

## HealthWISE

HEALTH = WINNING INVESTIGATIONS FOR STUDENTS AND ELDERS

### Student Pharmacists as Science Educators

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## HealthWISE Faculty

- Judith S. Wilson, San Joaquin County Office of Education
- Jim W. Blankenship, University of the Pacific
- Marti Lindsey, University of Arizona
- Lisa J. Woodard, Washington State University
- Raymond M. Quock, Washington State University

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## Learning Objectives

At the end of the program, the learner will be able to:

- Articulate the value of student pharmacist service-learning opportunities through the establishment of pharmacy school partnerships with K-12 educational communities.
- Promote development of student pharmacist communication skills through science teaching experience in elementary schools.
- Develop an elective HealthWISE course at his or her school.

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## Learning Objectives

At the end of the program, the learner will be able to:

- Identify professional program competencies that student pharmacists will address in the HealthWISE course.
- Compare implementation of the HealthWISE course at 3 pharmacy schools over 2 years.

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## HealthWISE PROGRAM DEVELOPMENT

Judith S. Wilson, M.A.  
 Education & Curriculum Consultant  
 San Joaquin County Office of Education

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## HealthWISE

Health=Winning Investigations for Students + Elders

- Funded by the National Institutes of Health (NIH)/ National Center for Research Resources (NCRR)/ Science Education Partnership Award (SEPA).
- Currently finishing the Phase II Dissemination Phase.
- Original sponsor is the San Joaquin County Office of Education in Stockton, California in conjunction with the University of the Pacific Thomas J. Long School of Pharmacy as the primary partner.
- Intended to improve science education in elementary schools with the help of community health professionals.

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## HealthWISE

Health-Winning Investigations for Students + Elders

- ◆ Phase II intended to study the effectiveness of student pharmacist partners to improve science education in elementary schools.
- ◆ Dissemination activities involved the development of the [www.healthwiselarning.org](http://www.healthwiselarning.org) website.
- ◆ AND, to test the use of this website and programs at the University of Arizona and Washington State University as well as the University of the Pacific.

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## Home Page

HealthWISE

About Us - The Pharmacy Faculty - For Pharmacy Students - For Elementary Schools

**Welcome to HealthWISE!**  
Health-Winning Investigations for Students + Elders

An innovative program that trains, nurtures and supports pharmacy students in elementary schools to teach science. Pharmacy student "elders" are trained through a unique "healthWISE" science course taught at the pharmacy school and are matched with local elementary schools to improve science education with the healthWISE curriculum.

**OBJECTIVES**

- ◆ **PHARMACY STUDENTS** receive training to teach the healthWISE curriculum through a unique course offered by a sponsoring pharmacy school. An instructor and student resources are provided to sponsoring pharmacy schools.
- ◆ **SCHOOLS** receive pharmacy school students and match them with a teacher who assists them to be successful in teaching elementary students science with the healthWISE curriculum.
- ◆ **TEACHERS AND STUDENTS** access healthWISE curriculum and training online for the improvement of science education at elementary schools.

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## About Us

HealthWISE

About Us - The Pharmacy Faculty - For Pharmacy Students - For Elementary Schools

**About Us**

**Our Funders:**  
[www.nca.com](http://www.nca.com)  
[www.dca.com](http://www.dca.com)

**Phase I HealthWISE:**  
[www.healthwise.org](http://www.healthwise.org)  
[www.healthwise.org](http://www.healthwise.org)

**In the News:**  
[www.healthwise.org](http://www.healthwise.org)

**Phase II Partners:**

University of Arizona College of Pharmacy Tucson, Arizona Dr. Mark Luchessa <a href="mailto:mark.luchessa@arizona.edu">mark.luchessa@arizona.edu</a>	University of the Pacific Thomas J. Long School of Pharmacy Stockton, California Dr. Jan Blankenship <a href="mailto:janblankenship@upac.edu">janblankenship@upac.edu</a>	Washington State University College of Pharmacy Pullman, Washington Dr. Lisa Hordahl <a href="mailto:lisa.hordahl@wsu.edu">lisa.hordahl@wsu.edu</a> Dr. Ray Soren <a href="mailto:ray.soren@wsu.edu">ray.soren@wsu.edu</a>
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**Contact Us:**  
Office of Science & Special Projects  
San Joaquin County Office of Education  
570-443-4933  
[www.healthwise.org](http://www.healthwise.org)  
Jodi Wilson  
[jwilson@healthwise.org](mailto:jwilson@healthwise.org)

