

Lesson Plan

SACNAS: The Society for the Advancement of Chicanos/Hispanics and Native Americans in Science



The logo of SACNAS.

Grade Level(s): 9-12

Subject(s): History, Physics, Contemporary

In-Class Time: 35-60 min

Prep Time: 10-15 min

Materials

- Copies of the “SACNAS History” reading (available in Supplemental Materials)
- Ability to project a video from the internet
- SACNAS Biography List
- Copies of the SACNAS Biographies (available in Supplemental Materials) and/or student access to internet and computers for group work

Objective

This lesson plan introduces students to the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS). It situates the formation of SACNAS in the historical context of the 1970s and encourages students to contemplate the significance of advocacy and diversity organizations such as SACNAS.

Introduction

Alongside the well-known African American Civil Rights movement, the 1950s and 60s were also a time period of major social ferment in other groups which faced major discrimination and hardship. Major civil rights victories had occurred in the 1947 case *Mendez v. Westminster* which declared that segregating children of “Mexican and Latin descent” was unconstitutional. This was followed by 1954’s *Hernandez v. Texas*, which ruled all marginalized groups were covered by the 14th amendment. Despite these victories, Hispanic Americans still faced poverty, both in urban and rural environments. The Mexican American Civil Rights or Chicano movement was an expression of a generation’s disappointment and anger. The term Chicano was originally a derogatory label for the sons and daughters of Mexican migrants. However, in the 1960s it began to be used by Mexican Americans themselves as a term of self-determination and pride. The movement encouraged Hispanic Americans to take pride in their Spanish, Mexican, or indigenous heritage. It had several leaders who fought for a

variety of issues, such as the return of land to Mexican Americans, better treatment for Mexican Americans in the military, and improved working conditions and union rights for agricultural laborers.

While the African American and Chicano movements were in full swing, the Native American Movement also fought for the rights of indigenous Americans. In several states, lawsuits were brought and successfully won against historically unfair treaties. In 1968, the Indian Civil Rights Act extended the protections of the US Bill of Rights to all tribes. That same year, the American Indian Movement civil rights organization started to protest and bring notice to the horrible conditions many native peoples lived in, both on reservations and in the urban environments. The organization was involved in several high profile protests, including the takeover of Alcatraz Island from 1969-1971 and the site of Wounded Knee. These actions helped to bring visibility to the plight of Native Americans and led to calls for changes in the government's treatment of Native Americans.

The relatively few Native American and Hispanic American scientists in the 1970s also reacted to the larger social currents. At a meeting of the American Association for the Advancement of Science in the early 1970s, a small group of these scientific professionals met at a social mixer and got on to an elevator together. One of the group looked around and joked, "If this elevator crashes, it will wipe out the entire population of Chicano and Native American scientists!" That joke convinced the riders of the need to increase the numbers and representation of these marginalized groups in science. They quickly began collaborating and starting an organization which would become SACNAS.

The founders of SACNAS quickly realized how important but difficult their task would be. At that time, advanced science degrees were few and far between in the Hispanic and Native communities. Over 15,000 PhDs in science and engineering were granted in 1975, but only 151 were granted to Hispanics and 13 to Native Americans. Early initiatives included nationwide networking, securing funding, and organizing the first SACNAS conference in 1978. The organization started out with only enough members to fit into an elevator, but now has over 25,000 people involved.¹ SACNAS holds annual conferences that feature thousands of attendees. The conferences draw an international audience and feature a scientific program and mentorship opportunities for students.

The logo (seen at the top of page 1) is a blending of Central American and Southwest indigenous symbols. The oval and the streamer underneath it represents the Mayan symbol of the new sun (the streamer represents the beard of the sun god). The nine rays on the outside of the oval represent the New Mexican Zia Pueblos emblem which appears on New Mexico's state flag. In the middle of the oval is a representation of the helium atom, which powers the sun and is a noble gas, linking Native American and Hispanic cultures with science.²

¹ "Our History, <http://sacnas.org/about/our-history>

² "About the SACNAS Logo," http://bio.sacnas.org/uploads/Marketing/SACNAS_Logo.pdf, accessed 8/16/2016.

