

# The Observation/Inference Chart: Improving students' abilities to make inferences while reading nontraditional texts

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**Paintings, movies, historical artifacts, and other nontraditional texts are easier to understand when students are skilled in making inferences. These skills transfer to traditional texts as well.**

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**Many years ago** archeologists made some observations about animal bones that they found at certain archeological sites. Many bones had edges and corners that appeared to have been smoothed with sandpaper. Eventually archeologists developed the theory that as the prehistoric people prepared their meals, these bones were stirred in ceramic pots that had rough interiors. As the bones bounced off the rough sides of these pots, the edges and corners were smoothed, resulting in what is now called “pot polishing.”

The pattern of reflection that archeologists used in developing the concept of pot polishing provides a wonderful model for the reading of nontraditional “text”—be it an animal bone, a painting, a movie, a photograph, a musical composition, a scientific experiment, or an historical document. Their “reading” of the animal bones involved two important processes. First, they were able to make careful, detailed, and specific observations. Second, they used their observations and

their background knowledge to make logical inferences that explained what they observed. These same two strategies, observation followed by inference, are used by historians, scientists, politicians, salespeople, athletes, and countless others to read the texts and contexts with which they work.

Nontraditional texts are texts that are not written or read using letters and words in the usual sense. Instead, nontraditional texts are artifacts or expressions that are made or performed by individuals and can be interpreted, or read, by other individuals. These types of artifacts can be produced intentionally or unintentionally. Nontraditional texts include photographs, paintings, movies, coins, bones, dances, music, and numerous other forms of human expression or remnants of human activities.

Content area teachers, particularly history teachers, should consider using nontraditional texts for several reasons. First, they provide students with an opportunity to engage in authentic research activities. Archeologists and historians use artifacts to analyze prehistoric and historic cultures. As students practice reading nontraditional texts, they can engage in the same types of thought processes that archeologists and historians use in the field. Second, artifacts, whether from prehistoric or modern times, tend to draw students into an activity. Many of the most engaging activities that I use in my high school history

class are those that allow students to think deeply about nontraditional texts. Third, the types of cognitive strategies that students develop using nontraditional texts may be applied to traditional reading activities. Through the use of artifacts, students practice making observations and inferences in a setting that is engaging and perhaps less taxing of cognitive resources than traditional reading assignments. Teachers can encourage students to transfer these strategies from nontraditional to traditional reading activities.

However, many students struggle to read nontraditional texts, just as they struggle to comprehend traditional texts. The Observation/Inference (OI) Chart that I describe in this article is an instructional strategy that provides support, structure, and scaffolding for students as they improve their ability to use observations to make inferences. This article has the following purposes:

- Explain the structure of the OI Chart
- Describe research that provides a rationale for the use of the OI Chart

- Explain how the OI Chart could be used to illustrate the making of inferences
- Give examples of history lessons that I have taught using the OI Chart
- Provide materials that could be used to assess students' completed OI Charts

## Description of and rationale for the OI Chart

The OI Chart has a simple structure that is easy for students to understand. Each student's paper is divided into two sections, with a line drawn down the center of the page from top to bottom. Figure 1 illustrates the format of an OI Chart. To the left of the line, students list observations that they make about the text they are studying. To the right of the line, students list the inferences that they make about the text based on those observations. Arrows are drawn linking each inference with the observations that support it, with the arrows pointing from the observations toward the

**Figure 1**  
**The Observation/Inference (OI) Chart**

Observation	Inference

inference. As the OI Chart is completed a complex system of arrows can develop because certain observations lead to more than one inference, and an inference is often based on more than one observation.

There are three main reasons for using the OI Chart. First, the chart helps students learn to make inferences; second, it helps students think deeply about a text; and, third, it helps students learn to be metacognitive.

Good readers make inferences during reading (Pressley & Afflerbach, 1995). When an individual makes inferences he or she reads between the lines to sense the underlying meanings that are conveyed implicitly by a text. Making inferences allows readers to fill in gaps in the text and to predict upcoming information (Vacca, Vacca, & Gove, 1995). The ability to make inferences is a key to comprehension (Pressley & Afflerbach, 1995).

Proficient readers follow several guidelines as they make appropriate inferences. First, they base their inference on information that is found in the text. A good reader is able to cite evidence from the text that supports the inference. If there is no evidence in the text to support the inference, it is unwarranted. Second, readers draw upon appropriate background knowledge to make inferences. Students who have a rich background knowledge of the topic about which they are reading are more likely to make good inferences (Pressley, 2000). Third, good readers make inferences that are parsimonious. In other words, they find simple explanations for what they observe in the text.