**Gallery:**  
[Photo Gallery](#)

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## For Faculty

Username:  
Faculty

Password:  
password



The screenshot shows the HealthWISE website for faculty. It features a navigation bar with 'Home', 'Faculty', 'Students', and 'Elementary Schools'. The main content area is titled 'Welcome to HealthWISE' and includes a 'Faculty Login' button. Below the welcome message, there are links for 'Faculty Login' and 'Faculty Registration'. The footer contains contact information for the National Center for Research Resources, the National Institutes of Health, and the National Library of Medicine.

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## For Students

Username:  
students

Password:  
healthwise



The screenshot shows the 'Pharmacy Student Home Page' on the HealthWISE website. It features a navigation bar with 'Home', 'Faculty', 'Students', and 'Elementary Schools'. The main content area is titled 'Pharmacy Student Home Page' and includes a 'Student Login' button. Below the header, there is a section for 'Pharmacy Student Home Page' with a list of links: 'Home', 'Faculty', 'Students', 'Elementary Schools', 'Faculty Login', 'Student Login', 'Faculty Registration', 'Student Registration', 'Faculty Home Page', 'Student Home Page', 'Elementary Schools Home Page', 'Faculty Home Page', 'Student Home Page', 'Elementary Schools Home Page', 'Faculty Home Page', 'Student Home Page', 'Elementary Schools Home Page'. The footer contains contact information for the National Center for Research Resources, the National Institutes of Health, and the National Library of Medicine.

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## For Elementary Schools



The screenshot shows the 'For Elementary Schools' page on the HealthWISE website. It features a navigation bar with 'Home', 'Faculty', 'Students', and 'Elementary Schools'. The main content area is titled 'For Elementary Schools' and includes a 'Faculty Login' button. Below the header, there is a section for 'For Elementary Schools' with a list of links: 'Home', 'Faculty', 'Students', 'Elementary Schools', 'Faculty Login', 'Student Login', 'Faculty Registration', 'Student Registration', 'Faculty Home Page', 'Student Home Page', 'Elementary Schools Home Page', 'Faculty Home Page', 'Student Home Page', 'Elementary Schools Home Page', 'Faculty Home Page', 'Student Home Page', 'Elementary Schools Home Page'. The footer contains contact information for the National Center for Research Resources, the National Institutes of Health, and the National Library of Medicine.

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### Student Pharmacists in Elementary Schools



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### Why Partnerships with Elementary Schools?

To improve science education in the United States, changes are urgently needed throughout the system. Beginning with what is known about how children learn science, changes in teaching and in the education of teachers can and should begin now.

Taking Science to School: Learning and Teaching Science in Elementary School; 2007

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### Benefits to Elementary Teachers, Schools and Students

- Provides a "science content expert" in the classroom to work alongside the teacher.
- Insures that science will be taught.
- Educates students and parents through family science events at school sites.
- Provides role models for students.
- Implements the science standards with health education.
- Assists the teachers to provide hands-on science that is integrated with math and reading.

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## Benefits to Student Pharmacists and Schools

- Great public relations for community outreach.
- Provides opportunities for student pharmacists to communicate with K-12 students, especially English learners.
- Provides training for career-long service for teaching science in schools.
- Provides confidence and practice for speaking to groups.
- Offers satisfaction to the student pharmacists as they make a difference and provide enthusiasm for something they love — science!

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## From Pills to Pill Bugs

FROM PILLS TO PILL BUGS  
 PACIFIC PHARMACY STUDENTS SHIFT TO SCIENCE IN NEW COUNTY PROGRAM

By [Amanda O'Brien](#)  
 November 17, 2007 Record Staff Writer

STOCKTON - The teachers wore white University of the Pacific pharmacy school lab coats, and the students couldn't take their 7-year-old eyes off the instructors. In the space of a fast-paced hour Friday afternoon, the second-graders in Loretta Allen's classroom at Colonial Heights School learned the meanings of the words "hypothesis" and "habitat," that a spider has eight legs and that crickets savor a diet of lettuce and cucumbers. "It's really cool," 7-year-old Holly Kedzierski said. "It's kind of like you're on a TV show, like on a quiz show, being asked lots of questions that you answer."

