Audience Identification

The materials within the lessons were designed considering the current classrooms, at the time, of the instructor designers. However, the instructor designers feel that the format of the lessons, and the incorporated methods and strategies, would be ideal for a distance learning environment for students ranging from grades 7-10. Therefore, the current format, including the instruction, evaluation, and communication methods are created specifically for a distance learning classroom.

This original audience included students from two school districts. One group consisted of155 tenth grade students who were enrolled in regular biology at Carrollton High School. These eight sections of biology include 18-32 students per class. The second group was an individual class of nineteen 7th grade male and female middle school students attending South Side Middle School in Columbiana Exempted Village School District. The 7th graders were taking Gateway to Technology, the middle school segment of the Project Lead the Way engineering program.

As of the 2009-12010 school year, both schools had predominantly white student bodies with approximately 15% of the students on individualized educational plans. Classes in both school districts contained a heterogeneous mix of academic abilities. Approximately 36-40% of students on each district were economically disadvantaged and both districts were in an area of Ohio that is rural in nature.

Technology Standards

Standard 1: Nature of Technology

A . Analyze information relative to the characteristics of technology and apply in a practical setting. (Ohio, Gradeband 6-8)

B . Apply the core concepts of technology in a practical setting. (Ohio, Gradeband 6-8)

C. Analyze the relationships among technologies and explore the connections between technology and other fields of study. (Ohio, Gradeband 6-8)

Standard 2: Technology and Society Interaction

C. Interpret and evaluate the influence of technology throughout history, and predict its impact on the future. (Ohio, Gradeband 9-12)

E. Assess the impact of technological products and systems. (Ohio, Gradeband 6-8)

Standard 3: Technology for Productivity Applications

A. Integrate conceptual knowledge of technology systems in determining practical applications for learning and technical problem-solving. (Ohio, Gradeband 9-12)

Standard 4: Technology and Communication Applications

B. Create, publish and present information, utilizing formats appropriate to the content and audience. (Ohio, Gradeband 9-12)

Standard 5: Technology and Information Literacy

D. Select, access, and use appropriate electronic resources for a defined information need. (Ohio, Gradeband 6-8)

Standard 7: Designed World

C. Develop an understanding of how bio-related technologies have changed over time. (Ohio, Gradeband 6-8)

Science Content Standards

Science Standards

A. Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life. (Ohio, Gradeband 6-8)

A. Explain the ways in which the processes of technological design respond to the needs of society. (Ohio, Gradeband 9-10)

B. Explain that science and technology are interdependent; each drives the other. (Ohio, Gradeband 9-10)

The instructional goals for the students are as follows:

- The students will be able to identify the changes in microscope technology throughout history.
- The students will be able to recognize the enhancement a microscope has on the viewable details of an object.
- The students will be able to explain the impact microscope technology has made in society

Access to Technology

Students, and the instructor, within a distance learning environment that will be following this unit on microscopes will need access to a personal computer with speakers or headphones, the internet, and email. If the students do not have the following software on their computer, they will need to download the free version from the internet. These include Adobe Shockwave Player, Adobe Flash Player, Adobe Reader, Windows Media Player, QuickTime, and Java. Links for downloading purposes are located within the Teacher Materials Professional Development section. The students must also join the classroom wiki to communicate with other students.

If any students with physical limitations are enrolled in the course, there is also information about assistive technology found within the

Learning Disability Information to Assist Instructors

Kid Source Online

This wonderful site, designed more for parents, can really help an educator understand and appreciate what a student with learning disabilities is struggling to overcome. This is a beneficial source to help everyone involved in education, whether it is parents or teachers, understand learning disabilities and how to help struggling students.

National Dissemination Center for Children with Disabilities (Educators and Administrators)

This page will help educators understand how to better assist students with learning difficulties reach their full potential. While it may be designed more for “classroom” teachers, distance learning educators can greatly benefit from this resource.

Assistive devices for students with special needs

Jouse2 keyboard and mouse replacement technology

Students that lack the ability to use the keyboard would be able to complete our distance learning lessons using a Jouse2. The Jouse2 allows the user to left click, right click, and double click like a mouse. Through series of sips and puffs the students are also able to write text. In case the student is on a respirator, a switch is available so they are still able to use this technology. The Jouse2 works on all operating systems and uses USB technology, allowing for portability. This product is considered to be ideal mouse replacement, which would be an important factor since our students need to be able to adjust microscopes on the screen.

Contact and materials information:

http://www.jouse.com/

Compusult Limited
P.O. Box 1000
Mount Pearl, NL, Canada
A1N 3C9
Toll Free: **888.388.8180**
Tel/Fax: **709.745.7914 / 709.745.7927**
E-Mail: info@jouse.

ZoomText Magnifier/Reader

Students who are visually impaired would benefit from the ZoomText Magnifier/Reader Software. The software allows the user to magnify the screen up to 36x for better viewing. The user is able to select which part of the screen is enlarged with the availability of 8 different viewing windows or even two screens. For our distance learning unit this will be of extreme importance when viewing the microscope specimens. The software is also capable of reading the text on the computer screen, including menus, web pages, and emails. Users are also able to read automatically or by character, word, line, sentence, or paragraph. Distance learning students with visual disabilities could easily use this software to navigate our site, read the necessary text, and submit assignments.

Contact and materials information:

http://www.aisquared.com/zoomtext/more/zoomtext_magnifier_reader/

Ai Squared
PO Box 669
Manchester Center, VT 05255
Order Hotline: 1-800-859-0270
Fax: 1-802-362-1670
Sales email: sales@aisquared.com

Monitor Magnifiers

Students who simply need the screen enlarged can purchase an over-the-monitor magnifier. The magnifier fits over the monitor and enlarges the material on the screen. Students are able to purchase these from common shopping sites such as Amazon.com.