I have been asked several times as to why the stories of women in science, technology, engineering, and mathematics (STEM) should be told to our students. One major reason is that fewer students are majoring in STEM fields. Without STEM professionals, who will make the next major breakthrough in cancer research? Who will explore the solar system? Who will develop the next iPod? Recruitment, retention, and graduation of women with STEM training are critical needs in Tennessee and in our nation. The low rate at which women are entering the STEM pipeline in high school and in college is troubling, especially since even low-paying jobs require a fundamental knowledge of these subjects. The continuing success of the American workforce requires the full (continued on page 2)

SPECIAL COLUMN: WOMEN’S ACHIEVEMENTS IN SCIENCE Contributed by Dr. Judith Iriarte-Gross, Professor of Chemistry, MTSU

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“AWESOME” SOURCE OF THE MONTH:

Golfer Miss O. Lindman, with a golf club raised over her head, standing on the grounds of Hinsdale Golf Club [1905]

NEWS:

- GET PAID TO SHARE YOUR LESSON UNITS WITH US! We are seeking high-quality, inquiry-driven lesson units, in all subjects, that are based on primary sources from the Library of Congress Web site. Selected submissions will be posted to our TPS-TN Web site, and the submitting teacher will receive a stipend. Please email us or call us at (615) 898-2947 for more information.

- Are you a 5th-8th grade or U.S. History high school teacher? Check out the new lesson unit based on the Great Depression and home front Tennessee on our Web site!

- Let us know what you’d like to see on our Web site! Fill out our Two-Minute Questionnaire.

UPCOMING EVENTS:

- March 6 (Knoxville)- Tennessee Council for Social Studies, 11 a.m.-12 p.m.

- March 7 (Knoxville)- University of Tennessee- Knoxville History Teachers Workshop, 9:15-10:15 a.m.

- March 18 (Chattanooga)- Tennessee Association of Museums Conference, 1:30-2:30 p.m.

- March 19 (Chattanooga)- Educational Marketplace of Ideas panel at TAM conference, 1-2 p.m.

- April 4 (Nashville)- History Day state competition workshop, 12:30-2:30 p.m.

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participation of women in STEM fields. Where do women learn about education and careers in these fields? The stories of women scientists and engineers provide that important first step for our students when they are planning their future.

Sharing the history of women role models in STEM provides the impetus needed by students in K-12 and beyond to ask questions about these types of careers. Most students have heard about Marie Curie. These same students often do not know that Marie's daughter, Irene Joliot-Curie, was also a Nobel Prize-winning chemist. Students do not know that Gerty Radnitz Cori, the first American woman to win a Nobel Prize (1947), was told that her husband would be fired if she worked in his laboratory. Students learn that Watson and Crick "discovered" the structure of DNA but are not told about the work of Rosalind Franklin, whose data were used by them without her permission. These women scientists had a passion for education and their research and thus worked around or through obstacles. Early women in science often were not paid and were told to work in basement laboratories so they would not distract the men. If they were part of a husband and wife team, the husband was thought to be the leader and the wife, the research assistant. These histories show students how far women in science have come since Marie Curie's time.

Today, many young women are not aware of the career opportunities, economic rewards, and job satisfaction in STEM in Tennessee and across the nation. Primary sources are an important tool which illustrate the lives of women scientists and describes skills needed for careers in STEM fields. Primary sources therefore provide an important first step to help girls and young women explore their future in science.

For a reference guide on women in the sciences, click here.

LESSON IDEAS—WOMEN'S ACHIEVEMENTS IN JOURNALISM

During World War II, women did not just stay on the home front riveting with Rosie. Several women went to war as journalists, photographers, and broadcasters. Over 100 were even accredited by the military as war correspondents!

Break students into eight mixed ability groups and assign each group one of the women listed in the Women Come to the Front online exhibit.

Have them answer the following questions, then present their findings in an oral report.

- What did she cover during the war, and whom did she work for?
- How did she get her start as a journalist/photographer/broadcaster?
- What did she do after the war?
- Describe the photo or story she covered that your group believes made the biggest impact. Why did it make an impact? Why might she have taken that picture or told that story?

These ideas can be adapted to meet state curriculum standards for U.S. History (high school), Journalism (high school), English (8th grade), and can be adapted for use in other classes, especially when involving public speaking.
As stated in the Tennessee Department of Education curriculum standards for high school Government (standard 5.0: History), “Students will study the major events, ideas, and individuals of the Suffragist and Civil Rights movement to create, in small groups, a 2 to 4 minute public service announcement that targets 18 to 24 year olds (the lowest voting age group in the U.S.) and emphasizes the importance of voting and political participation in our society.” This lesson could also be applied to vocational classes on Electronic Media Production standards.

Have students use the Library of Congress Web site links (to the left) to find images and documents of women involved in both movements. Students can create the 2 to 4 minute public service announcement (PSA) using these women’s tactics for gaining the right to vote and participate in politics. After these announcements have been presented, have a class discussion about which tactics worked for the movements and which ones did not.

If you have the technological capabilities, you might also want to try having students film their PSAs and have them edit the video using a movie-maker program, so that they can also include

LESSON IDEAS—WOMEN’S ACHIEVEMENTS IN THE ARTS

American women illustrators have contributed greatly to the fields of American visual arts, media, and advertising. Elizabeth Shippen Green, for example, produced magazine and book illustrations in the early twentieth century, during the “golden age” of American illustration. Shippen Green was also the first woman staff member at Harper’s Weekly, an influential American political journal.

Tour the online exhibit A Petal from the Rose: The Illustrations of Elizabeth Shippen Green at the Library of Congress Web site. Have the students discuss the artworks while answering these questions:

• How does she portray women’s and children’s lives in her illustrations?

• What do her illustrations say about American life at the turn of the twentieth century?

• How does her use of color, line, and shape make you feel?

Lessons using these primary sources can be made to satisfy K-8 Visual Art Standards 3.0 (evaluation), 4.0 (History and Culture), and 5.0 (Reflection and Assessment). Specifically, they can satisfy Visual Arts 1.2 and 4.3 for grades 6-8 that deal with communication of ideas through media and the effect of time and place on visual art.