Because of the complexity of making inferences, many students have not figured out how to make them while reading. Some students struggle with comprehension because of their inability to make the basic inferences that are essential for understanding. Other students draw upon inappropriate background knowledge to make unwarranted inferences or do not base inferences on information found in the text (Pressley, 2000). Students who do not have the ability to make in-

ferences miss out on many of the subtle, hidden, implicit meanings that allow us to learn from a text and make reading enjoyable.

However, studies have shown that inexperienced readers improve in their ability to make inferences when they are given explicit instruction in how to do so (Paris, Wasik, & Turner, 1991). Vacca (2002) referred to explicit strategy instruction as "visible." The teacher makes a strategy visible to students through minilessons. The OI Chart is one resource that teachers can use to provide visible reading instruction on making inferences. The OI Chart is designed to facilitate a dialogue between the teacher and students by breaking down a complex task into two simpler stages, making observations and making inferences. The chart provides a framework for discussing the process of drawing upon background knowledge to make appropriate inferences. It makes explicit the relationship between evidence from the text and the inferences that can be drawn from that evidence.

A second rationale for using the OI Chart is that it helps students think deeply about a text. Research has shown that the most thoughtful and engaging classrooms are those that provide in-depth coverage of fewer topics rather than superficial coverage of many topics (Newmann, 1990, 1991). However, it is difficult to get students to slow down and think deeply about one text. Simply giving students a text to read, time in class to read it, and asking them to "Think!" may not result in deep thinking but in wasted class time. Students often become frustrated or bored when they feel that the pace of the class is too slow. The OI Chart helps teachers deal with this challenge. When used effectively, the OI Chart promotes a rapid flow of ideas that helps students stay engaged. It allows the students to explore a single text in depth, while maintaining a pace that holds their attention.

A third rationale for using the OI Chart is that it helps students become metacognitive. Researchers have found great merit in helping students learn to be metacognitive, or to think about their thought processes (Baker, 2002;

Gourgey, 1998). The OI Chart is designed to break down the task of making inferences into stages of cognition. Probing questions from the teacher about students' cognitive processes as they engage with the OI Chart can lead to discussions on students' thinking. Sometimes students make inferences automatically without conscious effort. Asking students to justify an inference helps them think about their thinking. Asking them to try to make these processes explicit can help them see if they are making appropriate inferences and can help them model inference-making for those students who, unlike them, must make a conscious effort to make appropriate inferences. Through interactions with the text, teacher, OI Chart, and peers, students are more likely to think about the thinking that they and others have engaged in to formulate inferences.

## **Making inference-making visible with the OI Chart**

The OI Chart supplies a context for a teacher to provide visible or explicit reading instruction on making inferences. According to this model of instruction, the content area teacher integrates reading strategy minilessons with content instruction. During these minilessons the teacher

- provides instruction on making inferences
- models the making of inferences
- provides an opportunity for guided practice
- provides an opportunity for independent practice in the application of the strategy (Nokes & Dole, 2004; Vacca, 2002)

The OI Chart is an instructional resource through which each of these four stages of visible instruction can take place.

### ***Providing instruction on making inferences***

According to the explicit strategy instruction model, the teacher begins a lesson with direct in-

struction on the strategy. When introducing the OI Chart the teacher should begin the lesson with instruction on how to make good observations and how to use observations and background knowledge to make appropriate inferences.

**Making good observations.** Observations are anything that an individual can see, hear, smell, taste, or touch through their senses or through instruments that magnify their senses (such as telescopes). When engaging with traditional text, an individual's sight is the sense that comes into play the most. When working with nontraditional texts such as animal bones, pottery, or movies, other senses such as touch and hearing are important. Some people observe things that others overlook. A person who is skilled in making observations is said to be "observant." Individuals can become more observant by slowing down their reading speed, removing distractions, focusing on one small thing at a time, and paying attention to details.

**Making appropriate inferences.** Inferences are educated guesses that are based on the observations that an individual has made. Skillful readers activate their background knowledge as they consider their observations. In order for an inference to be appropriate it must be based on information observed in the text and the reader's relevant background knowledge. Individuals constantly make inferences as they engage in conversations with their friends, watch movies, or participate in other aspects of life. For example, it is common to make inferences about the things a person says based on the person's body language. Students often make these types of inferences without being aware of the cognitive processes in which they are engaged. When individuals are made aware of these processes that often occur naturally, they seem to be more able to apply the processes to situations where it is more difficult to make inferences, such as in reading.

