K-5 Kids Use Databases to Learn About Agriculture

A State / University / School Initiative

Fritz Getze, Assoc. Librarian & UDLib/SEARCH Coordinator, Univ. of Delaware Library

Views from the Chronicle of Higher Education

• ...the Commission ... stopped short of calling for mandatory testing of college students, [but] other provisions in the final draft of its report have caused consternation among some higher-education leaders.

• The report also pushes for changes to make the accreditation process more open, urges professors to take the lead in defining educational objectives for their students, and supports a database that would allow parents, students, and policy-makers to compare institutions.  Chronicle, Sept 1, 2006, p42

• College-bound students face not only the issues of access [to college], but also that of readiness. . . When students arrive unprepared to do the work, it’s time-consuming and costly to get them up to speed.  Chronicle, Oct 14, 2005, p16
About UDLib/SEARCH

The UDLib/SEARCH program provides a virtual library of online resources for all K-12 public schools in Delaware. Since 1997, the UDLib/SEARCH program has provided access to the Web to online periodical and encyclopedia databases and related teacher training.

Every computer in every K-12 public and charter school in Delaware that is wired for Internet access through the state network has access to the thousands of articles and images from periodicals and encyclopedias included in UDLib/SEARCH resources. This includes computers in classrooms, libraries, computer labs and offices at schools, school district offices, and the State Department of Education.

The University of Delaware Library receives funding for UDLib/SEARCH from the State of Delaware Department of Education, as recommended by Governor Ruth Ann Minner and approved by the Delaware General Assembly. UDLib/SEARCH funding has been approved for the period from July 1, 2006 through June 30, 2007.

The UDLib/SEARCH databases are selected by the UDLib/SEARCH Advisory Board based on recommendations made by school librarians. The Advisory Board, which consists of University of Delaware librarians, Delaware school library media specialists, and Delaware Department of Education staff, meet annually to discuss issues concerning the UDLib/SEARCH program such as database selection and training.

The University of Delaware Library manages UDLib/SEARCH, including negotiating and funding subscriptions and license agreements for all Delaware public schools to access UDLib/SEARCH databases through the Internet on the existing state network. The University of Delaware Library also provides all training and support related to UDLib/SEARCH databases to school librarians, teachers, and administrators in all Delaware public K-12 schools.

This page is maintained by John Deitz, UDLib/SEARCH Training Coordinator, University of Delaware Library.

Questions or comments to: john@udlib.udel.edu

Last modified: 09/13/06
The Coordinator in Action!
Maple Lane Elem. School, May 2006
Welcome to the College of Agriculture & Natural Resources at the University of Delaware. One of seven colleges at the University, we offer more than 20 academic programs related to science, business, economics, and engineering technology. With a faculty of 70 and a student body of just over 700, we have a warm, family-like feel to our College.

Please browse this website to learn more about all of the unique opportunities we offer, and be sure to contact us if you would like further information. If you are a prospective student, please see the sections that apply specifically to you under "Student Resources." Finally, we welcome you to visit!

Enjoy your trip through our website, and we hope to see you on campus very soon!
UD Admission Requirements
http://www.udel.edu/apply

Apply for Admission

- Freshman applicants (US Citizens and Permanent Residents)
- Transfer applicants (US Citizens and Permanent Residents)
- International applicants
- Readmission
- Distance Learning

The 2007 application is now available:
- Complete it Online
- Download it (fall only)
- Request a paper copy of the fall application by adding yourself to our mailing list or calling (302) 831-8123

Freshman Applicants: What We’re Looking For

The University of Delaware seeks academically ambitious and creative applicants from a variety of cultural and ethnic backgrounds and geographic regions. For information about the academic qualifications and background of our current freshman class, see our freshman class profile.