Instructions/Activities

Engage: 10-15 minutes

Have the class watch the video about the history of SACNAS at <https://vimeo.com/26779001> (8:04 minutes).

What is the teacher doing?

Ask questions to get the students thinking critically about their assumptions regarding race, gender, and science. Respond to student answers and prompts for more information.

Ask the students what they think of the video. Ask them why they think it might have been difficult to be a Hispanic or Native American scientist in the past.

What are the students doing?

Think carefully about the questions the teacher asks and answering them. Use any historical background knowledge about the Civil Rights movement and racial identity.

Explore: 10-15 minutes

Students should now have the opportunity to learn about the history of SACNAS and what the organization represents. A short (3 page) history of the organization is included in the Supplemental Materials to this lesson for students to read.

What is the teacher doing?

Hand out copies of the “SACNAS History” reading (available in Supplemental Materials). Assist the students if they have questions about the reading or the organization. If desired, hand out the Discussion Questions handout (available in the Supplemental Materials).

What are the students doing?

Read the “SACNAS History” paper. Take notes and, if assigned, fill out the Discussion Questions handout.

Explain: 10-15 minutes

Students should now have the opportunity to learn about the membership of SACAS and what sorts of positions minority scientists hold. If all students have access to the web, they can explore the SACNAS Biography project at <http://bio.sacnas.org/biography/default.asp>. (Note: the website can be slow; if this is happening, printing the biographies in the Supplemental Materials is recommended). Several biographies are also available in the Supplemental Materials of this lesson plan so they can be easily printed, instead of requiring web access.

Alternatively, SACNAS has several video biographies available online. These, and videos about the research SACNAS members perform, are included in the “Further Reading and Additional Resources” section of the lesson plan. The links can be given to the student groups and they can watch these videos instead of reading the biographies.

What is the teacher doing?

Break the students into groups and have each group select a different scientist. A list of available biographies is available in the Supplemental Materials to this lesson plan. Either hand out copies of the scientist

What are the students doing?

Read the biography of the chosen scientist with the group. Take note of any interesting ideas of questions the biography raises, and answer any Discussion Questions.

<p>biographies or help students find a biography on the website. Possible Discussion Questions for the biographies are included in the Discussion Questions handout (available in Supplemental Materials)</p> <p>Alternatively, give each student a link to one of the scientist video biographies, and have each group watch the video for their particular scientist.</p>	<p>If assigned a video biography instead, watch it, take notes, and discuss the video among their group.</p>
---	--

Elaborate: 5-15 minutes

<p>Have a short class discussion after students have finished the readings and videos. This is a chance for students to reflect upon what they just learned and how this might have changed their thinking from the beginning of the period. Make sure to encourage students to ask any questions that they may have about who goes into careers in science and the work scientific societies do.</p>	
<p>What is the teacher doing? Lead a large group in discussion of what they've learned. Possible discussion questions are below:</p> <ol style="list-style-type: none"> 1. Thinking about the biographies you read, why do you think scientists join SACNAS? 2. The founding of SACNAS in the 1970s was several decades ago, why is SACNAS still relevant today? 3. Why do you think there's an organization for both Native American and Hispanic scientists, rather than a separate one for each? 4. Why might a scientist go to both SACNAS and other scientific conferences? 	<p>What are the students doing? Participate in the group discussion. Answer and ask further questions about SACNAS and scientific societies more generally. Make sure any assigned handout questions have been completed.</p>

Evaluate:

Answers and participation in discussion can be used to evaluate student performance. If they were handed out, students can also turn in their answers to the Discussion Questions handout for evaluation. The short presentations in the elaborate section can also be evaluated by the teacher.

Required/Recommended Reading and Resources

- Society for the Advancement of Chicanos and Native Americans in Science website: <http://sacnas.org/>
 - SACNAS Biography Project: <http://bio.sacnas.org/biography/default.asp>
 - SACNAS History: http://bio.sacnas.org/uploads/Marketing/SACNAS_History.pdf
- AIP Member Societies website: <http://www.aip.org/member-societies>.

