Distance Learning at the Cleveland Museum of Art

Arms, Armor, and Simple Machines

Grades 4-6

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Teacher Note: Please make copies of the Viewing Guides, and bring the materials for the Catapult Building Activity for students to use during the lesson.
How to Prepare Your Class for the Distance Learning Presentation

Teacher Information will be sent or made available to you prior to the program.

Please familiarize yourself with the materials and discuss them with your class.

Have the Teacher Information Packet (T.I.P.) materials on hand in the classroom, ready for the program. These materials may be used during the videoconference.

Be prepared to facilitate by calling on students yourself during the lesson. Students are sometimes initially shy about responding to questions during a distance learning lesson.

Explain to students that this is an interactive medium and encourage them to ask questions.

Reinforce topics discussed in the program by asking students to complete some of the suggested pre- and post-conference activities in the Teacher Information Packet.

We ask teachers, after the program, to please fill out the Evaluation Form and return it to:

Dale Hilton/Distance Learning
The Cleveland Museum of Art
11150 East Boulevard
Cleveland, OH 44106

Thank You!
Teacher Information Guide

Distance Learning at the Cleveland Museum of Art

Arms, Armor, and Simple Machines

Grades 4-6

Program Objectives:
Students will learn and understand...

1. To recognize the six simple machines: lever, screw, wedge, pulley, inclined plane, and wheel and axle.
2. To appreciate the artistic design of objects which utilize simple machines, as well as observe their functions.

National Education Standards:
For Fine Arts - Visual Arts (grades 5-8):
- Using knowledge of structures and functions.
- Understanding the visual arts in relation to history and cultures.
- Making connections between visual arts and other disciplines.

For Science (grades 5-8):
- Physical science
- Science and technology
- Personal and social perspectives
- History and nature of science

Common Core Standards:
English Language Art & Literacy in History/Social Studies, Science, and Technical Subjects - 4th Grade:
CCSS.ELA-Literacy.W.4.3
Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
CCSS.ELA-Literacy.W.4.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-Literacy.SL.4.1
Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly.
5th Grade:
CCSS.ELA-Literacy.W.5.3
Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-Literacy.W.5.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.SL.5.1
Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.

6th Grade:
CCSS.ELA-Literacy.W.6.3
Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

CCSS.ELA-Literacy.W.6.4
CCSS.ELA-Literacy.WHST.6.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.SL.6.1
Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

In this program, students will learn how the six simple machines (lever, screw, wedge, pulley, inclined plane, and wheel and axle) have played a part in the development of arms and armor. Using examples from the Cleveland Museum of Art's famed Armor Court, students will compare different types of armor and discover how they have been used in battle, sport, and for ornamentation. Students will also be able to identify simple machines in everyday objects.

Prerequisite Activities:

During the Lesson there will be a building activity. Please pay particular attention to item 2 on this list.

1. Students should have a basic understanding of simple machines: **Lever, Wedge, Screw, Inclined Plane, Pulley**, and **Wheel and Axle**. We will briefly discuss the controversy surrounding the number and classification of the simple machines (See “Teacher Resources” for more information.)
2. CATAPULT BUILDING – If your class would like to build simple catapults during the videoconference, please bring the following instructions and materials:

**Simple Tension Catapult Materials & Instructions**
For 30 students working in pairs

- 30 popsicle sticks
- 15 pens, pencils or markers of various size
- 15 plastic spoons
- 1 bag of assorted rubber bands
- 1 bag of mini-marshmallows

1. Take one of your popsicle sticks and place the plastic spoon on top of it, so the end of the handle is even with the end of the popsicle stick (the back of the spoon’s bowl should just rest on the other end)
2. Using a smaller rubber band, attach the spoon to the popsicle stick to the neck of the spoon. This is now the “throwing arm.”
3. Place the other popsicle stick underneath the paired spoon and popsicle stick.
4. Fold one regular sized (3-4” long) rubber band by twisting it into an “8” shape, then folding the two sides over onto each other.
5. Wrap this ‘doubled’ rubber band a few times over end of the sticks and spoon away from the spoons bowl, but not too tightly.
6. Slip a pen, pencil or marker between the two popsicle sticks, which should be bound together only at the non-cup end. Get it within a few millimeters of the rubber band.
7. The catapult is complete. To fire it, place the fingers of your hands onto the pen or marker, and with one of your thumbs, pull back the spoon. Have your buddy load the marshmallow, and when nobody is in the way, fire.
8. Have the students figure out how you can make the marshmallow go farther. They should feel free to move the catapult around (ideally, by adjusting the angle), or to change the fulcrum under the throwing arm.