### ***Modeling the making of inferences***

The second phase of explicit strategy instruction is modeling, during which the teacher demonstrates

the strategy for the students. After discussing observations and inferences, I pass out the OI Chart and give students access to a text of some type. Together as a class, we begin to make observations. I typically record the observations on an OI Chart that I construct on the board for the whole class to see. At times, students will mistakenly give an inference as an observation. At other times it is difficult to determine whether a statement is an observation or an inference. When these things happen, the teacher has a chance to review the concepts of observation and inference. If there are important observations to be made that students don't discover, I will make these by thinking aloud with the class watching.

After a number of observations have been made, the discussion often naturally flows into inferences. If the discussion doesn't go there on its own, I will ask students to begin to discuss inferences that they could make. Each time a student lists an inference, I write it on the OI Chart and ask the student to find the observations upon which it is based. If the observations have already been listed, I draw arrows from the observations to the inference. If the observation has not been listed, I add it to the list of observations and draw an arrow to the inference. Sometimes students make an inference without being consciously aware of the observations upon which it is based. When this happens the class can discuss the inference and eventually discover the observation that they had made unconsciously. I point out that it is good to continue to make observations while making inferences. We critique inferences as they are suggested. We search for better inferences that explain observations in simpler terms.

An essential part of the modeling stage is to model the thinking that you and the students go through to come up with appropriate inferences. Discussing how individuals blend background knowledge with information observed in the text will help those students in your class who struggle to make inferences. It is not enough to model the *product* by listing the good observations and appropriate inferences that students have made; it

has been shown that struggling readers benefit by observing more experienced readers "think aloud" as they go through the *process* (Duffy, Roehler, & Hermann, 1988).

### ***Guided practice in making inferences***

The third phase of explicit strategy instruction is guided practice, during which the students practice the strategy with scaffolding or support from the teacher and peers. After students have received instruction and have watched others make observations and inferences using the OI Chart, they should be prepared to practice making observations and inferences with support. The OI Chart provides scaffolding for students to work without the direct involvement of the teacher. The OI Chart reminds students that inferences should be based on observations found in the text and provides a place to record observations, freeing up the students' working memory to focus on making inferences.

Additional scaffolding can be provided during guided practice. Allowing students to work in small groups can help struggling readers learn from their more skillful peers. Choosing texts that are easy to read and that facilitate observations and inferences can also scaffold students as they become familiar with the process. For example, many Norman Rockwell paintings have stories that are implied and that appear to readers when they think deeply about the things they are observing. An obituary is another kind of text that is loaded with implied meanings that can be inferred by thoughtful readers.

### ***Independent practice in making inferences***

The final phase of explicit strategy instruction is independent practice, during which the teacher removes the scaffolding and the students work on their own. The metaphor of scaffolding, which is an important part of guided practice, suggests a temporary support that can be removed as the

learner becomes more capable. Independent practice allows the student to work on making observations and inferences with less support. During independent practice the responsibility of learning rests on the student with little help from the teacher or peers.

Assigning students the completion of an OI Chart as homework or class work gives the students a chance to practice making observations and inferences on their own. In addition, it gives the teacher a chance to assess each student's learning and to provide feedback that can help each student refine skills.

The independent practice that follows an OI Chart activity sometimes should require students to make inferences without using the OI Chart. In this way, the scaffolding is removed completely and teachers can see if students can make inferences without support.

## Examples of history lessons that use the Observation/Inference Chart

The following examples demonstrate the versatility of the OI Chart. I have used both of these lessons with 11th-grade students in mainstream United States History classes and with adult high school students.

### Example 1

During a unit on the U.S. Civil Rights movement I have used an OI Chart to introduce the concept of *de facto* segregation in the North and to teach about the Civil Rights Act of 1968, which prohibited discrimination in the sale and rental of houses and apartments. After the initial discussion on making observations and inferences, students create an OI Chart and view Norman Rockwell's 1967 painting *Moving In*. Figure 2 is an example of a student's OI Chart from a recent occurrence of this activity.

As a class we begin to list observations on the left side of the OI Chart. Students observe that this painting shows a moving van in a neighborhood with well-groomed yards and nice houses. Furniture is being moved out of the van. In front of the van a well-dressed African American boy and girl stand facing two white boys and a white girl who are in their play clothes. The white children are leaning forward, with curious stares. The black children are leaning backward with curious stares. The black boy is holding a baseball mitt. One of the white boys also holds a baseball mitt and is dressed in a baseball uniform. The black girl is holding a white cat. One of the white boys is holding a black dog on a leash.

After a few minutes of making observations, students begin to make inferences about the story Rockwell is telling with this picture. They list these inferences on the right side of their OI Chart. Students often infer that the black children are moving into a white, upper class neighborhood. There appears to be some tension between these new children and the children who live in the neighborhood. The tension may be based on race. As these types of inferences are made, students draw arrows connecting the inference with the observation upon which it is based. For example, the inference that the neighborhood is upper class is based on the observation that the homes are large and the yards are well-groomed. The tension between these children can be inferred from their postures.

