights to establish relationships between various impressions. A steak has no flavor without its smell, just as a rose that looks like a pizza will smell like pepperoni. The process of perception is one of connecting one idea to another, one sensation to another and one understanding to another. Thus our perceptions and our ideas are often one in the same.

Only with experiences and knowledge can we progress to writing. When we look at seeing and knowing in this context, with experience leading to impressions and understanding leading to ideas, it becomes easy to understand the necessity of writing. Seen this way, writing becomes the chief means of solidifying and

preserving ideas. To write something down is indeed to make it permanent. Each time we write down phone numbers and grocery lists, we remind ourselves of the permanent nature of writing and the impermanent nature of thought.

In this context however, writing is also a means of thought. It is a means of thinking about our knowledge that makes our thought processes visible and displays them to the world. In his 2007 article "Writing as Thinking," Richard Menary argues that writing is a cognitive process that transforms our cognitive abilities¹. He further argues that the use of the external, permanent memory system that writing affords us allows us to change and manipulate ideas long after their initial creation. These possibilities infinitely expand our interaction with our own ideas and the ideas of others.

The curious nature of writing is that the process of putting thought into language and displaying it in a form that can be read and therefore recalled verbatim leaves us with a deeper understanding of the topic of our writing. It also makes the ideas we were writing about more solid than they were before and allows those ideas to become new experiences and new knowledge. Thus the process begins again, with the writer or the reader seeking new experiences, leading to more knowledge and an ever-increasing capacity to share and increase understanding.

Explicit understanding of the role cognition plays in writing and of the roles that sensation and perception play in cognition allows students to put each step of the process in its proper context. Students with a strong grasp of the psychology of cognition will have the necessary tools to evaluate their own understanding of the world. Thus, they will more clearly appreciate the process by which they filter information, think about it, and present it to others. This knowledge will allow them to be clearer in their writing and, as Flower suggests, devote less of their cognitive resources to writing.

Though Menary, Flowers, and many others have studied writing and thought, there is little research to be found on the relationship between psychological education and writing. Even so, it seems obvious that an understanding of the concepts enhances an understanding of the skills and that an understanding of the skills enhances an understanding of the concepts. As a result this relationship can be extremely useful in teaching both writing and psychology.

Strategies

The unit will begin with an overview of the process of sensation. For the purposes of a psychology course, it is necessary to give a full review of the five senses, their mechanics, and their various anatomical structures. The students will read the sensation section of their textbooks, and we will discuss this information using the Socratic method. This approach gives the students the opportunity to clarify their understanding of sensory processes and requires their participation to address any of their difficulties.

Through their reading and their questions, the students will begin to understand the processes that are common to all senses: stimulation, transduction, sensation and perception (though perception will be dealt with later in the unit). The material will also include other commonalities like sensory adaptation, thresholds, and signal detection theory. Each of these concepts will be necessary for the students to understand the ways in which their senses function before we begin discussing the anatomy of any specific sense.

During this phase of the unit, we will also begin our discussion of the writing process, with a simple writing assignment based purely on explanation. This exercise will be partially evaluative in nature, giving me the chance to assess more fully where the students are in terms of their writing. We will begin with a simple writing prompt, "All senses are alike in that they..."to be completed in no more than one page. This time limit will encourage the students to explain the basic rules of sensation without allowing them the time or space to rewrite the entire explanation from the text. In order to function as designed, however, the students must complete this assignment in ten to fifteen minutes and with their books closed.

This assignment is suited for this phase of the unit in that the requirements for completion are as simple as possible. In that the goal is to illustrate the relationship between content and skills, it is necessary to do an assignment that is as close to sensation as possible. Initially, it may be very difficult for students to grasp how a writing assignment can mirror the process of sensation. Given that writing is an interpretive experience and that it requires sensation, perception and cognition to be successful, there is no real sensory equivalent in a writing assignment. Thus it will be easier to appreciate the relationship if the writing assignment is, like their senses, both short and imprecise.

