

**Equity  
Studies  
Research  
Center**

**Sisters In Science:**

**A Newsletter Promoting Gender Equity  
in the Science Classroom**

**Volume 1, Issue 2**

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**INSIDE THIS ISSUE:  
FOCUS SPORTS SCIENCE**

<b>Science Lesson</b>	<b>2</b>
<b>Special Sports Day Event</b>	<b>3</b>

**Ways to Foster Gender Equity in the Science Classroom:**

- Offer lessons that detail the contributions of famous female scientists
- Encourage girls to participate in science lessons
- Make science fun! Most importantly, lessons should be hands-on and collaborative.

**Equity in the Science Classroom**

“Girls are afraid of science!”, muses a Queens College of the City University of New York graduate student. It sounds like a taunt that could be heard coming from one of our elementary students’ mouths, but that is not the case. A male student in a master’s level science education class made this unnerving, insensitive remark.

Strangely enough, he was in the midst of mostly women (specializing in elementary science), including the two of us. Many of us were offended. However, was his assertion completely off base, or is there

some truth to it? Unfortunately, young girls are less likely to achieve in the sciences. It is very unlikely that girls plan to pursue science-based careers. Girls and boys enter school roughly equal in measured ability. However, twelfth grade girls are lagging far behind boys in higher-level math and science. Nevertheless, this does not imply that girls are afraid of science. It indicates that somehow girls are being left behind.

In a historically male dominated field, such as science, it is not surprising that gender role stereotyping affects our

students’ science experiences. Research states that girls and boys informal and traditional science classroom experiences are extremely different. Everything from entertainment choices to behavioral expectations of authority figures shape girls interest and achievement in science related courses.

Science education researchers make many distinctions between the way females learn compared to their male counterparts. Traditionally, science is taught in a competitive, lecture laden environment. Leaving little room for collaboration and hands-on experiences. As evidenced by (cont’d pg 3)

by:  
Renee Geithner; PS 71Q  
Amelia Mack; PS 11Q

**Sports as a Vehicle for Science Learning:  
Sisters in Science in the Community**

By: Penny Hammrich &  
Kathy Fadigan

Have you ever wondered why a golf ball travels such a great distance, or in many cases so little distance? Or even why your muscles get sore when you run? These are just a few of the questions middle school

girls are exploring as part of the Sisters in Science in the Community program (SISCOM). The SISCOM program was developed to address the need for urban girls to gain equitable access to science and

mathematics education by using sports as a vehicle for science learning. Through sport, not only are girls learning the underlying principles of science and mathematics embedded in the mechanics (cont’d pg 2)



# Sports as a Vehicle for Science Learning

(Continued from pg 1)

of performing a sports ; but also, they are learning scientific principles in an atmosphere that embraces their psycho-social-emotional connection to learning.

For example, each day girls are learning how to ride a bike, throw a ball, and jump rope. They learn these activities in an environment that is non-competitive and non-threatening. What they are not aware of is the scientific and



mathematical principles embedded in these activities. The classroom, girls learn these scientific and mathematical principles in a context that is foreign to their everyday experiences. They learn about the trajectory of a golf ball without connecting this principle to the actual practice of hitting a golf ball.

The SISCOM curriculum enhancement is standards based and has an equity focus. Each activity focuses on a specific sport, the science and mathematics utilized in

performing the sport and features an athlete, scientist, or mathematician connected to the sport. The three year supplemental curriculum includes 8 sports and 40 science, technology, engineering, and mathematics (STEM) driven activities. The following is a list of the sports covered:

1. Volleyball
2. Basketball
3. Soccer
4. Fencing
5. Golf
6. Tennis
7. Track
8. Field

By: Penny Hammrich

## Sisters in Science in the Community: Basketball Lesson

**Theme:** Motion

**Science and Math Concepts:** Speed and Rates

**Objectives:**

- Students will give examples of **rates**.
- Students will be able to explain the concept of **speed** in terms of distance and time.
- Students will **measure** the amount of time it takes to run various distances.
- Students will **calculate** rates of speed.
- Students will **communicate** rates of speed and free throws in the form of fractions and percentages.

**SISCOM Activity:**

*Part 1:*

**Materials:** 1 basketball per student

**Procedure:**

1. Have students run two laps

around the gym to warm-up.

2. Instruct students to practice finger tipping the ball.
3. Put students in pairs. Have them practice moving the ball around their bodies.
4. Divide students into groups of three. Have them practice 3-woman-weave with lay ups.
5. Finally, have the students practice half court dribbling.

*Part 2:*

**Materials:** 1 stopwatch, chalk, and Rate Worksheet (see insert)

1. Pre-measure and mark with chalk the various distances on the ground.
2. Divide children into groups of two. One child should be the **runner** and the other should be the **recorder**.
3. Give each child a Rate Worksheet.
4. The runner will run the teacher selected distance. The recorder will time and record this information on the Rate Worksheet. The partners will switch jobs and repeat the activity.

5. Students repeat steps 2 & 3 until they have timed and recorded at least four runs a piece.

*Part 3:*

**Materials:** Enough basketballs for available hoops, alternative-if hoops are not available, place a target on a wall.

1. Group the students in pairs.
2. Teach the children how to calculate the free-throw rate.
3. Have the students line up at a teacher designated line to shoot free-throws
4. Partners record information on the Free-Throw Worksheet (see insert).
5. Instruct students to calculate their free-throw rates (ie. 5 baskets out of 7 equals 5/7).