For six weeks this fall, with one more visit to come, 22-year-old Pacific students J.K. Fujimoto and Esther Yue have been visiting Allen's class and teaching science lessons, for which they are entitled to receive an elective credit. Even though Fujimoto and Yue are second-year pharmacy students, they have not been teaching about pills, but about pill bugs and other things of an entomological bent.




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## From the Teachers

"This program has provided me with (science) content for me, and thus increased my confidence and desire to teach science."




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### From the Student Pharmacists

Teaching kids about science has been a memorable and rewarding experience. It has been a pleasure being a part of the HealthWise education program. I enjoyed every moment of it. There are many things that I have learned from this experience. Teaching requires patience, high energy, enthusiasm, and passion. I never thought I would enjoy teaching until I took part in this program. It is something new to me and, if I were given another opportunity to teach, I would do it again.



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### HealthWISE AT THE UNIVERSITY OF THE PACIFIC

Jim Blankenship, Ph.D.  
Professor of Pharmacology and Toxicology  
Thomas J. Long School of Pharmacy and Health Sciences

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### Evolution of the Idea of Engaging Student Pharmacists in K-12 Classrooms

- **2003** — Pacific awarded NSF GK-12 grant to support graduate teaching fellows in K-12 education.
- **2003-07** — Graduate fellows led hands-on science projects in 6<sup>th</sup>-8<sup>th</sup> grade classrooms in San Joaquin County.
- **2006** — Student pharmacists participated in a voluntary program to provide supplementary science lessons in some of these classrooms.
- **2007-10** — Elective course offered for student pharmacists to provide health-related lessons in specific 2<sup>nd</sup> and 5<sup>th</sup> grade classrooms.

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## NSF GK-12 Program

**Synopsis from NSF website**

“This program provides funding for graduate students in NSF-supported science, technology, engineering, and mathematics (STEM) disciplines to bring their leading research practice and findings into K-12 learning settings... The GK-12 program provides an opportunity for graduate students to acquire value-added skills, such as communicating STEM subjects to technical and non-technical audiences, leadership, team building, and teaching while enriching STEM learning and instruction in K-12 settings...”

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## NSF GK-12 Expected Outcomes

- FOR GRADUATE FELLOWS**

Enhanced understanding of their own research subject area, and its societal and global contexts; improved communication skills of STEM subjects with technical and non-technical audiences, leadership, team building, and teaching capabilities.
- FOR K-12 EDUCATION**

Professional development opportunities for teachers in both STEM content and pedagogy; and enhanced learning and STEM career interest for students.
- FOR INSTITUTIONS OF HIGHER EDUCATION**

Transformation of graduate programs; strengthened and sustained partnerships with local school districts, industry, non-profit sector, *etc.*; and enhanced institutional impact of graduate education to society.

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## Adapted NSF GK-12 Expected outcomes

- FOR STUDENT PHARMACISTS**

Enhanced understanding of their subject area, and its societal and global contexts; improved communication skills of **health sciences** subjects with technical and non-technical audiences, leadership, team building, and teaching capabilities.
- FOR K-12 EDUCATION**

Professional development opportunities for teachers in both **health sciences** content and pedagogy; and enhanced learning and career interest for K-12 students.
- FOR INSTITUTIONS OF HIGHER EDUCATION**

Transformation of **pharmacy** programs; strengthened and sustained partnerships with local school districts, industry, non-profit sector, *etc.*; and enhanced institutional impact of **science** education to society.

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## Elective Course Developed

- Course title: Science Education Experiences
- Units: Two
- Grading: Pass/No Credit - Student pharmacists keep a journal of their activities and turn in reports reflecting on their educational experiences
- Term Offered: Fall (1<sup>st</sup> time - 2007)
- Enrollment limited: 40 students (20 classrooms available)
- Limited to second year students

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Student pharmacists work in the classroom in **pairs**. This seems to remove some of the pressure on the student pharmacists and facilitates full participation.



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Student pharmacists are comfortable getting into the activities with the students and this makes the students comfortable with them.



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### Course Description from Syllabus

The course will prepare second year student pharmacists for outreach to elementary school classrooms to teach science information and concepts. Students will receive training to prepare for the classroom environment and will then make weekly visits to assigned classrooms to present science information and direct hands-on science activities.

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You can see the rapport that quickly develops between the student pharmacists and the younger students.



