Grade 3 Historical Lesson – Skeletal System Connection

Objectives:
Students will research Andrew Taylor Still and Wilhelm Konrad Roentgen to expand their knowledge of important historical figures.

Students will relate the information from their health and science unit to the historical figures that helped the world better understand the skeletal system.

Materials:
- Picture of A.T. Still and Wilhelm Konrad Roentgen (See Figure 1 and Figure 2)
- Encyclopedias
- Informational Papers on the two historical figures. (See Figure 3 and Figure 4)
- Venn Diagram Sheets (See Figure 5)
- Large piece of paper for each group/marker

Activity Summary:
Students will research A.T. Still and Wilhelm Konrad Roentgen to learn about their discoveries, the connection to the skeletal system, and their overall impact on the world

Background information for the teacher
For information on A.T. Still please visit…
http://www.kcom.edu/load.asp?url=/newmuseum
For information on Wilhelm Konrad Roentgen Please visit…

Vocabulary:
X-Ray-
Cathode rays-
Osteopathy- Knowledge of bones
D.O. – Doctor of osteopathy
Bonesetting - the practice of keeping all bones in line

Engage (10 minutes):
Show students a picture of A.T. Still and W.K. Roentgen. (See Figure 1 and Figure 2)

Write three categories on the board. “We Know”, “We Want to Know”, “What We Learned”
(Either make two separate tables (one for each historical figure) or separate the information for both historical figures)

<table>
<thead>
<tr>
<th>We Know</th>
<th>Want to Know</th>
<th>We Learned</th>
</tr>
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<tbody>
<tr>
<td></td>
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</table>
Ask: Who do you think these people are?
Tell me about these people.
What could we say that we definitely know about these two people? (Record all answers on the board. Under the category called “We Know”)

What would we like to know about these two men? If they were sitting here what would you ask them? (record all questions)

**Explore** (25 minutes):
Split the students into groups of three. Assign the each student in the group a role.
(Recorder, Reporter, Reader)

Give each group a research tool. (Encyclopedia, article-you may split the attached articles into sections for each group **(See Figure 3 and Figure 4)**, internet, etc…) The group will need to read the information found in their research tool and record the most important information that answers any of the questions on the board.
If there is additional interesting information have the students record anything they think is important.

Give each group of students a large piece of paper in which they can record their information. Have them write the name of the person they researched on the top of the paper and then put bullets below – one bullet per important fact. (demonstrate on the board)

**Explain:**
Before presenting have students return to their seats and get out a piece of paper and a pencil. Demonstrating first on an overhead projector how to draw a Venn Diagram. Have the students draw a large Venn Diagram on their papers or give them the handout **(See Figure 5)**.
On one side write A.T. Still and on the other side write W. K. Roentgen.

After each presentation draw conclusions as a whole group as to what we should write in the diagram.

After all groups have present have the students look for similarities between the two men and write those facts in the part of the circles that overlaps.

**Expand:**
(This will expand on and connect the information they have learned in the previous lessons on the Skeletal System – If the students did not do those lessons still encourage students to extend the concept.)

Ask:
How did A.T. Still and W. K. Roentgen influence what we know about the skeletal system (skeleton)?

How did they change how we live today?

If the X-Ray was never discovered how would our lives be different today?

Where are X-Rays used?

If a Doctor of Osteopathy was never created how would our lives be different?

How are Doctors of Osteopathy special?

**Evaluation:**

Through observation the students will demonstrate an understanding of both historical figures.

Collect Venn Diagrams (optional – the activity below will also demonstrate whether or not the students were following along and writing in the information) – Assess the information recorded on their diagrams.

Have students individually finish the “We Learned” section on the board. Pick out certain questions from the “We Want to Know” section that must be answered. (Suggested questions to answer: What are their names? Where are they from? What is their profession/job? What did they invent/create? Or Why are they important to how we live today? Include one extra question. How did these each man influence what we know about the skeletal system? (You may choose to let the students use their Venn Diagrams or if you desire you may want them to try answering the questions on their own.)

**Optional Enrichment Activity:**

Have students individually write two short speeches on note cards, one note card for each historical figure. The note card speeches should be them pretending to be each historical figure. This can be short activity but the point is to identify who the historical figures are, what they did, and how this relates to the skeletal system and our world today.