Discussion Questions

Discussion Questions can be found as a Handout with a corresponding Answer Key in the Supplemental Materials to this lesson plan.

SACNAS History

1. Why did the founders of SACNAS feel the need to create such an organization?
2. What was happening in the 1970s that helps explain the name and reasons SACNAS was created?
3. What are some of the activities and goals of SACNAS?
4. Why is SACNAS focused especially on Native and Hispanic Americans?
5. What kinds of issues does the SACNAS advocate for on behalf of minority scientists?

Biographies

6. How did your scientist become interested in her field?
7. What sort of education did your scientist have?
8. What kinds of challenges did the scientist face in their education or workplace?
9. What surprised you most about this scientist?

Further Reading and Additional Resources

On the Society for the Advancement of Chicanos and Native Americans in Science:

- Video Biographies of SACNAS members:
 - Physicist JD Garcia (7:20): <https://vimeo.com/26743687>
 - Chemist Jani Ingram (6:30): <https://vimeo.com/26743581>
 - Seismologist Aaron Velasco (7:00): <https://vimeo.com/26743082>
 - Molecular Biologist Leticia Marques-Magana (7:00): <https://vimeo.com/26769052>
 - Mathematician Richard Tapia (8:20): <https://vimeo.com/26778668>
 - Mathematician Rebecca Garcia (7:00): <https://vimeo.com/26769670>
- Videos of Research Activities of SACNAS scientists:
 - Astrophysicist Enrico Ramirez: <https://vimeo.com/26070794>
 - Chemist Daniel Mindiola: <https://vimeo.com/44913940>
 - Environmental Engineer Lupita Montoya: <https://vimeo.com/26732171>
 - Environmental Scientist Margaret Hiza Redsteer: <https://vimeo.com/45593995>
 - Organic Chemist Eric Sorensen: <https://vimeo.com/27833764>
- Relevant videos on the history of SACNAS:
 - History of SACNAS as told by its members: <https://vimeo.com/26779001>
 - SACNAS Overview: <https://vimeo.com/26734643>

Resources on the Hispanic American and American Indian Civil Rights movements:

- *Chicano! History of the Mexican American Civil Rights Movement*. Video. NLCC Educational Media, 1996. Description at: <http://www.albany.edu/jmmh/vol3/chicano/chicano.html>.
- *Educating Change: Latina Activism and the Struggle for Educational Equity*. <http://www.brown.edu/Research/Coachella/introduction.html>.
- The Native American Power Movement, http://www.digitalhistory.uh.edu/disp_textbook.cfm?smtid=2&psid=3348.

Extensions

Scientific Societies

1. There are ten member societies and twenty-four affiliated societies that are part of the American Institute of Physics Federation of the Physical Sciences. They can be found at <http://www.aip.org/member-societies>.
2. Students can work individually or in groups to research the history of one of these societies. The following questions can be used:
 - a. When was the society founded?
 - b. What is the society's mission?
 - c. Who founded the society and in what region?
 - d. What functions and programs does the society provide?
 - e. Who does the society cater to?
3. Students can then present their findings to the class.

Common Core Standards

For more information on Common Core Standards, visit <http://www.corestandards.org/>.

Speaking & Listening	
CCSS.ELA-LITERACY.SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.9-10.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
CCSS.ELA-LITERACY.SL.11-12.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.11-12.4	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
History/Social Studies	
CCSS.ELA-LITERACY.RH.9-10.1	Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
CCSS.ELA-LITERACY.RH.9-10.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

<p><u>CCSS.ELA-LITERACY.RH.11-12.1</u></p>	<p>Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.</p>
<p><u>CCSS.ELA-LITERACY.RH.11-12.2</u></p>	<p>Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.</p>

Next Generation Science Standards

For more information on the Next Generation Science Standards, visit <http://www.nextgenscience.org/>.

N/A