



THE UNIVERSITY OF ARIZONA  
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

## Center for Middle Eastern Studies

### *Contributions of the Islamic Civilization*

Lesson Plan Prepared by Saviz Safizadeh  
Pierce Middle School, Milton Massachusetts

#### **Lesson Plan Objectives:**

In this lesson students will use a variety of sources to

- Develop their technology skills by conducting online research.
- Develop their reading/comprehension skills through guided reading.
- Identify and label various primary source images and their authors/themes through sourcing and corroboration (doing history)
- Research Islamic civilization scholars and continue their discussion on religion to make connections between religion and the rise of a new civilization.
- Develop their linguistic skills by making an oral presentation to share their findings with the class.
- Use prior knowledge to compare Roman numerals with Arabic numerals and make connections to their own life.

#### **Essential Questions:**

The focus of this lesson is to help students answer these basic questions:

1. How did the Islamic civilization contribute to scientific advancements?
2. What aspect of the religion promoted scientific advancements in the Muslim empire?
3. How did the cultural diversity of the Muslim empire help its progress?

#### **Content:**

##### ***Facts:***

1. Under the Abbasid caliphs, the Muslim empire reached its zenith.
2. Muslim scholars preserved the work of ancient Indian and Greek thinkers and added to this knowledge before passing it on to the Europeans in later centuries.

3. Many scientific products (rubbing alcohol), food (sugar), and luxury items (tafta), even musical instruments (lute) have been introduced to the western world through Muslim Spain.

**Concepts:**

Chemistry, algebra, Arabic numerals, geometry, astrology, philosophy, mathematics, Arabic numerals

**Generalizations:**

1. During the XII through XIV centuries, the research and findings of Muslim scholars like Avicenna and Al Khawrazmi were taught in many European universities.

**Massachusetts State Standards:**

1.7. H, C, G, E.

Show connections, casual and otherwise, between particular historical events and ideas and larger social, economic, and political trends and developments.

**Teaching material/resources:**

1. CNN article on contributions of the Muslim empire  
<http://www.cnn.com/2010/WORLD/meast/01/29/muslim.inventions/index.html>
2. Text: “*Arabic Names for Arab Gifts*”, excerpt from the book ***The Sun of God shines on the West***, by Sigrid Hunke, Accessible on  
[http://www.ajlm.org/j/index.php?option=com\\_content&view=article&id=55:des-noms-arabes-pour-des-dons-arabes&catid=39:culture&Itemid=61](http://www.ajlm.org/j/index.php?option=com_content&view=article&id=55:des-noms-arabes-pour-des-dons-arabes&catid=39:culture&Itemid=61)
3. Five primary source images from various Muslim manuscripts
4. Captions for each primary source image above
5. Website addresses for further research
6. Student computers with access to the internet
7. Islam supplementary packet containing worksheet

**Assessment Plan:**

1. Students will be informally assessed during direct reading/ teacher prompted questions as well as during oral presentation.
2. Students will be formally assessed by completing assignment in their packet.

**Teaching Strategy:**

Note: This lesson will be conducted in the school library’s media room.

