OER Symposium 2017: Introductory Chemistry

Meeting Education Needs from High School to College
Project Goal

• To create a user friendly, interactive online textbook resource for introductory general, organic and biochemistry

• To create a textbook resource for high school teachers teaching in our college in high school program
Development Strategy:

• The Resource

• The Resource Development Team
  – Primary WOU Faculty Author
  – Upper Division Chemistry Student Team
  – WOU Chemistry Faculty Editor
  – WP High School Editor
  – Input from regional Chemistry Faculty from other Universities
Resource Development

- Accommodate Diverse Learning Styles
- Build a High Quality Text
- Use Real World Examples
- Provide Multiple Delivery Formats
  - Web Format
  - Downloadable Format
  - Video Tutorials
- Interactive Quizzes and Problem Sets
Diverse Learning Styles

By: Hadeel Abozenadah
Diverse learning styles

We tried to accommodate most students needs with different leaning styles:

Types of learners:
• Visual
• Auditory
• Reading/Writing
• Kinesthetic.
Diverse learning styles

We used different demonstration methods

Our book includes:
• Interactive PDF
• Interactive quizzes
• Videos
• Images
• Examples
• Practice problems
• Summaries
Diverse learning styles

To reach that goal we divided our work

Tasks:
• Writing
• Editing
• InDesign
• Video searching/recording
• Practice problems
• Teaching at WOU
High Quality Text

By: Scott Bittner
Resources

Creative Commons
• ShareAlike licenses
  – Copy
  – Adapt – same license
• Attribution

Other Materials
• Written permission
  – Keep records
• Attribution
The Writing Process

Don’t reinvent the wheel!
• Copy and adapt
  – Creative Commons
  – Accuracy
• Control
• Framing

Draw in the reader!
• Interesting examples
• Visuals
CHEMISTRY: In the real world.

Our writers try to include real life examples to engage student interest and meet course learning objectives

- **Fun Examples:** Capsaicin and Vanillin

- **Medical Examples:** Penicillin and Cyclosporin.

- **Case Studies:** Polio and the Development of Vaccines
The Polio Virus as a Case Study

• **Brief overview of the Immune System**
  – Adaptive & Innate
  – Understanding of how immunity works in our bodies

• **History of Vaccination**
  – Edward Jenner : Small Pox / Cow Pox Pustules
  – Louis Pasteur: Cholera and Anthrax

• **Case Study: The Polio Virus**
  – The numbers: Given statistics to help visualize the depth of polio as an issue.
  – At its worst in 1952, 57,628 cases reported; 3,145 deaths; 21,269 disabling paralysis.
  – Summers were not fun. Everybody's worry was The Polio Virus.
  – 1921 : Polio Strikes FDR. Polio was a very emotional disease for the US.
Discussions stemming from the Polio Virus Case Study

Help to meet major course learning objectives:

• Addresses a current controversial topic in science (the use of vaccines)
• Helps to develop critical thinking skills
• Helps to develop a student’s ability to find credible scientific resources to support or refute a conclusion
• Introduces students to ethics in scientific research and medicine
Developing Multiple Formats

By: Adam Bishop
CREATING A PDF: The Struggles of Adobe InDesign

Using InDesign we were able to create PDFs of our chapters, allowing students to easily print materials, as well as view them on any device.

Challenges:
• Adding interactive features
• Software learning curve
• Ensuring features added work on all devices
RECORDING SOFTWARE: Videos through Camtasia

Through Camtasia we were able to record and edit videos quickly. Using YouTube’s auto caption function we were able to quickly generate captions for our videos

Videos consisted of:

• Powerpoint presentations
• Demonstrations as needed
• Captions were added
To insure that everyone had access to the necessary documents, files were shared across Google Drive.

Sharing allowed for:
• Uniformity
• Sharing of found materials
• Backups of files
Interactive Tutorials and Quizzes

By: Chelsea Wiley
Interactive Tutorials and Quizzes

The interactive quizzes are formatted through Google Forms and are divided into chapter sections and chapter summaries.

Content includes:
• Key concepts
• Implementing formulas
• Connecting ideas
Example of Interactive Tutorials and Quizzes

CH150 Chapter 1 Quiz

Which of the following is not a physical property?
- Mass
- Color
- Density
- Flammability

What type of substance is this?
- An element
- A compound
- A homogeneous mixture
- A heterogeneous mixture
- An atom

Solid to liquid
Choose

0 points
Interactive Tutorials and Quizzes

Implementing Ted-Ed lessons to combine video clips and questions pertaining to material.

Learning to use Ted-Ed:
• Choosing relevant videos
• Creating “Think” Questions
• Starting a discussion
Putting it All Together

By: Patricia Flatt
Putting It All Together

- Ease of Accessibility
- Quality Control
  - Editors/Peer Review
  - Student/Teacher Feedback and Surveys
- Outreach to Establish Widespread Use
Questions??