As the Admissions Committee evaluates an application for admission, it weighs the rigor of the student’s high school program, academic record (especially the trend in grades), SAT Reasoning and/or ACT with Writing scores, class rank (if available), student essays, letters of recommendation, and personal statement. Special talents and abilities, Delaware residency, and alumni affiliation are taken into consideration. The SAT Subject tests are recommended for all freshman applicants, especially those to the honors Program, and if those scores are submitted the Admissions

<table>
<thead>
<tr>
<th>Subject</th>
<th>Years Required</th>
<th>Years Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Science</td>
<td>4 (2 must include a lab)</td>
<td>4 (2 must include a lab)</td>
</tr>
<tr>
<td>History/Social Sciences</td>
<td>4*</td>
<td>4*</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>2 of same</td>
<td>4 of same</td>
</tr>
<tr>
<td>Academic Electives</td>
<td>2 units</td>
<td>0-2 units</td>
</tr>
<tr>
<td></td>
<td>18 units</td>
<td>20-22 units</td>
</tr>
</tbody>
</table>

* An additional year of math or science may be substituted for the 4th year of history/social science.

**Foreign language courses taken before the ninth grade do not count.

** American Sign Language does not fulfill the foreign language requirement.

Some programs at the University require additional preparation in math and sciences:

- Prospective majors in mathematics, engineering, business, computer science, or other sciences should have completed four years of mathematics, including trigonometry, pre-calculus, and/or calculus.
- Prospective majors in engineering and other science fields are strongly urged to take physics, chemistry, and biology.
- Prospective majors in nursing must have completed at least one year of both biology and chemistry.

The above criteria represent the minimum requirements to be considered for admission. Applicants typically present credentials that exceed the minimum. The academic profiles of the most competitive candidates well exceed the minimum requirements.
Research apprenticeships with faculty mentors give talented, motivated University of Delaware undergraduates a chance to see and take part in what is happening on the front lines of discovery at UD today. Every UD college, department and research center provides opportunities for interested students to get their hands on the source of learning. About 700 students participate each year. Explore the many challenging options you have for bringing learning to life.

2006 Arts, Humanities & Social Science In View
Summer Undergraduate Research Science Symposium Program

- Advice for Getting Started
- Alumni News
- Calendar of Events
- Deadlines
- Faculty Projects
- Financial Resources
- Forms
- Graduate School Information
- Policies and Procedures
- Reading Room
- Research Abroad
- Scholar Programs
- Senior Thesis Program
- Symposium & Poster Sessions
Curriculum Standards
Plusses and Minuses

• The pressure of NCLB accountability has led principals and teachers to
  direct time and resources toward language arts and mathematics, and, due
  to limited hours . . . , to diminishing time for science. *Marx & Harris,* 2006, p 469

• Standards-based biology instruction would begin with engaging inquiry with
  materials, followed by discussion and then explanations, the opposite
  sequence from traditional instruction. *Leonard & Penick,* 2005, p 74

• There is now a greater emphasis on quality teaching and accountability at
  the local level. Agricultural education must make sure that its curriculum is
  current and viable. Changes have been so rapid in agriculture that often it is
UDLib/SEARCH Access

About UDLib/SEARCH

The UDLib/SEARCH program provides a virtual library of online resources for all K-12 public schools in Delaware. Since 1997, the UDLib/SEARCH program has provided access to the Web to online periodical and encyclopedia databases and related teacher training.

Every computer in every K-12 public and charter school in Delaware that is wired for Internet access through the state network has access to the thousands of articles and images from periodicals and encyclopedias included in UDLib/SEARCH resources. This includes computers in classrooms, libraries, computer labs and offices in schools, school district offices, and the State Department of Education.

The University of Delaware Library receives funding for UDLib/SEARCH from the State of Delaware Department of Education as recommended by Governor Ruth Ann Minner and approved by the Delaware General Assembly. UDLib/SEARCH funding has been approved for the period from July 1, 2006 through June 30, 2007.

The UDLib/SEARCH databases are selected by the UDLib/SEARCH Advisory Board based on recommendations made by school librarians. The Advisory Board, which consists of University of Delaware librarians, Delaware school library media specialists, and Delaware Department of Education staff, meets annually to discuss issues concerning the UDLib/SEARCH program such as database selection and training.

