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BioBus Now Keyed to CT Science Mastery

Curricula and teacher training in the CURE BioBus Educational Programs have recently been revised with a key goal in mind – preparing Connecticut students and teachers for the new state science mastery standards, including the Connecticut Mastery Test (elementary and middle school) and Connecticut Academic Performance Test (high school).

Teacher training workshops now include a new focus on curriculum-embedded performance tasks, which are state-recommended activities teachers can use to prepare their high school students for the science portion of the CAPT, to be given for the first time in March 2007.

Through the addition of new experiments and materials, the BioBus Educational Programs curricula have been revised to provide teachers with all the tools necessary to teach vital life science concepts using modern, state-of-the-art biotech equipment and everyday classroom resources.

“As a result of the changes, the BioBus experience has become an outstanding component of science education in Connecticut,” said Sarah Berke, director of the BioBus Educational Programs.

Each of the BioBus experiments now maps into the 11 conceptual themes outlined in the state science framework, and the curricula can easily be mapped to the math and language arts frameworks to encompass and broaden the educational experience for students.

The Programs’ teacher guides follow a user-friendly format with callouts, web resources, pre- and post- laboratory activities, a glossary of terms, a list of current events, and a separate student guide for each experiment. The “Science Education Standards” section of each teacher guide highlights how the experiment serves as a tool to teach the Connecticut science framework.

The new approach provides teachers with a means to fully integrate the BioBus Educational Programs experience into their existing curricular units. After a BioBus or BioConnection visit (see below),

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the stand alone pre- and post- laboratory activities continue to be used to teach key life science concepts in the classroom, broadening the impact of the BioBus Educational Programs from an event to an enhancement of science education.

Two new experiments were officially launched in the fall of 2006. One, *Genetically Modified Organisms*, provides a context to discuss the ethical conundrum and societal responsibilities pertaining to the generation and distribution of genetically engineered foods, a CAPT Generation III Curriculum-Embedded Performance Task. In the experiment, students determine whether a company's "GMO-free" soy flour has been contaminated with GMO-containing soy using a biotech technique called polymerase chain reaction, or PCR.

"The GMO experiment was a great experience for my senior genetics students," said Lisa Cellini of St. Joseph High School in Trumbull. "The hands-on activity led to better understanding, and there were opportunities to team teach with social studies, economics, and business teachers. This was a total learning experience that covered content and encouraged further exploration."

A second new experiment, *Hunting for the Immune Villain*, allows students to explore infectious diseases, human health, central dogma (transcription and translation), viruses, and vaccinations, all of which are content standards in the 10th grade core curriculum science framework.

A recent teacher-training workshop at the University of New Haven, co-hosted with Education Connection and funded by Connecticut Career Choices and a Math and Science Partnership grant supported by the No Child Left Behind legislation, focused on the 9th and 10th grade curriculum-embedded performance tasks.

Attendees were provided with a manual, developed by the BioBus staff, containing helpful information, protocols and resources to assist teachers in bringing the embedded tasks into their classrooms.

In addition, teachers were given an extensive kit containing all of the supplies and reagents needed to perform the CAPT embedded tasks with 48 students in their classroom. Supplies included scientific equipment such as graduated cylinders and test tubes, as well as consumables like enzymes and pH testing strips.

BioBus and BioConnection Programs

Outfitted with the latest in bioscience equipment and state-of-the-art computers, Connecticut's BioBus is a 40-foot-long mobile science learning center designed to foster the excitement of scientific discovery.

Under the BioConnection Program, which is free of charge, schools are lent laboratory equipment, and teachers are trained to conduct in their own classrooms experiments from the curricula of Connecticut's BioBus.

"The BioBus Educational Programs provide the best teacher training I have encountered in my ten years in the field," said Helene Melchionne, a tenth-grade biology teacher in the Waterbury school system. "The follow-up support is generous and much appreciated. Science with CURE is truly collaborative."

The BioBus curricula include several experiments aimed at students in grades 4 through 12 as well as an experiment for adults aimed at a general audience. The BioBus and BioConnection Programs were inaugurated by CURE, the state bioscience organization, and rely primarily on CURE members and other Connecticut businesses and organizations for funding.

Since its inception, the Programs have trained more than 600 teachers through professional development workshops and reached more than 52,000 students at over 300 schools. Connecticut's bioscience industry currently employs more than 17,000 persons and is expected to grow.

For more information about the BioBus Educational Programs visit the website at www.ctbiobus.org or contact Sarah Berke at 203-777-8747.

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