For example, I am A.T. Still. I started the profession of Osteopathy. I believed having the bones in place is very important to being healthy. OR I am W. K. Roentgen. I am scientist. One day I discovered the X-ray. This helps people see bones inside the body.

This can be used as an assessment

**Home Connection:**

Have students bring note cards home and do their short speech for a parent or guardian. Ask the adult to sign a sheet indicating they gave their speech at home and return it when completed.
www.kcom.edu/load.asp?url=/newmuseum

http://www.uhrad.com/kids/intro.htm

Standards:

Grade Level Expectations:

Strand 7: Scientific Inquiry
1. Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking
   E. The nature of science relies upon communication of results and justification of explanations
      a. Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs, writings

Strand 8: Impact of Science, Technology and Human Activity

1. The nature of technology can advance, and is advanced by, science as it seeks to apply scientific knowledge in ways that meet human needs.
   B. Advances in technology often result in improved data collection and an increase in scientific information
      a. Describe how new technologies have helped scientists make better observations and measurements for investigations

2. Historical and cultural perspectives of scientific explanations help to improve understanding of the nature of science and how science knowledge and technology evolve over time.
   A. People of different gender and ethnicity have contributed to scientific discoveries and the invention of technological innovations
      a. Research biographical information about various scientists and inventors from different gender and ethnic backgrounds, and describe how their work contributed to science and technology

3. Science and technology affect, and are affected by, society
   A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done.
b. work with a group to solve a problem, giving due credit to the ideas and contributions of each group member

   - Identify, use and create primary and secondary sources.
   - Identify and use library and media resources.
Andrew Taylor Still started a new type of medical school in Kirksville, Missouri, in 1892. Presently, the Kirksville College of Osteopathic Medicine is part of A.T. Still University. Still believed that man had within him the remedies necessary to maintain health. A.T. Still said, “When all parts of the body are in line, we have perfect health. When they are not, the effect is disease. When the parts are readjusted disease gives place to health.”

Your Healer Within by Dr. James McGovern

Andrew Taylor Still created a new type of medical doctor called an Osteopath. He started the profession of Osteopathy and the first school in which Osteopathy was taught. He believed that the body could heal itself if everything in the body was in line. Dr. A.T. Still practiced a technique called bonesetting. He believed that keeping all the bones in line and in their correct place would help all the other parts of the body to work correctly as well.

Dr. A.T. Still was a doctor of Osteopathy. He created the idea, the profession and the first school of osteopathy. His idea is that to help someone feel better the doctor must know how each bone in the body looks and what it does. This is how he created the word osteopathy. Osteon means bone. Osteopathy is the “knowledge of bones”.

I was surprised, yet glad to know I had discovered that when all the bones were in place and joints perfectly articulated, the whole body was a machine and could manufacture and apply all substances necessary to keep it in repair and health. Quote by A.T. Still Research and Practice quote Research and Practice, p. 126-127.
Wilhelm Conrad Röntgen is famous for being the first scientist to discover X rays in 1895. He discovered X rays by accident when working with another kind of ray. To name his discovery of a new ray he decided X ray would be a good name. Many of his friends thought he should name them "Rontegen Rays". However, being "X" is used in math to mean something unknown and the rays were unknown he decided X rays would be a good name. He was given the first Nobel Prize in physics in 1901 for his discovery.

Wilhelm Conrad Röntgen is famous for being the first scientist to discover X rays in 1895. Becoming famous for his discovery was not easy. Although he did discover X rays others tried to say he stole the discovery. He never looked for praise or for money for his discovery.

Wilhelm Conrad Röntgen is famous for being the first scientist to discover X rays in 1895. X rays are used in medicine, science, and businesses. Doctors and dentists use X rays. X rays go through body tissue and skin. X rays cannot go through bones making it useful for doctors. X rays are used in airports, physics, and archeology.

Wilhelm Conrad Röntgen is famous for being the first scientist to discover X rays. Wilhelm Conrad Röntgen was born in Germany in 1845. In 1895 Wilhelm Conrad Rontegen had been working with cathode ray instruments. He noticed a bright glowing screen on a table across the room. Even if wood was put between the tube and the glowing screen it kept glowing. He discovered that this glowing was coming from the tube he was using to study the cathode rays. The rays actually glowed through the black paper that was wrapped around the tube. He named the new rays "X" rays.
Figure 5