• Where found
• How funded
• Who selects
UDLib/SEARCH Elementary Databases

UDLib/SEARCH Elementary School Program
Online Magazines, Newspapers, Encyclopedias, & Images for Young Delaware Learners

Databases for Elementary Schools
- EBSCO Primary Search on Kids Search
- Gale Kids InfoBits
- SIRS Discoverer
- Britannica Elementary
- World Book Online

UDLib/SEARCH is a University of Delaware Library/State of Delaware partnership.
World Book Online Reference Center
http://www.worldbookonline.com/wb/Home
## Delaware Standards

**View the Curriculum Correlations:**
- All Grade Levels
- All Subjects

### CONTENT STANDARD

**OE.7.** Diversity and Continuity of Living Things: The natural world consists of a diversity of organisms that transmit their characteristics to future generations. Students will study how living things reproduce, develop, and transmit traits, and how theories of evolution explain the unity and diversity of species found on Earth. Students will also study how knowledge of genetics, reproduction, and development is being applied to improve agriculture and human health.

<table>
<thead>
<tr>
<th>STUDENT PERFORMANCE</th>
<th>7.1.</th>
<th>Heredity and Reproduction: Students should know that physical characteristics are passed on from parent to offspring. Organisms with two parents inherit characteristics of both.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.2.</td>
<td>Diversity: Students should know that organisms have many distinct and unique features which they use for survival. Specialized features include those for finding food, building shelters, evading predators, and reproducing. Scientists use similarities and differences in these features to classify and group organisms.</td>
</tr>
</tbody>
</table>

[materials correlated to this standard](#)
World Book

[Content from the webpage is not visible in the image.]
Genetic engineering is the term applied to techniques that alter the genes (hereditary material) or combination of genes in an organism. The cells of all living organisms contain genes. Genes carry chemical information that determines the organism's characteristics. By changing an organism's genes, scientists can give the organism and its descendants different traits.

For thousands of years, breeders of plants and animals have used breeding methods to produce favorable combinations of genes. These "genetic engineers" have produced most of the economically important varieties of flowers, vegetables, grains, cows, horses, dogs, and cats. Beginning in the 1970s, scientists developed ways to reintroduce individual genes into cells or into plants, animals, or other organisms. Such techniques alter the heredity of the cells or organisms.

How genes are reintroduced into cells. Genes are within cells as tiny, threadlike structures called chromosomes. Each chromosome contains a single long molecule of a chemical substance called DNA (deoxyribonucleic acid). A molecule of DNA may contain thousands of genes. DNA stores within its chemical structure the information that determines an organism's hereditary properties.

The physical structure of DNA is much the same in all organisms. The DNA molecule is shaped like a twisted rope ladder, called a double helix. The "rungs" of the ladder are made of four chemical compounds called bases. A pair of bases forms each rung. Most genes consist of several thousand base pairs. The order of the bases, or the base sequence, provides the information necessary for a cell to make a specific protein. The form and function of a cell depend on the protein it produces. Thus, the base sequences of an organism's DNA make the organism different from all other living things.
Britannica Elementary
### Teachers' Resources: Learning Materials

Take advantage of Britannica's study guides, interactive lessons, online activities, printable worksheets, and other exercises that help students excel. You can find materials for all levels of language arts, mathematics, science, and social studies.

<table>
<thead>
<tr>
<th>Language Arts</th>
<th>Grades K-5</th>
<th>Grades 6-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td></td>
<td>American Literature</td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td>English Literature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Literary Genres</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Writing</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Numbers and Operations</td>
<td>Algebra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Geometry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-Algebra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Statistics</td>
</tr>
<tr>
<td>Science</td>
<td>Earth and Space</td>
<td>Biology</td>
</tr>
<tr>
<td></td>
<td>Life Sciences</td>
<td>Chemistry</td>
</tr>
<tr>
<td></td>
<td>Physical Sciences</td>
<td>Earth and Space</td>
</tr>
</tbody>
</table>
# Munching Veggies

**Grade:** K  
**Subject:** SCIENCE

**Content Standard:** DE.7  
Diversity and Continuity of Living Things: The natural world consists of a diversity of organisms that transmit their characteristics to subsequent generations. Students will study how living things reproduce, develop, and transmit traits, and how theories of evolution explain the diversity of species found on Earth. Students will also study how knowledge of genetics, reproduction, and development can be applied to improve agriculture and human health.