It is therefore necessary to make use of a simple description in which the students write down only their initial impressions of the material. Ideally, their responses should take place on the spur of the moment and be based purely on their first impressions. When the assignment is complete, the students will have an opportunity to reflect on it. We will discuss the successes, failures and challenges inherent in the assignment. This discussion will allow students to note the faults in their initial impressions and hasty judgments. It may be necessary to explain the connection to initial sensory impressions, though if the students are successful, they will draw their own connections.

This debriefing will be coupled with discussion and description of our view of the writing process. I will draw explicit connections between the process of seeing something and the process of explaining it to others. At this point I will lay out the outline for the whole unit, offering the students an explanation of the goals and of the path we will take to get there.

It will also be necessary at this early stage in the unit to explain to the students the model of writing we will follow, from seeing, through knowledge to writing. This series will lay out the framework for our writing process, and it will allow the students to assess their own progress as I am also assessing it.

With this foundation in place, the students will study the anatomy of each sense individually. This sequence of material tends to be difficult for students, given that each sense is based on different mechanical and physical processes. At this point the Socratic method becomes more important. While the commonalities of each sense are relatively straightforward, the anatomy of each is quite specific and often difficult to take in all at once.

The next step in the writing process will be a series of short anatomical descriptions. These assignments will ask the class to provide me with diagrams of the mechanics of each of the senses with descriptions of those diagrams. Each student will be responsible for creating an anatomical diagram of one of the five sense organs and a complete description of that diagram. These descriptions will be no more than one page, with the goal of establishing and improving the students' ability to demonstrate their understanding of the basic functions of each sense.

Because this writing assignment will be a description of their diagram, it is more interpretive than our first piece, in that it requires students to consider the information in more detail and with a partner. The students will be given more time and greater access to the material through the use of computer resources so that they

can distinguish between each sense and combine multiple pieces of information to complete their assignment.

For each sense students will be given the chance to work with a partner to discuss their descriptions. Given the time constraints in class, it is unlikely that time can be spared for an all-out evaluative workshop process. Yet even this brief process of discussing the work with another student and evaluating information to create a coherent work serves as a useful introduction to perception, thereby modeling the process by which a variety of sensory impulses are combined to create a perception. In this case, an individual student will have to combine his or her own thoughts with those of another student by compiling potentially contradictory ideas to create a coherent thought. If indeed the students fail to draw these connections themselves, it will be useful to discuss them at the beginning of the section on perception.

As we conclude the section of the unit dealing with the mechanics of sensation, it will be necessary to remind the students of the goals of the unit and our understanding of the writing process by drawing the links between sensation and experience. Once again, we will rely on reading and the Socratic method to establish a basic understanding of the process of perception. Perception, like sensation, will be broken into two parts and, consequently, two separate writing assignments. The first part of our study of perception will deal with what psychologists understand as perceptual constants, including illusions.

Our text includes a wide variety of illusions, covering a range of perceptual information. Each illusion tells us something about how we perceive the world, and each offers a piece of the total picture that is perception. Our first analysis assignment in this part of the unit deals with the information that can be gleaned by studying these assignments phenomena. The students will be asked, "What do these illusions tell us about how we perceive the world?" Unlike the previous assignment, this task will be accomplished individually. Again the students will have limitations placed on them. In this case the assignment must be no longer than two pages and will be completed within prescribed time limits of no more than thirty minutes.

In order to accomplish this writing assignment, we will begin by discussing the material together. After drawing the famous Necker cube on the board, the teacher leads the students in brainstorming potential answers to the prompt question based on the figure in front of them.

This activity serves two purposes. First, it builds on the previous activity in that multiple ideas and perspectives are considered. This strategy mimics the process of perception, as it uses multiple sources of information in order to make a determination. Second, this activity requires a greater depth of analysis than the previous assignment, just as the second assignment required greater depth than the first.

Students then write down their responses. Their writing will solidify their understanding of the content on perception. It will also require them to break that information down so that they can build it back up into a coherent idea. The text presents all this information in terms of how the illusions work, not how they demonstrate the realities of our understanding of the world. As a result, even though our discussion partially explains these concepts, the students will be encouraged to truly analyze the material to formulate their own ideas. These ideas, in their newly solid form, will also be based on one of the more difficult concepts for students to master.