1. Describe today's plans with students and what they need to complete before the end of the period.
2. Have each student on a computer. Send them the webpage below and have several students read through passages. <http://www.cnn.com/2010/WORLD/meast/01/29/muslim.inventions/index.html>
3. When reach the passage on Arabic numerals, interrupt and explain to them the number system we use in Math today is of Indian origin. Al Khawrazmi, a Muslim mathematician added the concept of zero to it.
4. Ask students to recall the smallest Roman number.
5. Ask them how Romans wrote 10, 100, 1000?
7. Write one hundred twenty five plus sixty eight in Roman numerals on the board and ask students to complete the operation.
8. Write the same operation  $125 + 68 =$
9. Once student see the practicality of the second numerals, ask them to use appendix 1- Arabic numerals to write the same numbers in Arabic.
10. Ask students to compare Arabic numerals they use everyday with the numbers on the chart (in Arabic) and find the numbers that have changed the least (0, 1, 2, 3, 7, 9, 10, 11, 12, and so on).
11. Announce to students that math is one of the many sciences influenced by Muslim scholars. Other sciences include medicine, pharmacy, astrology, geometry, arithmetic, algebra, chemistry, anatomy ...
12. Take students at tables as a large group. Display the 5 primary sources and assign each image to a small group of students.
13. Distribute a list of captions related to the primary source images.
14. Ask students to read all five descriptions before matching each image with the correct description.
15. Once they figure what their image represents, send them back on computers and direct them to log onto the class webpage. For each image, they will find a link posted on the page.
16. Ask students to research their manuscript and do sourcing by gathering information on the creator: they should find out who was it created for, what it was used for, where did it appear, when did it appear, and what was the advantages of it.
17. Once students complete their research, call on them to present their image and provide information to the rest of the class.
18. Have students complete their worksheet by writing the shared information in the space provided for each primary source image.
20. Take students back to the tables in a large group setting. Distribute text "Arabic names for Arab gifts» and ask volunteers to read each passage. Explain problem vocabulary.
21. Have students complete table on worksheet #2 during the direct reading by organizing the various products in the appropriate column.
22. Any unfinished portion of the text should be done for homework.