3. To introduce students to the topic of Arms and Armor, read The Making of a Knight by Patrick O’Brien (Watertown, MA: Charlesbridge Publishing, 1998). Set in the Middles Ages in England, this story traces the main character’s journey from an inexperienced seven-year-old page to his knighthood at the age of twenty-one
Selected Vocabulary:

**Machine** – a simple device that affects the force, or effort, needed to do a certain amount of work.

**Simple machines** – the lever, the pulley, the inclined plane, the wedge, the screw, and the wheel and axle; each machine affects the direction or the amount of effort needed to do work.

**Work** – work, in physics, is the amount of force used to move another object multiplied by the distance over which the force is applied; this can be written in mathematical terms: \[ \text{Work} = \text{Force} \times \text{Distance} \]

**Inclined plane** – an object that decreases the effort to lift an object by increasing the distance over which the effort is applied; this increase in distance allows a person to move a large object to a certain height while applying less force than would otherwise be needed; the tradeoff is that with the inclined plane, the person must move the object a farther distance. Ramps and staircases are simple examples of inclined planes.

**Screw** – a helical (a three-dimensional spiral) inclined plane wrapped around a cylinder or cone.

**Wedge** – a piece of material, such as metal or wood, thick at one edge and tapered to a thin edge at the other for insertion in a narrow crevice, used for splitting, tightening, securing, or levering.

**Pulley** – the pulley is a special type of wheel, called a sheave, which has a groove cut into the edge to guide a rope, cable, or chain. If a single pulley is used, the mechanical advantage is 1, and the only advantage of using the pulley is that the direction of the force is changed. (Examples: window blind, pulley at the top of a flagpole) When multiple pulleys are combined (called a block and tackle), they can have mechanical advantages greater than 1, because they increase the distance the rope travels, thereby increasing the distance over which the effort is applied.

**Wheel and axle** – similar in appearance to a pulley, with one major difference: the wheel is fixed to the axle, as is the steering wheel of a car. A user applies effort to the large outer wheel of the steering wheel to move the load at the axle.

**Lever** – consists of a bar that rotates around a pivot point, which is called the fulcrum; the force applied by the user is the effort; the object being lifted is called the load.

  o **Class 1 lever:** the fulcrum lies between the effort and the load, as in a seesaw.
  o **Class 2 lever:** the fulcrum lies at one end, the effort is applied at the other end, and the load is in the middle, as in a wheelbarrow.
  o **Class 3 lever:** the fulcrum is again at one end, but the load is at the other end, and the effort is applied in the middle. The human forearm is a Class 3 lever. The elbow is the fulcrum, and the forearm muscles apply the effort between the elbow and hand. Tweezers are another example.
**Chain maille** – flexible armor made of thousands of hand-formed steel rings attached so as to create a mesh covering.

**Crossbow** – a medieval weapon consisting of a bow set across a wooden stock; the stock is grooved to direct an arrow and notched to hold the bowstring, which is drawn up by a cranequin and released by a trigger.

**Cranequin** – a crossbow winder consisting of a ratchet, a claw to grasp the cord, and a handle, used to wind the crossbow in order to fire its bolt.

**Crossbow bolt** – an arrow fired from a crossbow.

**Wheel-lock hunting pistol** – a firearm with a firing mechanism that consisted of a rough wheel which spun against a piece of pyrite when the trigger was pulled. This would throw sparks into the pan and ignite the gunpowder to fire the gun.

**Complex (compound) machine** – combinations of simple machines (doorknob: a wheel and axle system that transfers the force to a system of levers; automobile: the engine contains many levers, wheels and axles, and pulleys.)

**Renaissance** – the transitional period of European history in which learning and the arts blossomed with a renewed interest in classical antiquity and medieval thought was gradually subjected to the beginnings of scientific scrutiny; though there are no fixed dates for the Renaissance, the years 1400-1600 roughly bracket the achievements of this era.