**Student Performance:**  
7.4 Diversity: Students should know that many different kinds of plants and animals live throughout the world and can be classified into groups based upon appearance and behavior.

---

**Grade:** 1  
**Subject:** SCIENCE

**Content Standard:** DE.7  
Diversity and Continuity of Living Things: The natural world consists of a diversity of organisms that transmit their characteristics to subsequent generations. Students will study how living things reproduce, develop, and transmit traits, and how theories of evolution explain the diversity of species found on Earth. Students will also study how knowledge of genetics, reproduction, and development can be applied to improve agriculture and human health.

**Student Performance:**  
7.4 Diversity: Students should know that many different kinds of plants and animals live throughout the world and can be classified into groups based upon appearance and behavior.

---

**Grade:** 2  
**Subject:** SCIENCE

**Content Standard:** DE.7  
Diversity and Continuity of Living Things: The natural world consists of a diversity of organisms that transmit their characteristics to subsequent generations. Students will study how living things reproduce, develop, and transmit traits, and how theories of evolution explain the diversity of species found on Earth. Students will also study how knowledge of genetics, reproduction, and development can be applied to improve agriculture and human health.

**Student Performance:**  
7.4 Diversity: Students should know that many different kinds of plants and animals live throughout the world and can be classified into groups based upon appearance and behavior.
SIRS Discoverer

SIRS Discoverer on the Web

Advanced Search / Search Tips

- Subject Headings
- Keyword/Natural Language

Sort by: relevance, date

Discoverer's Top Pick
"Labor Day Parade, Main Street,"

The Very First Labor Day

Database Features
- Pathfinders
- Activities
- Biographies
- Fiction
- Country Facts
- Photo Essays
- Pictures
- Maps of the World
- Educators' Resources
- Dictionary / Thesaurus

Tutorial | Help | How to Cite | Workbooks | Tips | Bookmark

Educator's Resources | Privacy | Accessibility | License | Contact

Copyright © 2006 ProQuest Information and Learning Company. All rights reserved.
SIRS Curriculum Framework

State of Delaware Science Curriculum Framework

- Grades 6-8
  - Standard One - Nature and Application of Science & Technology
  - Standard Two - Materials and Their Properties
  - Standard Three - Energy and Its Effects
  - Standard Four - Earth in Space
  - Standard Five - Earth's Dynamic Systems
  - Standard Six - Life Processes
  - Standard Seven - Diversity and Continuity of Living Things
    - Heredity
    - Reproduction and Development
      - 1. In asexual reproduction, a new organism grows from a single cell or a cluster of cells provided by the parent and results in offspring genetically identical to the parent.
      - 2. In sexual reproduction, gametes (egg and sperm), which are produced in specialized structures of the parents, fuse during fertilization to form an organism. Since each gamete contributes a set of chromosomes, the offspring have traits of both parents.
      - 3. After the egg is fertilized, it undergoes an orderly series of changes involving cell division and differentiation as a new organism is formed. Each of the new cells in the developing organism receives an exact copy of the genetic information contained in the fertilized egg.
  - Evolution
  - Diversity
  - Health and Technology Applications
    - 1. Selective breeding is used to produce new varieties of cultivated
State of Delaware Science Curriculum Framework
Grades 6-8
Standard Seven - Diversity and Continuity of Living Things
    Health and Technology Applications
    1. Selective breeding is used to produce new varieties of cultivated plants and
domesticated animals with enhanced traits.
    Use a variety of resources to develop a report on selective breeding. Select
a cultivated plant (e.g., Super Sweet Corn, Sugar Baby Watermelon) or
domesticated animal (e.g., Overstuffer Roaster, Low Fat Hogs) and trace its
history of development and the traits of the plant or animal that were
enhanced by selective breeding.

Birds
Mammals
SIRS “Birds” Search

-> Avian Flu
Superfood or double trouble?

Title: Superfood or double trouble?

Source: Scholastic Choices; Feb2002, Vol. 17 Issue 8, p15, 3p, 1 diagram, 3c

Document Type: Article

Subject Terms: GENETIC engineering
SCIENTISTS -- United States
GENETICALLY modified foods

Geographic Terms: UNITED States

Abstract: Reports the prevalence of genetically modified foods in the U.S. Use of gene splicing technique in transplanting genes from an organism to another. Effort of the researchers to create cooking oils with less saturated fats and high in vitamin E; Benefit of the technique in feeding the hungry through creating seeds yielding more food.