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Student pharmacists are great, young role models for both the girls and boys in their classes.



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## Sister Act



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## Class Meeting Sequence

- **First Week:** Orientation Meeting and Start of Training.
- **Second Week:** Training and orientation continues through Web activities or classes with education personnel from County Office of Education.
- **Third Week:** Teachers from participating classrooms are invited to campus for short orientation and students (paired in teams) meet with the teachers to whom they are assigned.
- **Fourth Week to End of Term:** Teams of two students each visit their assigned classrooms weekly to lead hands-on science activities.
- **Week Before Finals:** Last class meeting with students sharing their experiences and turning in journals/reports.

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Student pharmacists are not far removed from their elementary school days and many remember vividly their days in these classes.



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## Course Logistics

- Before the term begins, must **recruit K-6<sup>th</sup> grade teachers to participate in the program**. Helpful to have someone from the school district or science museum act as a recruiter.
- During the course, **maintain a supply room where students can pick up materials for their activities**. These may include handouts, books, science supplies and even insects. We have a science closet always open with a sign-out/in list.

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Both younger students and student pharmacists really get interested in the live insect observations.



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## Develop Communication Skills

- Student pharmacists learn to communicate scientific and health-related information using simple, clear explanations these young students can understand without the medical terminology they are more accustomed to using.
- The classrooms provide a unique setting for both large group communications and individual hands-on teaching.
- In some classrooms, student pharmacists learn to communicate with ESL students.

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Student pharmacists develop their communication skills leading hands-on activities.



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### Quote from a Student Pharmacist

"I will definitely use what I learned here as a bridge to the pharmacy world. After all, adults are just big kids. When it comes to counseling, you are explaining to patients something they know nothing about, kind of like children and insects. You have to make sure you explain at a level they understand, not to intimidate them, or lose their focus. Just like with patients, with children you have to make your passion for what you are doing show."

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Student pharmacists spark enthusiasm for science in the classroom while keeping focus on the topic.



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### Quote from a Student Pharmacist Placed in a 7<sup>th</sup> Grade ESL/ELL Classroom

"This experience has helped me improve my communication skills by introducing me to a genre of people that I haven't had much experience with, in terms of education level and cultural differences. I generally have a shy, laidback attitude, but these past weeks have forced me to step outside my comfort zone and strengthen my leadership skills. This will definitely help my confidence as I interact with patients at outreach events like health fairs."

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Student pharmacists develop their confidence by leading discussions on science in front of a class of students who are not scientifically sophisticated.



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### Another Quote from a Student Pharmacist

"This experience has given me invaluable tools to be able to communicate. I can now explain information so that it is more easily understood, and I am flexible in the methods by which I do this. I have also realized it is important not to give students (patients) too much information so they do not get confused. This class has changed the way I communicate with patients and I feel much more confident in my ability to do so."

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Student pharmacists learn to work with other individuals, to clarify points and to answer questions.



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### Summary of Benefits of HealthWISE Program

- Gives student pharmacists a **unique setting** where they can test and develop their **communication skills** on an unsophisticated audience.
- Exposes student pharmacists to the world of **K-12 science education** where they can have an impact now and possibly throughout their careers.
- Provides **science role models** for students in **K-12 schools** to stimulate interest in science and health education
- Provides **outreach for the pharmacy school** connecting to the community and K-12 schools.

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### HealthWISE AT THE UNIVERSITY OF ARIZONA

Marti Lindsey, Ph.D.  
College of Pharmacy,  
Outreach Director, Southwest  
Environmental Health Sciences Center,



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### Health Literacy: Service Learning

- Promote student pharmacist communication skill development through science teaching experience in elementary schools.
  - ▶ Applying the concepts of health literacy to pharmacy practice.
  - ▶ Understanding the power of health and the impact of the environment on human health to promote an interest in science.

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### Health Literacy

- Health literacy is defined as “the ability to obtain, process and understand basic health information and services needed to make appropriate health decisions” by Healthy People 2010.
- Student pharmacists learn about the importance of well written materials and effective communication to promote health literacy among their patients through reading and discussing journal articles on the subject and by practicing with school children.

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### Specific Aims

- Create a vision for underserved students of the possibility of attending the university and considering a career in pharmacy.
- To provide opportunities for students of the College of Pharmacy, University of Arizona students to serve the public with their pharmaceutical expertise.
- To provide opportunities for the College of Pharmacy, University of Arizona students to practice health communication.
- Pharmacy students will understand the need for empathy and effective communication in promoting health and dealing with patients.