**Teaching Extensions:**

1) CMA provides one color copy of each of the four CMA artifacts to the class. Students are divided into groups of 3 or 4 and each group is provided a color copy. Each group is instructed to become “museum curators” and create an information card for the pictured artifact, describing the artifact, its function, and the simple or complex machines present in the artifact.

*Images include:* Half Armor for the Foot Tournament (1996.299); Two-handed Sword (1916.1508); Crossbow and Cranequin (1916.1725, 1916.2082) Lucas Cranach the Elder, Hunting Scene at Hartenfels Castle (1540, 1958.425)

2) Using the color copy of the Armor for Man and Horse (1964.88), the class can closely examine the color picture, list and discuss simple and complex machines that are present, and explain their importance in accomplishing work and making work easier.

3) Pretend that you are living during the Renaissance period. Write a persuasive piece about why crossbows should be outlawed.
4) Look around the classroom or school environment and identify examples of simple and complex machines. List and discuss what work each object accomplishes and how each object makes work easier. Present your findings in a chart or graph form.

**Teacher Resources:**

*Recommended Reading:*


*Websites:*

Chivalry Kid zone – Cool Stuff for Children of all Ages.

Both of these sites have links to several sites about Simple Machines.

These site provide instructions on how to build other simple catapults.
http://www.scientificamerican.com/article/build-a-catapult/
http://kidsactivitiesblog.com/28664/building-a-catapult

This a fun animated jousting game.
http://www.tudorbritain.org/joust/index.asp

An animated simple machines game from The Museum of Science and Industry in Chicago.
https://www.msichicago.org/play/simplemachines/
Two-Handed Sword

Ways It Might Have Been Used:

1.
2.
3.

Crossbow and Cranequin

Designs that I see on these pieces:

1.
2.
3.
4.
5.

Parts of a Pistol That Are Simple Machines:

1.
2.
3.
**Simple Machine Review:**

<table>
<thead>
<tr>
<th>Simple Machine:</th>
<th>Armor Court Example:</th>
<th>Work the object does:</th>
<th>Present Time Example:</th>
<th>Work the object does:</th>
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**Simple/Complex Machines in School Environment:**

Present your findings in the chart below-
- Name the objects
- Identify whether they are simple machines or complex machines (S or C)
- Identify the specific simple machines found in the object
- Tell what work the object accomplishes

<table>
<thead>
<tr>
<th>Name of the object:</th>
<th>Simple or Complex Machine:</th>
<th>Simple Machines found in the object:</th>
<th>Work the object accomplishes:</th>
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Arms, Armor, and Simple Machines: Selected Images

**Armor for Man and Horse with Völs-Colonna Arms, c. 1575**
North Italy, 16th century
Steel
1964.88
©The Cleveland Museum of Art

**Two-Handed Sword of the State Guard of Julius of Brunswick-Lunüneburg, c.1574**
Germany, Brunswick, 16th century
Steel, leather and wire bound grip
1916.1508
©The Cleveland Museum of Art
Arms, Armor, and Simple Machines:
Selected Images

**Half Armor for the Foot Tournament**, c. 1590
Pompeo della Cesa (Italian)
Etched and gilded steel, brass rivets, leather and velvet fittings
1996.299
©The Cleveland Museum of Art

**Crossbow and Cranequin of Elector Augustus I of Saxony**, c. 1553-1573
Germany, Saxony
Wood (walnut?), bone veneers, flax cord, steel (etched, traces of gilding), woolen pompoms, stock decorated with inlaid trophies of arms
1916.1723
©The Cleveland Museum of Art
Hunting near Hartenfels Castle, c. 1540
Lucas Cranach (German, 1472 - 1553)
Oil, originally on wood, transferred to masonite
1958.425
©The Cleveland Museum of Art
What was a knight?

The term knight comes from the Old English ceaht, or soldier. Above all the knight was a fighting man. But he also held a small estate, called a manor, from which he oversaw the life of a neighboring village or two. The manor was a gift from a more powerful lord, who, in return, held his vast estates from the king. In this social system, called feudalism, all land was held in return for military service.