Lexile: 1040

Full Text Word Count: 1166

ISSN: 0889-475X

Accession Number: 6047414

Persistent link to this record: http://search.ebscohost.com/login.aspx?direct=true&db=prh&AN=6047414&site=ehost-live

Database: Primary Search
SUPERFOOD OR DOUBLE TROUBLE?

Section: Nutrition/Food Safety

Genetically modified foods cook up a sizzling debate by Nancy Fitzgerald & Nicole Dyer

Stroll down a supermarket aisle and pick up any of your favorite munchies — corn chips, soda, ice cream. Sounds good. But how would you feel if you knew these foods contained microscopic bits of fish, or even bacteria? Hard to believe?

Today, nearly 70 percent of processed foods sold in the United States contain ingredients that have been injected with foreign genes, hereditary information in cells that control an organism's growth. The lab technique, gene splicing (see diagram on page 17) lets scientists transplant genes from almost any organism into another. These types of creations are called genetically modified organisms (GMOs). GMOs are in everything from corn flakes to dog chow.

Genetic engineering shows remarkable real-life potential: germ-proof corn or cancer-fighting tomatoes, for example. But genetically modified foods have also ignited a firestorm of protest. Critics warn of unforeseen side effects: allergic reactions in people, environmental damage, and poisoned wildlife. Only about a third of Americans believe that GMOs are safe to eat, according to a recent ABC News survey.

Do we know enough about genetic engineering to experiment with the world's food supply? Read the pros and cons fueling the GM-food debate — then make up your own mind.

**PROS**

* GMOs help fight disease. Work is under way to create foods with "built-in" medicines that thwart disease. For instance, scientists at the Boyce Thompson Institute at Cornell University in Ithaca, New York, isolated genes from the hepatitis B virus, infectious particle that causes deadly liver disease. Then they spliced the virus genes into a banana's DNA to create an edible vaccine, a medicine used to trigger the body's
Student Opportunities at the University of Delaware
Last Words . . .

• Major improvements are needed in our approach to the teaching of science . . . at the college and university level as well as at the pre-college level, and we should not leave it to any separate group to lead the way toward improved learning and understanding.  --Moore, 2006

• Agricultural experts indicated that youth in agriculture was a significant issue, . . . a positive sign for the agricultural education community since it indicates that there is a need for more youth to pursue involvement in agriculture. The fact that agricultural experts see this . . . need indicates that there is a high need for what agriculture education does.  --Stewart, et al, 2004, p. 63.


**Post Script**

*Measuring up 2006: the state report card on higher education. Delaware.*

Despite improvement, Delaware lags much of the nation in preparing students to succeed in college. Delaware receives a C in preparation this year.

<table>
<thead>
<tr>
<th><strong>PREPARATION</strong></th>
<th><strong>DELAWARE</strong></th>
<th>Top States 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIGH SCHOOL COMPLETION (2006)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18- to 24-year-olds with a high school credential</td>
<td>87%</td>
<td>83%↑</td>
</tr>
<tr>
<td><strong>H-12 COURSE TAKING (1998)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On the 12th-graders taking at least one advanced math course</td>
<td>20%</td>
<td>39%↑</td>
</tr>
<tr>
<td>On the 12th-graders taking at least one advanced science course</td>
<td>18%</td>
<td>35%↑</td>
</tr>
<tr>
<td>On grade students taking algebra</td>
<td>n/a</td>
<td>73%↑</td>
</tr>
<tr>
<td>12th graders taking at least one ap-level math course</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>H-12 STUDENT ACHIEVEMENT (1998)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On the students scoring at or above “proficient” on the national assessment exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In math</td>
<td>15%</td>
<td>30%</td>
</tr>
<tr>
<td>In reading</td>
<td>26%</td>
<td>36%</td>
</tr>
<tr>
<td>In science</td>
<td>21%</td>
<td>30%</td>
</tr>
</tbody>
</table>