*Primary source Images and Captions*



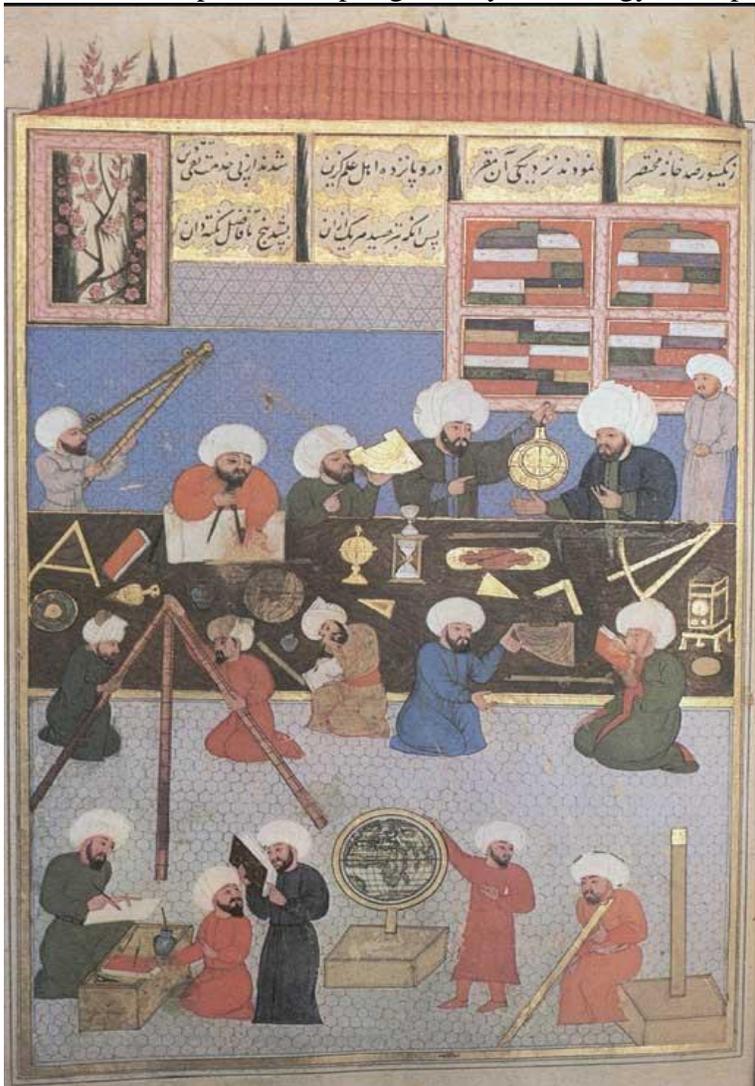
### Permanent sternpost-mounted rudder

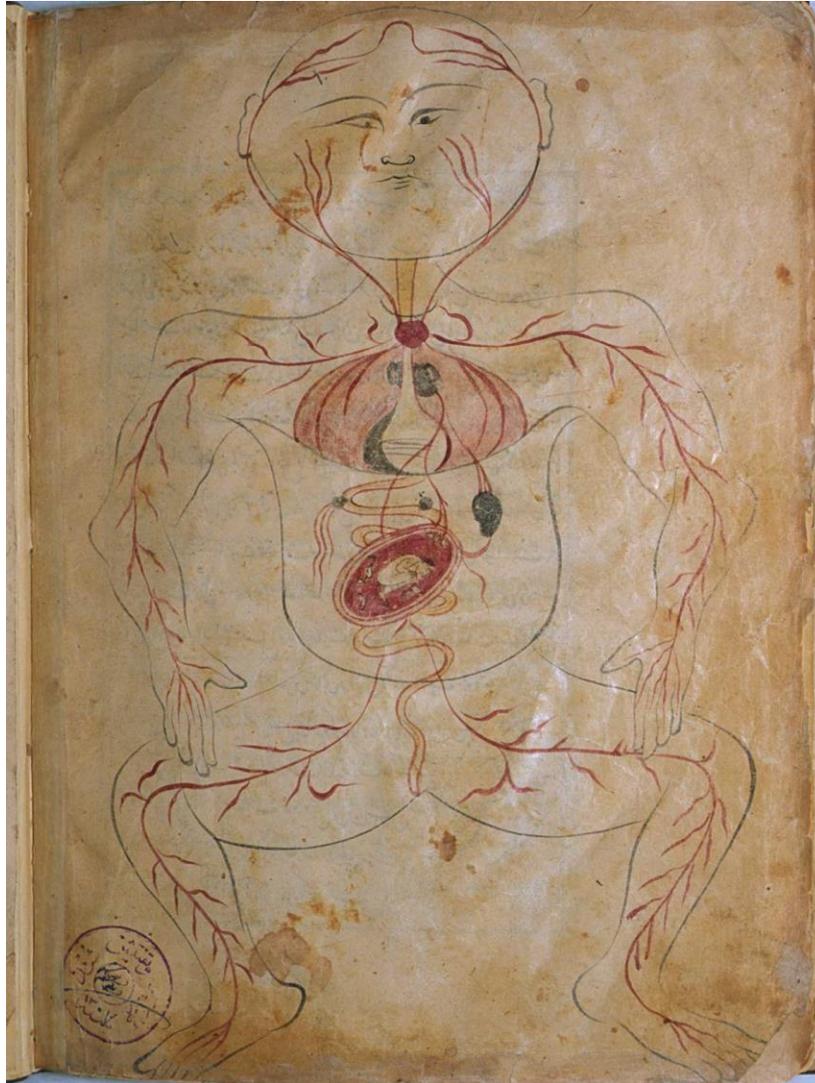
The Arab ships used a sternpost-mounted rudder which differed technically from both its European and Chinese counterparts. On their ships "the rudder is controlled by two lines, each attached to a crosspiece mounted on the rudder head perpendicular to the plane of the rudder blade. The earliest evidence comes from the *Ahsan al-Taqasim fi Marifat al-Aqalim* ('The Best Divisions for the Classification of Regions') written by al-Muqaddasi in 985:

**Taqi al Din and other 16th-century astronomers working in the observatory of Muradd III in Istanbul. From the Shahansani-namah, 16th century, manuscript number FY 1404 in the University Library, Istanbul, Turkey**

Image courtesy of FSTC

Posted link: <http://www.aip.org/history/cosmology/tools/pic-naked-eyes-istanbul.htm>





**Tashrīḥ-i badan-i insān by Maṣṣūr ibn Muḥammad ibn Aḥmad.**

An illustrated Persian treatise on human anatomy, usually referred to as Tashrīḥ-i Mansūrī (Mansūr's Anatomy); dedicated to Sultan Ziyā al-Dīn Amīrzadah Pīr Muḥammad Bahādur (fol. 1b lines 25-26), in all likelihood referring to Pīr Muḥammad ibn 'Umar ibn Tīmūr, the Tīmurid ruler of Fars from 1393-1409; for a second copy of the treatise see NLM MS P18.