A knight was required to spend part of his manor’s income on equipping himself for battle: a suit of armor, a sword, and a horse, and at least two well-trained war horses. In fact, so essential was a horse to knighthood, that both the French word for knight (chevalier) and the English term for the knight’s honor code, the code of chivalry, come from the French word for horse—cheval.

How should a knight behave according to the rules of chivalry?

It wasn’t an easy code to follow! On the battlefield he was supposed to be fierce, courageous, and victorious. Yet the Church told him to be merciful and to refrain from fighting other Christians. He was honor bound to be a loyal subject of his king, but at the same time, he had to obey the orders of the baron from whom he held his manor. Finally, at the end of a hard day’s fighting, a knight was supposed to settle down and entertain the families of his ladylove. He therefore needed to know poetry, music, and tales of derring-do. Not least, he had to compete for his lady’s honor and favor at the tournaments.

Knights, with the Church’s blessing, were expected to fight for the defense of Christendom. The First and Second Crusades were thus perhaps the greatest acts of chivalry. Christian knights, promised entry to heaven, fought the Muslims for control of the cities of the Bible. Unfortunately, the other seven crusades were fought for less lofty ideals. In 1094 the Crusaders seized Constantinople, the gold-filled capital of the Byzantine Empire, their Christian ally!

How did one become a knight?

The would-be knight, usually the son of a knight, had to undergo many years of training. Beginning at age six or seven, he was a page. For about seven years he served his lord and lady in their castle, receiving, in return, a smattering of learning and religion. When a teenager, the boy rose to the level of squire. In this position he learned how to dress his lord in armor, wield a sword, and ride in tournaments. Her ladyship instructed the squire in the finer points of courtly love. Finally, when about 21, the squire could petition to be knighted by the king.

A quicker way to become a knight was to distinguish oneself on the battlefield and to be knighted on the spot by the king or one of his commanders. The simple ceremony of dubbing—tapping the knight on the shoulders with the point of a sword—is still used by the Queen of England in conferring knighthood, although today it is for distinguished persons in diverse fields.
Who wore armor?

The knight did, of course, but the foot soldier could too. King Harold of England, wearing a hauberk, a tunic of chain mail, fought the Battle of Hastings in 1066 on foot. Foot soldiers usually wore just a helmet and breastplate for protection, rather than full suits of armor.

Horses too wore armor. Steel plates covered a horse’s head and body. Chain mail around the neck permitted free movement. Some very ingenious full suits of armor added protection for the horse’s legs as well, but they were rarely used because the knight had to strike a balance between protecting his expensive and well-trained horse, and retaining its speed and agility.

The armor looks small; were people shorter in the Middle Ages?

No, not really. Charlemagne, Holy Roman Emperor between 800 and 814, was over six feet tall. Medieval Europeans were nearly as tall as modern Europeans. Americans, on average, have always been a little taller. The rather small looking suits of armor are like the small sizes left over in a modern-day clothing sale. Unwanted, unworn, and unbattered, they have survived to enter museum collections. Damaged suits, however, were melted down and made into other things (like plowshares and razor blades).

Who made armor?

In the beginning, simple forms of armor and armor were made by the local blacksmith at his forge. But by the late 13th century, specialist-craftsmen had entered the field. There were 100 hauberk-makers in Milan by the mid-14th century. By the end of that century, regulations governed the making of plate armor throughout Europe. Typical of these were the guild rules of Augsburg, Germany. To become a master armorer, you had to have served for four years as an apprentice (trainee), and for another four as a journeymen (paid craftsman). Only then could you establish your own foundry. However, the last four years were waived if you married the widow of a master armorer!

How was armor made?

Chain mail

There were a number of ways of making the rings for a hauberk. One method was to punch, or stamp, the ring out of a sheet of metal. This produced rather flat looking rings. A rounded look indicates that a thick wire was used. A quick way to make lots of rings was to coil the wire around a rod, and then to cut along its length, creating many open rings. These were rivetted closed once the whole hauberk had been laid out according to a pattern, much like a knitting pattern. Indeed, the English word “mail” comes from the French term maille, meaning “stitch.” If you look carefully at the Museum’s chain mail, you will see examples of both techniques as well as the thousands of small rivets that close the rings of a hauberk.