When this writing assignment is complete, there will be another debriefing. Under ideal circumstances, the students will have analyzed the material including a discussion of how the mind and the sense organs interact to create meaning. Analysis itself is a difficult concept to pin down, lying somewhere between description and argument. Given that difficulty, it will be necessary to discuss the process they have just completed. The most important part of this discussion will involve convincing the students to outline in a step-by-step fashion what

it is they just did. In this way the students will be encouraged to address their own thinking process as well as their own writing process.

The next step in the unit is an analysis of the various theoretical explanations of perception. These theories include learning--based inference, Gestalt theories, and depth perception. Like illusions, each has information that will allow the students to more fully understand the perceptual process. They will also allow the students to more fully understand the ways in which they perceive the world. Furthermore, with a more complete understanding of perceptual processes, the students will have a more complete understanding of the ways in which the brain analyzes the information the senses provide.

The writing assignment connected to this section goes into greater depth than the previous assignments, and it reflects our need to progress from simpler to more complex assignments. Unlike previous assignments, which required students to be responsible for the creation of multiple writing pieces covering the entirety of the material, this time the students will each write only one piece covering only one of the theories. This assignment will allow each student to analyze the material in greater depth and emphasize depth over breadth. Each student will be assigned one of the theories, and he or she will answer the question, "What does your theory teach us about the nature of our relationship to the outside world?"

This assignment will likely require some pre--writing, and therefore students will be encouraged to seek out a partner (the limited number of theories ensures that there will be more than one student dealing with each topic). While working with a partner for brainstorming and initial discussion will be encouraged, each individual student will be responsible for providing his or her own writing assignment and his or her own understanding of the answer to the question. Given that we are beginning to border on argument, there should be a wide variety of student responses even on a single topic. Thus, while collaboration is expected on the meaning of the theory, it will need to be discouraged for the writing assignment.

When the assignment is complete, the class will need to reconvene and debrief once more. In this particular case, each student has a piece of the larger perceptual puzzle. As a result, each student will be something of an expert on his or her own topic and in need of hearing from an expert on all the other theories. Therefore the first step in our debriefing session will be to have the students discuss their individual theories, explaining to the rest of the class what each theory is and what it means. This approach will lay the groundwork for the second phase of the debriefing.

Once all the students have a grounding in each of the theories, they will then take turns presenting their answers to the question that they have been asked to answer. The class will be encouraged to ask questions and challenge the writer in a respectful and productive manner. This discussion should go beyond the mechanics of what the students wrote by delving into the conclusions they drew from the material. Such a discussion has the potential to be quite illuminating for all present, but it could also go wildly astray. Thus it will be necessary to clearly explain the purpose of the conversation. This discussion should focus on analysis, not the quality of the students' writing.

The final step in the unit will be a discussion of cognition and judgment. From the standpoint of the material, the students will read and discuss the sections of our text that deal with memory and cognition. The goal of this juxtaposition between sensation and memory is to connect the ways in which we perceive with the ways in which we think. This is not only a necessary part of understanding knowledge, but it is also necessary for the students to understand the writing process.

Students will have to read about and discuss the processes of memory and then move on to problem solving

and language. Each of these concepts is necessary to ultimately understand the writing process, and each has unique information to impart before the students embark on their final writing assignments. The language section will allow the students to evaluate their ability to convey their various understandings into language, and the information on the processes of memory and thought will allow the students to evaluate their ability to establish and recall those understandings. Thus each piece is necessary to the students' overall understanding of knowledge.

The first writing assignment for this section deals entirely with the memory portion of the material. After having read and discussed the various stages of memory (sensory, working and long-term), the students will come to the section on the failures of memory. For the purposes of this assignment we will discuss and brainstorm all the failures of creating memory and the process of remembering before the writing assignment is mentioned. The goal of this discussion is ensure that the students understand the nuances of memory and the ways in which it can be unreliable or totally incorrect.