After the students have inferred the story that is being told in this painting using the OI Chart, I have them get into small groups to work on a new assignment. Students use their observations and inferences about the painting to make inferences about what Rockwell is saying about race relations in America. I circulate and use prompting and probing questions to help students think deeply about this issue. For example, I point out that Rockwell could have painted the children holding books or boxes or flowers. I ask why he painted the black girl holding a white cat and the white boy holding a black dog. Why did

**Figure 2**  
**A student's OI Chart completed using Norman Rockwell's**  
***Moving In***

Observations	Inferences
- Small (dog) (black)	- Black kids are moving in.
- moving van.	- White neighborhood.
- houses same	- or welcoming them to the neighborhood.
- 2 black kids	- White kids asking Black kids to play
- 3 white kids.	
- baseball outfit	
- mitt	
- leaning forward	- White kids bullying Black kids.
- grass/yards.	
- <del>cat</del> (white).	Norman Rockwell see
- Suburbs.	potentail fur, ... good or bad.
- convertible / yellow	
- car.	

Rockwell paint the two boys holding baseball mitts? What does this first interaction between new neighbors symbolize? At this point in the lesson students still have the OI Chart to refer to but are no longer writing on it.

As an exit activity students write a paragraph explaining what lessons this painting has for us today and how it applies to our lives. What parts of its message still apply, or is it completely outdated? What experiences have they had that relate to the message in this painting? At this point, the OI Chart may or may not be referred to, but it has served its purpose of scaffolding as students read this painting and made inferences about its message.

### Example 2

During a unit on the 1980s I use the OI Chart to help students read a popular movie of the 1980s as evidence of U.S. attitudes toward the Soviet Union during the final years of the Cold War. Students make observations and inferences using clips from the first 30 minutes of the movie *Rocky IV*. Following the same format as the lesson on Rockwell's painting, the class engages in a short discussion on how to make good observations and appropriate inferences. After this discussion, students create an OI Chart and I show the video clip. Students record their observations of two boxing gloves—one with an American flag and one with a Soviet flag—colliding and exploding

during the opening credits of the movie. After this clip I stop the movie and we discuss what we have observed and what we can infer about the themes of this movie before it has even started.

I proceed by showing another clip during which students observe as a serious and cold-hearted Soviet boxer and his heartless girlfriend come to the United States. They watch Americans grandstanding and celebrating being American with flowery displays of patriotism. They observe the former American champion underestimating the threat of the powerful Soviet boxer. They see the Soviet boxer viciously beat his opponent, saying, "If he dies, he dies."

From these and numerous other observations, small groups of students continue working on their OI Chart by making inferences about the message that was being sent by the producers of this movie. It becomes clear to the students as they complete the OI Chart that the producers of

this movie were playing on Cold War hatred and fear to sell this movie and to send a message about the Cold War. Americans in 1985 may have wondered whether the United States was underestimating the Soviet threat. Was the Soviet Union more powerful than the United States because they took the conflict seriously, while the United States was grandstanding? For independent practice students are offered extra credit for watching the entire movie, adding to the OI Chart that they had started in class.

### Assessment and conclusions

Figure 3, the Observation/Inference Chart Assessment Rubric can be used to assess students' use of the OI Chart. It can be used to evaluate their engagement with the text and their ability to make observations and inferences. In order to receive full credit for this activity, students must go

**Figure 3**  
**Observation/Inference Chart Assessment Rubric**

Criteria	Score		
	1	2	3
Observations	Lists few observations and only those that were discussed in class	Lists many observations but few that were not discussed as a class	Lists many observations, including some that were not listed as a class, and shows an unusual level of observation
Inferences linked to observations	Lists some inferences but does not base inferences on observations	Bases inferences on observations but fails to show the relationship	Bases inferences on observations and shows the relationship
Inferences	Makes few inferences or makes inferences that have no basis in the text	Lists several sound inferences but primarily those that were discussed by the class	Lists many sound inferences, including some that were not discussed as a class and some that demonstrate deep thinking about the text



beyond what the class has done and come up with additional observations and inferences in small groups or on their own. The rubric, if distributed to the students, provides them with an additional reminder about the thought processes that will help them make better inferences during reading. A teacher should adapt this rubric to meet the particular needs of the students in his or her class, and, as with any rubric, it should continue to be revised and refined with repeated use.

The OI Chart can help teachers help their students learn to use observations to make inferences when reading nontraditional texts. It provides a framework that facilitates the explicit strategy instruction that research has shown to help students become better readers.

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