Plate armor

To make plate armor, metal sheets, or billets, were purchased from a foundry and cut into roughly the correct shape and size for a specific piece of armor. The piece was then heated in a forge until red hot, allowing it to be easily hammered and beaten into shape over a metal form. An armorer had at least five different metal forms, one each for making arm and leg defenses, breastplates, and helmeis (along with their crests and visors).

Once the suit had been forged, it was assembled; every joint was carefully checked to ensure a proper fit. The suit had to allow the knight to move his limbs with ease but also keep every part of him protected. The pieces were filed down until they fit perfectly. The armor was then passed to a millman, who polished the surface and smoothed any dents. Following this, the armorer reassembled the suit, adding straps, buckles, and padding.
How heavy was a suit of armor?

The average suit of armor weighed between 45 and 50 pounds, but was not as cumbersome as you might imagine. In fact, it weighed no more than the modern soldier's backpack, and, like today's soldier, the medieval knight had to be able to run, jump, and lie down in his armor. If necessary, a knight could dress himself in armor and vault onto his horse. Of course, he preferred to call upon his squire for help! A fully armored knight could even ford rivers if he was careful. The unfortunate Frederick Barbarossa, the Holy Roman Emperor, was not so careful as he drowned on his way to the Third Crusade in 1190.

How did a knight see with his helmet on?

Most helmets have long, narrow slits, or "sights," that one can see through. Just as you can see a room through a keyhole if you place your eye against the lock, so also the knight could gain a good view of the battlefield through these slits.

Think how hot it could get inside a helmet during a fierce battle! In an attempt to be as comfortable as possible, knights delayed putting on their helmets until they rode out onto the battlefield. Their helmets were fitted with visors, hunged metal guards, that were lowered to protect the face during the fight. When the knight was out of danger, the visor could be raised to admit cooling breezes.

How was armor decorated?

The most common form of decoration consisted of lines incised into the metal plate. To achieve this, one could engrave, or scratch, the design into the armor using a chisel-like implement called a hucin. A second method was called etching, in which all the hard work is done by acid. The artist simply covered the piece in wax, or some other acid-resistant substance, and drew the design through it, revealing areas of the metal beneath as he went along. The design was then inserted into the unprotected metal while it sat in an acid bath.

An embossed suit is one in which the decoration has been stamped into the metal from behind. This produces a wonderfully sculptural effect, allowing the decoration to stand out and catch the light. However, the stamping weakens the armor, so one usually only finds this method used on fancy parade armor.

In the 16th century, French noblemen wore suits of gold. Very chic! The gilding could either glue tissue-thin sheets of gold to the armor with a varnish, or apply a mixture of mercury and gold to the metal and heat it; the mercury evaporates, leaving the gold bonded to the armor.

By heating metal to about 629°C and then immediately immersing it in cold water, armor could be "blueed." To cut a particularly dashing figure, the Emperor Maximilian had a "blueed" suit decorated with gold.

How long did it take to make a suit of armor, and was it expensive?

It depended on how many people the armorer had working for him, and just how lavish the suit of armor was to be. Munitions armor was relatively quick to produce, since it was not made-to-measure and was seldom decorated. In the mid-16th century, Antoon Poffenhauer of Augsburg, Germany, was commissioned to produce 600 suits in twelve weeks. He cheated by buying 300 from neighboring Nuremberg. Clearly, ready-made armor could be easily purchased in huge lots. In 1539, fearing a French invasion of England, Henry VIII bought 12,000 suits from Cologne and 2,700 from Antwerp.

It probably took about two months to forge a tailored suit of armor. If the armor was to be beautifully decorated with etched and gilded designs, the production time doubled. The fancier, more expensive armor was worn only at tournaments, where it was less likely to get damaged.

Hans Seinem's accounts of 1527 provide us with a relative scale for the price of different types of armor. He charged 70 florins for etched tournament armor, 50 florins for battle armor, and 25 for a half-suit.
How did one tell friend from foe on the battlefield?

In the days before armies wore uniforms, foot soldiers often added an identifying color to their clothes. The English royal house of Plantagenet, which reigned during the Middle Ages, got its name from the sprig of the broom, or gênet, plant that its supporters wore in their caps.

It was impossible to identify a knight in full armor with his helmet on. During the Battle of Hastings, in 1066, the Normans almost abandoned the field because a rumor spread that Duke William had been killed. He had to remove his helmet and show his face before he could reassert his troops on to victory and the conquest of England.