With this foundation in place, we will progress to our writing prompt. The question for this section is "Given what we know of sensation, perception and memory, can we trust our recollections of events?" This question is designed to rise to the level of argument and to require the students to combine their new knowledge with all the other information covered in the unit thus far. The students will have only one to two pages in which to write this assignment, and the time will be limited as well. These limitations are designed to force the students to make quick judgments, which they will draw upon immediately as we reconvene to discuss their findings.

This discussion will take on some of the characteristics of a debate, but in most ways it will resemble our previous debriefings. As with the previous writing discussion, we will divide the current one into two phases, writing and concept. First we will deal with the conceptual framework of their writing. Ideally, the students have chosen both potential sides of the issue. This choice would allow us to have a true debate on the material and to think deeply about the arguments that have been made. However, it is entirely possible that the students will all line up on one side of the issue or the other. This will require the teacher to step in and provide the students with the other side in order to spur debate and discussion.

The second phase of the debriefing is likely to be more tricky than the first. The students will be asked to discuss what they did while they were writing. How did they reach their conclusions? What analysis did they offer? Is their position strong or weak? This discussion should have a different tone than the debate, and it will likely be necessary for the teacher to plan for that eventuality. It may even be necessary to take a break between the two. In any event, the class should go through the process of creating their pieces step by step, endeavoring to leave nothing out. A picture should be emerging at this point of human understanding of the world outside of themselves and of the process of recording that understanding for others. Ideally, it will not be necessary for the teacher to point this out to the students.

Once the topic of memory and its failings has been satisfactorily addressed, we will progress to our final writing assignment and the conclusion of the unit. Each assignment to this point has built on the last through both the content and writing skill on which it has focused. This assignment is no different, though it does encourage a more complete understanding of all the material than did previous assignments.

The students' final task will be to evaluate people's ability to understand their experiences, to know what is going on, and to convince others of that understanding. Again the students will be provided with a guiding prompt to address. They will be asked, "Evaluate the ability of human beings to understand their experiences and convey that understanding to others through writing." This prompt will require the students to engage with all the skills and the content from the unit as well as to argue persuasively in defense of their ideas.

Students will need to briefly explain sensory and perceptual processes. They will need to analyze the failures of perception and memory. And they will need to evaluate cognition and language as a means of conveying that understanding to others in a convincing way. The teacher is thus able to assess not only the material that was covered in previous assignments, but also to evaluate the material (cognition and language) that is new to this assignment.

Additionally, students will be required to pass through all the phases of the writing process as we discussed them earlier in the unit. They will need to review all the information covered in the unit. They will need to know their position and evaluate it based on their experiences of the material. And finally they will need to write out all this analysis, preserving it and passing it along. In this culminating activity the students will finally be able to see the reinforcing relationship between seeing, knowing and writing. This exercise will also allow the students to see how this relationship mirrors that of sensation, perception and cognition.

As with all our later writing assignments, this one will culminate in a discussion of the process of writing their responses and the material contained therein. In this case, however, the discussion will serve as the capstone for the entire unit, and therefore it will be necessary to review the goals and objectives of the unit as well as evaluate the process of creating understanding in general. Again this discussion should be a two--part debriefing, combining an emphasis on content with one on skills. This time, however, the discussion of the skills should focus on the larger relationships present in this unit, including the notion that seeing leads to knowledge, which leads in turn to writing, which can lead to greater knowledge. Similarly, for the sake of comparison, sensation can be shown to lead to perception, which can lead to cognition, which in turn can go back to influence perception. In this way it should be possible to demonstrate once and for all the close link between these two larger activities: the relationships in each system are not just similar, but the same.

Objectives

As a result of this unit, the students will be able to:

1. Describe the processes common to all five human senses.
2. Describe the biology and mechanics of one of the five human senses.
3. Discuss the process of explaining something in writing.
4. Analyze the failures of perception as demonstrated by illusions.
5. Analyze the theoretical explanations of perception and its relationship to our understanding of the world around us.
6. Evaluate the failures of memory.
7. Evaluate human beings' ability to understand the world around them.
8. Discuss and evaluate the reciprocal nature of the relationship of seeing, knowing and writing to sensation, perception and cognition.