Treatise consists of an introduction (muqaddimah), five chapters on the five systems (bones, nerves, muscles, veins and arteries) and a conclusion (khatimah) on the compound organs and embryology. The first version of Mansur's anatomy was composed in 1396 with illustrations about the human body with respect to circulatory system, cardiovascular system, nervous system, and reproductive system. The manuscript is one of the first systematic works on human anatomy.

Posted link:

[http://www.nlm.nih.gov/exhibition/historicalanatomies/mansur\\_home.html](http://www.nlm.nih.gov/exhibition/historicalanatomies/mansur_home.html)



Artist Name: Umayyad Anonymous  
Artist Dates: (661 - 1031, )  
Title: Astrolabe.  
Creation Date: 10 c  
Style: Umayyad  
Repository: Kraków. Muzeum Uniwersytetu Jagiellonskiego.  
Accession #: exp01002

An Astrolabe is a vertical angle measuring device. Brought from Spain to Krakow in the 15th century. Used by Nicolaus Copernicus (Polish astronomer 1473-1543).As you can see from the photo above, the astrolabe is mounted in a case with degrees marked around the perimeter and arms mounted in the center. To use the astrolabe, you move the moveable arms to a particular location.

Posted

link:[http://www.google.com/imgres?imgurl=http://www.engr.sjsu.edu/~pabacker/history/images/herbs.jpg&imgrefurl=http://www.engr.sjsu.edu/~pabacker/history/islam.htm&usq=\\_\\_XcR1yFAe6C2qNnbkX6zECgB7dVI=&h=234&w=288&sz=9&hl=en&start=15&sig2=RQeCWas\\_eQqG0\\_J3HcCAOg&um=1&itbs=1&tbnid=1oGsPHNOI44rfM:&tbnh=93&tbnw=115&prev=/images%3Fq%3Dmuslims%2Bcontributions%2Bto%2Bscience%26um%3D1%26hl%3Den%26sa%3DN%26rls%3Dcom.microsoft:en-us:IE-SearchBox%26rlz%3D1I7GGLL\\_en%26tbs%3Disch:1&ei=0\\_ZaTJCJGoK78ga44tj-AQ](http://www.google.com/imgres?imgurl=http://www.engr.sjsu.edu/~pabacker/history/images/herbs.jpg&imgrefurl=http://www.engr.sjsu.edu/~pabacker/history/islam.htm&usq=__XcR1yFAe6C2qNnbkX6zECgB7dVI=&h=234&w=288&sz=9&hl=en&start=15&sig2=RQeCWas_eQqG0_J3HcCAOg&um=1&itbs=1&tbnid=1oGsPHNOI44rfM:&tbnh=93&tbnw=115&prev=/images%3Fq%3Dmuslims%2Bcontributions%2Bto%2Bscience%26um%3D1%26hl%3Den%26sa%3DN%26rls%3Dcom.microsoft:en-us:IE-SearchBox%26rlz%3D1I7GGLL_en%26tbs%3Disch:1&ei=0_ZaTJCJGoK78ga44tj-AQ)



### Sarafeddin Sabuncuoglu (1385-1468)

Lived in central Antolia (Turkey) and published one of the earliest surgical textbooks in 1465. Three original copies of this textbook are in existence today. An artist and calligrapher, Sabuncuoglu left detailed illustrations of his surgical techniques. He is often referred to as the father of pediatric surgery because of his original contributions to the surgical treatments of hydrocephalus, webbed fingers, inguinal hernias, and more. His surgical description of the treatment of hydrocephalus includes this illustration. From [www.imageofsurgery.com/related.htm](http://www.imageofsurgery.com/related.htm)

Posted links:

<http://www.ncbi.nlm.nih.gov/pubmed/1779321>

[http://grande.nal.usda.gov/ibids/index.php?mode2=detail&origin=ibids\\_references&therow=101437](http://grande.nal.usda.gov/ibids/index.php?mode2=detail&origin=ibids_references&therow=101437)

<http://www.anesthesia-analgesia.org/content/102/4/1289.3.full.pdf>