

Syllabus: “ Addressing Student Misconceptions in Science Using Concept Cartoons and Web Resources.”

1. Dates this course is set to run: TBA

2. Course Description:

Students enter your classroom with ideas about how the world around them works. These ideas are often naïve, or incorrect. If they are not addressed learning will not occur.

This workshop will address three problems that confront the science teacher:

- How to identify individual student misconceptions
- How to help students embrace conceptual change so learning can occur
- Assessing student learning of new concepts

You will be introduced to concept cartoons - a wonderful, non-threatening strategy for students to identify and assess their own subject knowledge and understanding. Using templates and Microsoft Publisher you will create and customize your own cartoons for any science subject area. Cartoons will be used to promote discussion and identify the range of misconceptions.

Participants will explore a variety of interactive and virtual lab websites such as the BBC “Bitesize” www.bbc.co.uk/schools/bitesize/ , Engineering Interact, www.engineeringinteract.org , Explore Learning www.explorelearning.com Discovery Education www.discoveryeducation.com/products/science/middle.cfm or Science Courseware www.sciencecourseware.org You will use these activities to address misconceptions for the topic and then assess to determine if learning has occurred.

3. Course Goals, Outcomes and Objectives:

Goals:

- The goals of this course are for participants to master a new and effective strategy for science classrooms and use it to address science misconceptions in their students. They will evaluate the effectiveness of internet resources to produce conceptual change and learning. During this course participants will also experience the use of online learning as part of their professional development plan.

Outcomes:

What are the enduring understandings?

- Science misconceptions are held by every student

- Misconceptions must be identified before learning can occur
- Misconceptions can be addressed effectively by providing relevant learning experiences

Objectives:

What will the participants know/be able to do?

- Discuss their role in their students learning
- Use templates to create concept cartoons and use them in their class
- State why concept cartoons are an effective strategy for identifying misconceptions
- Select appropriate interactives/virtual labs, from different web sites
- Incorporate these learning tools into a lesson and use it in the classroom
- Develop an assessment to gauge student learning
- Present evidence that conceptual change and learning has occurred in their students
- Evaluate if student learning has occurred

4. Biography:

Dr. Helen Pashley received her teaching and doctoral qualifications from Cambridge University in England. a workshop facilitator and curriculum writer for Putnam/ Northern Westchester's popular Science 21 program. This inquiry - based, hands-on elementary curriculum is currently used by 57 districts and 172 schools in New York State. Helen has also provided on site consultant services for curriculum and staff development for many districts including Millburn Township NJ, Eastchester, Mamaroneck and Greenburgh 11. Her published articles include a discussion on how to identify student misconceptions in science with concept cartoons and their connection to conceptual understanding. Helen has presented workshops on this topic at the Science Teachers Association of New York State (STANYS) annual conference in Rochester, and for the Westchester Section annual conference at Pace University.

5. New York State Standards Addressed:

- ELA
 - Standard 1 Listening and Reading
 - Standard 2 Speaking and Writing
- Arts Standard 1 Creating, Performing and Participating in the Arts
- MST Standard 1 Analysis, Inquiry and Design
 - Scientific Inquiry
- MST Standard 2 Information Systems
 - Key Idea 1

- MST Standard 4 Science (dependent on topics selected by participant)
 - Living Environment
 - Physical Setting
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- MST Standard 5 Technology
 - Key Idea 2
 - Key Idea 3
- MST Standard 6 Interconnectedness: Common Themes
 - Key Idea 2

6. Contact Information:

- Email drpashley@optonline.net
- Phone (914)739-5225

7. Prerequisite skills/Requirements:

- Students must be familiar with basic computer skills including conducting internet searches, sending email, saving and sending digital photos, downloading, saving and posting files. They should be confident in using Microsoft Word, Powerpoint and Publisher.
- If they use a SMART Board in their classroom they should know how to screen capture.
- Access to flip video cameras (optional)
- Access to a digital camera and software
- Access to a computer with Microsoft XP or Windows 7 and high speed internet connection

8. Any Software required:

- Microsoft Office (including Publisher, Word and Powerpoint)
- Flash player
- Quicktime
- Real Player (three above available as free downloads)

9. Recommendation for In-service credit:

- Students must complete all assignments satisfactorily and have posted an adequate, positive comment/feedback on another student's assignment if required
- Participation in assigned readings, class discussions and other collaborative work is part of the course and will form part of the final credit awarded
- The portion of the course that requires posting classroom evidence should NOT include students that do not have parental permission. Alternative evidence is permitted

- This is a 15 hour course. In-service credit hours will be recommended on the quality of assignments completed, attendance requirements, class participation and adherence to all course policy guidelines