Classroom Activities

Lesson for Objective 2 and 3: The Anatomy of the Senses

Goal: To orient the students to the anatomy of the senses and the process of anatomical description.

Objectives:

As a result of this lesson, the students will be able to:

1. Create an anatomical diagram of one of the senses.
2. Describe the biology and mechanics of one of the senses.
3. Discuss the process of describing biological processes in writing.

Materials:

Board, marker, notebooks, pens, textbooks.

Anticipatory Set:

At the beginning of the class the students answer the following question: "How are each of the senses unique?"

Procedure:

1. The teacher begins class by answering any questions that the students have regarding the reading on the senses from the night before. In this way the students are allowed to fill in gaps in their understanding of the material.
2. When all of the questions have been answered, the students are each assigned one of the five senses, of which they will then draw an anatomical diagram.
3. When this is complete, each student is responsible for answering the writing prompt "What makes the sense you diagrammed unique?" The students will only have about twenty minutes to complete their description.
4. When the time is up, the students are tasked with finding a partner who dealt with the same sense that they did and comparing their diagram to that of their partner.
5. The teacher will gather the class together with ten minutes remaining.

Closure: Day 1

The teacher wraps up class by leading the students in discussing the process of describing their diagrams. The teacher must be sure to remind the students of the goals of the unit and, if necessary, explain how this lesson furthered those goals

Homework:

For homework the students will be asked to read the section of their text that deals with perception.

Lesson for Objectives 4: Illusions and their Effect on Perception

Goal: To orient the students to the basic concepts of perception through the study of illusions.

Objectives:

As a result of this lesson the students will be able to:

1. Assess the information that illusions provide about perception.
2. Discuss the Necker cube.
3. Analyze the failures of perception demonstrated by illusions.

Materials:

Board, marker, notebooks, pens, textbooks.

Anticipatory Set:

Students begin class by answering the question "What factors contribute to our forming a perception from sensations?"

Procedure:

1. The teacher begins the lesson by leading the students in a brief discussion of the anticipatory set.
2. When this is complete, the teacher answers any questions the students have about the readings on perception in order to fill in whatever gaps may exist in their understanding.
3. The teacher then draws the Necker cube on the board, leading the students in brainstorming the information it provides about our perceptual processes.
4. When the class has finished brainstorming, the teacher notes the similarities between the process of brainstorming and the process of perception.
5. When this is complete the students are given thirty minutes to answer the following question in one to two pages, "What do these illusions tell us about how we perceive the world?"

6. The teacher then leads the students in debriefing their work through a discussion of the steps they took and the logic they followed to reach their conclusions.

Closure:

The teacher wraps up class by briefly reminding the students of the goals of the unit and assessing their progress toward meeting them.

Homework:

For homework the students will read the section of the text devoted to theoretical explanations of perception.

Lesson for Objective 7 & 8: Evaluating the Process of Writing and Thinking.

Goal: To allow the students to solidify their understanding of the relationship between writing and cognition as well as offer an opportunity to evaluate human sensation and perception.

Objectives:

As a result of this lesson the students will be able to:

1. Evaluate human beings' ability to understand the world around them.
2. Discuss and evaluate the reciprocal nature of the relationship of seeing, knowing and writing to sensation, perception and cognition.

Materials:

Board, marker, notebooks, pens, textbooks.

Anticipatory Set:

The students begin class by answering the question "How is the writing process similar to cognition?"

Procedure:

1. The teacher begins the lesson by discussing the anticipatory set with the students, without explaining that writing is a form of cognition and without the students making that point first (this will come later if it does not come naturally).
2. At this point students are broken into small groups of two to four in which they will create a

brief outline of the unit thus far. Outlines should include the parallel tracts of the writing process and the psychological material presented so far. They should also include all the relevant steps covered by the unit.

3. When this is complete, the teacher leads the class in going over their outlines, clearly mentioning each of the steps in the perceptual and writing processes.