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### Outcomes for Doctor of Pharmacy Graduates at the University of Arizona

- Domain 3: Health improvement, wellness, and disease prevention.  
Description: The graduate will promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an inter-professional team of health care providers.
- Competency 3.2: Demonstrate the skills needed to participate in the preventive service aspects of practice
  - a. Participate in public education programs (e.g., health fairs and screenings).
  - b. Provide empowerment strategies to control health outcomes.
  - c. Participate in programs for health improvement, wellness, and disease prevention.

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### Service Learning Rationale Student Pharmacists

- Develops social responsibility and heighten civic awareness and heightens sensitivity and awareness of the culturally diverse, social, and economic components of health and illness that impact the quality of life in the surrounding community.
- Is a way to a mutually-fulfilling reciprocal arrangement where students and community members can each be learners and teachers, servers and served.
  - better understand the future patients that they will be serving
  - recognize the importance of community service
  - become more aware of patients' need for social support

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### Service Learning Rationale Student Pharmacists

- Students serve in settings of the partners of the Community Outreach and Education Core of the Southwest Environmental Health Sciences Center.
- Assignments include presentations, journal discussions, reaction logs to the assignments and a written paper at the end of the semester.

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## HealthWISE at UA

- ◆ A three credit-hour elective course will provide :
  - ▶ 15 hours of didactic training in community outreach principles;
  - ▶ 25 hours of service related to common diseases with environmental etiologies; and
  - ▶ 5 hours of reflection on the service work performed.
- ◆ Through this design the student will be able to integrate academic and clinical skills with principles of community health promotion and prevention.
- ◆ Small classes of three to ten - allows for mentoring.
- ◆ Interesting outcome is the focus of the class of 2012 on Health Literacy and service through "Children's Health Fairs."

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## Time Table Fifteen Week Semester

- ◆ Week One: Health Literacy
- ◆ Week Two: Communication Styles & Cross Training
- ◆ Week Three: Environmental Health & Cross Training
- ◆ Week Four: Service Learning with K-12 students & Cross Training
- ◆ Week Five: Service Learning Assignments & meet the teachers
- ◆ Weeks Six - Fourteen: Journal article presentations, Guest Speakers, Reports of experiences, Additional work on curriculum, & planning for events
- ◆ Week Fifteen: Final meeting, Evaluation, Reception with Students + Teachers Multi-Media (pictures of classroom visits) presentation

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## Grading

- ◆ In-class presentations - 30%
  - ◆ Class participation - 20%
  - ◆ Summary report - 10%
- ◆ Weekly reflection logs - 20%

### Assignments

- ◆ Schools
- ◆ Libraries
- ◆ Public Events




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## HealthWISE AT WASHINGTON STATE UNIVERSITY

Raymond M. Quock, Ph.D.  
Allen I. White Professor and Chair of  
Pharmaceutical Sciences  
Washington State University

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### Course Learning Objectives

At the end of the course, the student will be able to:

- Engage elementary school children in learning scientific information and concepts on a level they will understand and that will interest them.
- Guide elementary school students through hands-on lab exercises using insects and immunology concepts so that students understand more basic ideas of biology and science.
- Apply their experience to manage (in cooperation with the teacher) a class of elementary school children, to keep the students' interest and attention and to follow rules and regulations as they apply to the classroom.

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### Competency-Based Outcomes

Communication

- Demonstrate comprehension of cultural competence principles by considering other perspectives and effectively articulating ... with patients, families, and other health care providers representing different cultures, languages, lifestyles, ideologies, etc.
- Effectively use principles of communication for quality presentation of drug or other health-related information to an audience, through selection of data, media, technology and other methods appropriate for the purpose of the interaction.
- Apply well-developed and professional level writing skills in papers, ... using appropriate methods, guidelines and terminology and demonstrating competency in the presentation of the information.

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### Competency-Based Outcomes

**Professionalism**

- Understand the significance of responsibilities as a member of a profession which is dedicated to the principles of quality medication therapy management, and assume the commitment to uphold these principles that have shaped the integrity of the profession and the image of the pharmacist over time.
- Identify personal assumptions, biases, opinions and prejudices and be able to set them aside to broaden perspectives, be open to new ideas, and avoid intolerance and ethno-centricity that may impede delivery of quality professional services.