The armor-clad knight was identifiable by his coat of arms painted on his shield and sometimes emblazoned on his surcoat. Covered in mud, splattered with blood, and battered in the fray, however, the emblems would have been difficult to identify. Such designs were far more visible in the tournament parade. There, a knight's heraldic arms—comprising colored shapes, patterns, and animals—were easily admired. There too, one could enjoy the witty, "canting" arms, which played upon the knight's name. Thus, Sir Roger de Trumpington had trumpets on his coat of arms.

Could any weapon pierce armor?

The armorer and weapon-smith were always in competition with each other; the first strived to forge the impenetrable suit, while the second sought to pierce with new weapons.

Chain mail, with its tight, interlocking links, was invented to protect a knight against the broad blows of edge weapons, such as swords, pikes, and daggers. Weaponsmiths responded by developing the long bow and the crossbow, which could fire either finely tipped arrowheads, to go through the links, or broad-headed bolts, which could split the iron links apart. So effective was the crossbow that in 1139 the pope attempted to ban its use against fellow Christians. Armormen met the challenge by adding metal plates to the hauberk, which led to the development of the full suit of plate armor.

A knight was almost invulnerable in his suit of armor. However, weapons such as maces and lances could unseat him or wound him down under their constant battering. The advent in the early 1500s of firearms that could project bullets with sufficient velocity to pierce steel brought about the end of "the knight in shining armor."

Written by
Jonathan Canning
Illustrated by
Robyn Einhorn
Department of
Education
and Public
Programs
The Cleveland
Museum of Art
12/82

Made possible by a generous grant from
The Cleveland Electric Illuminating Company,
a Centerior Energy Company.
The Cleveland Museum of Art Distance Learning Evaluation Form

Your Name______________________________________________________________
Your School_____________________________________________________________
School Address (with zip code) _____________________________________________
E-mail Address _____________
Grade/Class of students (e.g. 10th grade French) ______________________________
Program Title ___________________________________________________________
Program Date ___________________________________________

Thank you so much for your participation in our distance learning program. We would appreciate your response to these questions by circling the appropriate answer and returning the survey. Please Mail or Fax to Dale Hilton at 216-707-6679

5= Strongly Agree  4= Agree  3= Neither Agree nor Disagree
2= Disagree     1= Strongly Disagree

1. The teacher information packet was helpful for preparing my class and me for the distance learning lesson.
   5  4  3  2  1

2. The teaching style of the on-camera instructor was interesting, engaging and fostered interaction.
   5  4  3  2  1

3. The Teacher Information Packet was helpful in providing interdisciplinary extension activities that I did use or plan to use.
   5  4  3  2  1

4. The distance learning lesson successfully taught its objectives.
   5  4  3  2  1

5. The distance learning lesson was not interrupted by technical difficulties.
   5  4  3  2  1

6. The pre-requisites the distance learning lesson and extensions are aligned with The National Education standards.
   5  4  3  2  1

7. I plan to register for another distance learning lesson.
   (circle one)       Yes       No
   If no, why? __________________________________________________________

8. I would like more information about The Cleveland Museum of Art’s Teacher Resource Center.
   (circle one)       Yes       No
9. Why did you choose The Cleveland Museum of Art Distance Learning?  
   (circle one)

   a.) Price Point  
   b.) Quality of lessons  
   c.) Selection of lessons  
   d.) Ease of working with CMA  
   e.) Other

10. How did you hear about The Cleveland Museum of Art Distance Learning program?  
   (circle all that apply)

   a.) CMA inservice  
   b.) CILC  
   c.) TWICE  
   d.) Conference  
   e.) Brochure  
   f.) The Cleveland Museum of Art website  
   g.) The Teacher Resource Center  
   h.) Other

11. Do you have any additional comments about the distance learning lesson?

   __________________________________________________
   __________________________________________________
   __________________________________________________
   __________________________________________________
   __________________________________________________
   __________________________________________________

   Please return the completed teacher evaluation form to:

   Dale Hilton/Distance Learning  
   The Cleveland Museum of Art  
   11150 East Boulevard  
   Cleveland, OH 44106  

   Or fax to Dale Hilton at 216-707-6679