*Part 4:*

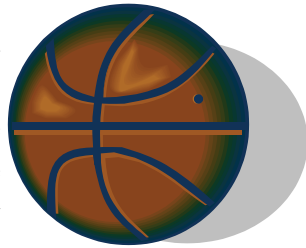
**Journaling**

- How did your senses affect how well you completed each activity?
- How did practicing affect how well you were able to complete each activity? (cont'd on pg 3)

## SISCOM Basketball Special Sports Day Event: Science and Basketball in Action

by: Vee Norris

A major component of the Sisters in Science in the Community (SISCOM) program is the inclusion of family, friends, and the community in the process of science learning. At the end of each science/ sports unit, the girls participate in a Special Sports Day Event. During the event, the girls present the science and sports skills they learned.



This spring nearly 100 hundred girls took part in the first SISCOM Basket-

ball Special Sports Day event. Held at Paul L. Dunbar Elementary School in partnership with B&V Outreach, the program drew people from the North-Philadelphia region.

The SISCOM Special Sports Day Event combined hands-on science exploration and basketball instruction. The students worked on science and mathematics concepts such as **free throw percentage, rates of speed, and measurement.**

The girls also worked on basketball fundamentals such as, ball handling, passing, shooting, and defense. In addition to working on science and sports skills, students had an opportunity to lead group discussions, present their newly learned science and basketball skills, and participate in the SISCOM Basketball Jeopardy Game. Students competed for awards based on their science and basketball knowledge. Additionally, students received certificates in categories such as outstanding achievement, perfect attendance, and most improved program participant.

## Equity in the Science Classroom (cont'd from pg 1)

Seymour and Hewitt (1996), girls achieve through cooperative learning strategies which include discussion, study groups, and shared leadership. Yet, cooperation and collaboration is great for my students both boys and girls. Science is the perfect forum for this kind of learning environment. Most importantly, cooperation and collabora-

tion in the science classroom negates the supposed masculine competitive nature of science.

"Girls are afraid of science!!" ... states a graduate student...

It is important to add that gender equity is not just for girls. Boys can bene-

fit from gender equity as well. In fact, studies show that an increased emphasis on teamwork and collaboration across the curriculum benefit all students.

While working together to complete assignments, students learn interpersonal skills. They learn (cont'd pg 4)

## SISCOM: Basketball Lesson (cont'd from pg 2)

### Science Career Connection

Aerospace Engineer **Mina Cappuccio**

Cappuccio is an aerospace engineering working in the area of propulsion airframe integration at NASA's Ames Research Center. Propulsion Airframe Integration (PAI) is the science of installing the propulsion system or engine on an airplane. She works

with NASA to develop the technology needed to design and build a commercial high speed civil transport (HSCT). The HSCT is expected to fly at supersonic speeds. Her most important role is to evaluate the designs of the HSCT.

For more information on Mina Cappuccio, please log on to <http://ftp.arc.nasa.gov/aero/team/cappuccio.html>.

### Sports Career Connection

President of the WNBA, Donna Orender, was an All-American basketball player at Queens College of the City University of New York. She has played professionally for the New York Stars, the New Jersey Gems and the Chicago Hustle of the Women's Basketball League (WBL). After leaving the WBL, Orender entered into the business of



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## EQUITY STUDIES RESEARCH CENTER

*Equity in Education for All!*

[www.sistersinscience.org](http://www.sistersinscience.org)



Founded in the summer of 2004, The Equity Studies Research Center (ESRC) at Queens College of the City University of New York has been developed to promote interdisciplinary scholarship including basic and applied research and serve as a vehicle for community engagement facilitating the advancement and study of equity in urban education and socio-economic participation. The ESRC provides a focal point for intellectual exchange, collaboration, and coordination of resources necessary for achieving both theoretical understandings of equity processes and the effective design and implementation of practical interventions advancing equity.

Currently, the ESRC houses the Sisters in Science Equity Reform Project (SISERP). The project is comprised of six science programs focused on broadening the participation of urban girls in science related courses. The following SISERP programs are intended to reach underserved females in numerous capacities:

Sisters in Science, All Sisters in Science, Sisters in Sports Science, Information-Sisters in Science Careers Opportunities Matter, Sisters in Science in the Community, and Sisters in Science Dissemination and Outreach Project.



### SISCOM: Basketball Lesson (cont'd from pg 3)

sports. Over the past 17 years, Orender has worked on the PGA Tour overseeing worldwide management, television production, advertising, brand management, new media and internet business. Orender assumed the responsibilities of her new position April, 2005.

For more information on Donna Orender log onto: [www.wnba.com](http://www.wnba.com).

#### SISCOM Special Thanks:

SISCOM is devoted to supporting positive changes in the community. Without the support of various community members and organizations, we would not have had such a successful year. Special Thanks to:

**B&V Outreach:** Patricia Wilson & Vee Norris; **The Lighthouse:** Maria Negron & Miss Selby; **Norris Square:** Amanda Bergstrom & Wendy Lebron; **Zion Baptist Church:** Tracey Norton, Ida DeBrest, & Nadine Lee

## Equity in the Science Classroom

Cont'd from pg 3

to cooperate, negotiate, debate, and resolve conflict by listening to one another. They learn to build healthy in-class relationships which will hopefully translate to their daily existence.

No doubt, gender equity is increasingly becoming an important issue in science classrooms across the nation. Students of all races, ethnicities, and genders must be encouraged to study sciences academically and professionally. It is up to us, the teachers, to provide a learning environment where neither girls or boys feel confined by stereotypes and expectations about who they are (Jobe, 2003).

#### References:

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Seymour, E., & Hewitt, N. M. (1996). *Talking about leaving: Why under graduates leave the sciences*. Colorado: Westview.