4. Each student then responds to the following prompt: "Evaluate human beings' ability to understand their experiences and convey that understanding to others through writing."

5. The teacher circulates while the students are writing and offers help if necessary. This exercise will likely require the remainder of the class, so the discussion to review the unit may extend to another day.

6. When this part of the assignment has been completed (or on the next day of class, with the assignment having been completed for homework), the teacher leads the students in reviewing the content of the entire unit, including the parallels between psychology and writing. If necessary, the teacher should also explain (though ideally the students will have come to this realization on their own) that writing is a form of cognition and that understanding the psychology of it will make them better writers.

Closure:

The teacher wraps up class by answering any final questions the students have.

Homework:

For homework the students will study for the unit test.

Appendix

The Advanced Placement program is grounded in teacher autonomy in curriculum design. As a result, the city of New Haven has not adopted a curriculum or requirements for AP Psychology courses. Thus this appendix will discuss the ways in which this unit meets the content requirements set forth by the College Board for AP Psychology courses.

This unit specifically addresses the content on sensation and perception as well as the unit on cognition. It meets the requirements that units on sensation include the anatomy of the senses as well as the commonalities between the senses. Additionally, this unit covers the required content on perceptual constancies and the construction of meaning. Finally, the unit addresses the content on cognition, including a discussion of language and memory. Furthermore, this unit offers students skills that will better prepare them

to write the essays on the AP Psychology exam.

Beyond the requirements of the AP Psychology course, this unit addresses the need for writing instruction in social studies classes more broadly. Specifically, this unit prepares students in regular psychology classes to learn psychological content even though the unit itself does not appear in the half--year psychology course set out by the New Haven Public Schools.

Bibliography

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In this article, Flower offers a method for teaching writing that is based on the ways in which our brains function. She includes some useful and insightful research on writing and cognition.

Flower, Linda, and John Hayes. *Writing research and the writer*. *American Psychologist* 41, : 1106. 1986.

Flower and Hayes offer some insight in this article as to the connection between thought and writing.

Harris, Roy. *How does Writing Restructure Thought*. *Language Communication* 9, (2--3): 99. 1989.

In this article, Harris discusses the history of writing and the ways in which the process of writing restructures thought on a cultural level. Harris seeks to demonstrate that cultures change upon the advent of writing, but makes a number of claims about individuals as well.

Kellogg, Ronald. *Long--term working memory in text production*. *Memory Cognition* 29, (1): 43. 2001.

In this article, Kellogg discusses the role of memory in the writing process. This is a technical discussion of a study on reaction times in written tasks and content knowledge.

Menary, Richard. *Writing as thinking*. *Language Sciences* 29, (5): 621. 2007.

Menary discusses the impact that writing has on our thought processes and our relationship to information.

Myers, David G. *Psychology*. 7th ed. Holland Michigan: Worth Publishers. 2004.

Myers has written an extremely useful psychology textbook, which that is ideally suited to use in the AP Psychology classroom. It provides a great deal of background in a format that is quite accessible.

Vygotsky, L.S. *Prehistory of Written Speech*. *Social Science Information* 17, (1): 1. 1978.

In this article Vygotsky, one of the premier thinkers in developmental psychology, offers an explanation of the origins of writing as they compare to the origins of verbal communication.

Wertsch, James. L. S. Vygotsky's "new" theory of mind. *The American Scholar* 57, : 81. 1988.

In this article Wertsch offers a critique of some of Vygotsky's work.

Student Reading

Zimbardo, Philip, Robert Johnson, Ann L. Weber, Craig W. Gruber. *Psychology: AP edition*. New York: Pearson. 2007.

This jointly authored text is a concise and complete survey of psychology. It offers relevant examples, strong graphic representations, and a great deal of useful information. For the purposes of this unit, the students will read chapter 4 and chapter 7. This reading will give them the background necessary to complete the unit's objectives.

Materials for Classroom Use

All the materials to be used in the classroom will be taken out of the text mentioned in the student readings section.

Endnote

1. Menary, Richard. 2007. Writing as thinking. *Language Sciences* 29, (5): 621.

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