The science of biology is all about constructing meaning from the information.

—Eric Jakobsson
What is the Biology Student Workbench (BSW)?
The Biology Student Workbench helps to define relationships between organisms that are only detectable by examination through use of a tool such as this. It is a web-based bioinformatics tool that allows the user access to biology databases linking and evaluating data about proteins and nucleic acids. The Biology Student Workbench consists of curricular materials geared toward molecular biological investigations, links to educational, scientific, computational, and informational resources, and communication tools that facilitate a growing community of educators who share information and ideas. The BSW gives a basic introduction to the tools and opportunities that the Biology Workbench offers for learning and teaching biology at all levels. The BSW employs sequence databases and has developed programs which analyze and organize the information that is found as a result of searching in these databases.

What is Inquiry?
The Inquiry method of teaching and learning is based on John Dewey’s ideas, Inquiry in the classroom focuses on the learner as the center of the learning activity. Inquiry learning begins by asking a question and then evolves into stages of investigating, creating, discussing, and reflecting. Ideally, this cycle does not end, but begins again after reflection with another question informed by what was learned in the first Inquiry.

How does the BSW fit into a classroom?
Because each session with the BSW begins with a query to find connections, it is ideally suited to a classroom environment that encourages such inquiries. For example, students may wonder how normal hemoglobin is different from hemoglobin affected by Sickle Cell Anemia. Using the BSW, students not only read a textbook definition of the variations, but are actually able to create a set of data that lets them view the amino acid sequences that result in these variations. Equipped with this knowledge, the students are then able to share their findings which leads to classroom reflection and will hopefully fuel their interest in forming new inquiries which can be solved with the BSW. Some teachers have found that by using the structure of an Inquiry Unit on the Inquiry Page (http://inquiry.uiuc.edu) the students are able to maximize the learning potential of the BSW.

Will this fit into my current teaching style?
Because of the investigative nature - and the broad range of possible inquiries that exist - in a biology classroom, using the BSW to explore topics in microbiology, draw connections, and back up what students read in their texts or see in experiments can only enrich the traditional classroom environment.

What kinds of classroom units will this facilitate?
Check out the tutorials within the Curricular Materials section of the BSW page: http://peptide.ncsa.uiuc.edu/tutorials/index.html#bioweb_stu. Here you will find sample explorations into evolution, protein sequences, cystic fibrosis, limb dysplasia, and more. Other potential inquiries include looking at the difference between infections and genetic disease or HIV studies. Keep in mind that these are just samples of the possibilities that the BSW offers for explorations in microbiology.

How can I find out more about structuring my students' BSW investigations in an Inquiry format?
Go to the Inquiry Page www.inquiry.uiuc.edu and browse through the resources section.

Who uses the BSW?
The biology student workbench is used by teachers and students from 9th grade through undergraduates in college. Because BSW helps students create meaningful information from the data sets they find, it can be adapted to various age and learning levels.

What can my students learn from this?
The tutorials, Inquiry based curriculum units, and resource materials all help students and teachers conduct open ended investigations into molecular biology (from NECC poster)

Do I need training to use it?
Here is a tutorial on using BSW: http://bioweb.ncsa.uiuc.edu/educwb/tutorials_current/How3.2/
If you understand biology and have basic computer skills, becoming proficient at the BSW should be a snap.

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How can I find out more about BSW?
Go to the Biology Student Workbench site: http://peptide.ncsa.uiuc.edu/index.html
To read an article about the use of BSW in a High School Biology class highlighted in "Science Success Stories" on the web, go to http://access.ncsa.uiuc.edu/CoverStories/BiologyWorkbench/

See The Inquiry Page for further exploration: http://inquiry.uiuc.edu