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### Competency-Based Outcomes

**Professionalism**

- Identify and evaluate the demographics, needs, and cultural profiles(s) of a particular community in the practice site to understand when adjustments are necessary for the delivery of optimal professional services.
- Consistently maintain a professional demeanor; acquire strategies and demonstrate the ability to effectively multi-task and manage stressful situations when providing professional services and when communicating with patients, other health care providers, and co-workers.

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### Competency-Based Outcomes

**Professionalism**

- Model a professional example to influence the behavior of others through demonstration of professional work habits, priorities, time management, and positive interactions.
- Provide leadership/mentorship to help individuals improve the profession and participate in influencing, training, and developing the next generation of pharmacists.

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## Competency Based Outcomes

### Health Promotion and Wellness

- Promote health awareness and disease prevention through preventive health measures, screening activities, and reduction of morbidity risk factors through service programs, health fairs, and public education programs in communities, schools, pharmacy and other healthcare facilities/venues.

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## Final Assignment

Identify one of the Competency-Based Outcomes that you feel you were able to achieve in the course. Evaluate your experiences in the course that have provided for you to achieve this outcome including how you learned from both positive and potentially negative experiences. Provide examples of experiences that impacted you. Include ideas for how this experience and learning could be integrated into your future pharmacy practice.

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## Student Pharmacist Responses

- "... I learned to hone my communication skills. I realize that the classroom is similar to the pharmacy and what I have learned in the classroom can apply in my future pharmacy practice."
- "Pediatrics is a field that I am considering to go into. Teaching the 5th grade class is just the beginning of my journey in working with kids in pharmacy."

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### Student Pharmacist Responses

- "I believe I will be more confident in teaching patients – adults and children alike."
- "... being passionate in the way I counsel patients, much like a good professor does, I can make an positive impact on patients health."
- "I got them more excited about science and I hope that they all remember what pharmacists do."

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### Future Plans

- Inter-professional education - medical, dental, nursing, occupational therapy, physical therapy, dental hygiene, speech and hearing
- Native American school system

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### HealthWISE ELEMENTARY LESSON

Lisa J. Woodard, M.P.H., Pharm.D.  
Clinical Assistant Professor  
Washington State University

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# WASHING GERMS AWAY

Second Grade Curriculum

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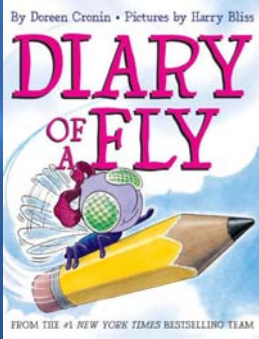
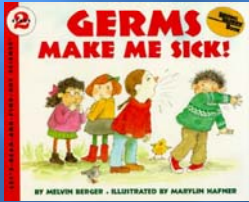
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## Introduction

Literature based -  
criss cross applesauce



By Doreen Cronin • Pictures by Harry Bliss

FROM THE #1 NEW YORK TIMES BESTSELLING TEAM

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## Discussion

- ~ What is a germ?
- ~ What do germs look like?
- ~ Where do we find germs?

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### Hypothesis

- What do flies look like?
- How do they spread germs?

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### Experimental Procedure

- Observe flies
- Sketch picture
- Developing observational skills in children

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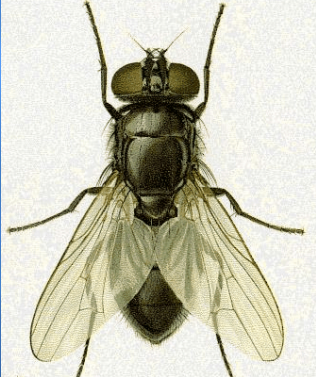

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### Discussion

- What do flies look like?
- How do they spread germs?

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### Active Learning Game

“Beat the Germs” game

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### Lessons Learned

- K-12 system located near University important.
- Key K-12 contacts critical.
- White coats make a big impression on children.
- Teacher visits before and after classroom sessions critical for relationship development.
- Website well-developed allowing for independent learning for student pharmacists.

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## Lessons Learned

- Materials must be prepared and easily available to student pharmacists.
- Maintain flexibility in lessons for geographic location/seasons.
- Student communication tools important - blog, chat room, Blackboard®, Angel®.

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## Resources

**Health Literacy**

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