

LEARN NC, New Internet Site, Makes Learning, Teaching Better In Tar Heel Classrooms

CHAPEL HILL — Tar Heel public school teachers and students are clicking their way into a new one-

stop Internet resource that is bringing a high-tech edge to classrooms statewide.

The Learners' and Educators' Assistance and Resource Network of North Carolina (LEARN) helps teachers better incorporate technology into classrooms. It includes high-quality lesson plans pegged to the N.C. Standard Course of Study, teacher forums, online libraries and carefully screened Internet links for teachers and students.

Teachers, curriculum or technology specialists in 100 of the state's 117 public school districts will be trained and using LEARN by the end of June. LEARN aims to improve every state public school district — benefiting 2,000 schools, 80,000 teachers and nearly 1.2 million students.

Offered for free, LEARN was designed at the University of North Carolina at Chapel Hill School of Education with input from the state's teachers and \$1.4 million in academic enhancement funds designated by Chancellor Michael Hooker from flexible state appropriations. The program received \$200,000 from Duke Energy Co. and \$100,000 from the N.C. Department of Public Instruction to spark even more submissions of lesson plans by teachers to the LEARN site.

"With LEARN North Carolina, we are using technology to help improve the education our children receive by giving every teacher in every classroom in North Carolina online access to quality educational and professional development information," Hooker said.

"Ultimately, this is all about students learning better so they can get better jobs so North Carolina will have a better economy and will be a better state to live in."

On April 20-21, Hooker kicked off statewide LEARN demonstrations at North Johnston Middle School in Micro and Pilot Elementary School in Greensboro. Future stops include Kitty Hawk Elementary School in Dare County in May and Lincoln Heights Elementary School in Charlotte in June.

Dr. Robert Beriam, project director and a former public school teacher, said LEARN is accessible with a standard phone line and Internet access from work or home. Users clicking to www.learnnc.org find resources such as:

- an electronic database of exemplary lesson plans indexed by grade, subject and the N.C. Standard Course of Study, set by the N.C. Department of Public Instruction and considered to be the

teacher's "bible." So far, teachers have submitted more than 600 lesson plans to LEARN's database. Each plan is reviewed by an expert panel to control quality.

- a multimedia resource library containing images, text, sound and video to allow classes to take virtual field trips. Next fall plans call for science teachers studying the cosmos to position UNC-CH's Morehead Observatory telescope at UNC-CH via remote control. Students can tour Ackland Art Museum or tap the treasures of the N.C. Collection in Chapel Hill without leaving their classrooms.

- a Web link library providing access to hundreds of other useful World Wide Web sites. About 320 million Web sites exist; LEARN offers a one-stop location so teachers can use the Internet without doing their own tedious, time-consuming searches. LEARN has about 200 links, many of which are specific to North Carolina.

- professional development programs for teachers, who can seek more training online at their convenience without being dependent upon teacher workdays or classroom substitutes.

In Johnston County, Emmie Fitzgerald, a 27-year teaching veteran at North Johnston Middle School, used LEARN to change her approach to a lesson on central Europe. Before LEARN, she identified textbooks, visited the li-

brary for reference books and checked with music and art teachers as well as the media coordinator for help in gathering materials. All that took days and filled a table and cart.

Using LEARN, technology specialist Jeff Ertzberger helped Fitzgerald work with her sixth graders in a computer lab. The information on artists and musicians from central Europe LEARN connected them with sites on Mozart, for example.

"We were able to use LEARN to give us a jump start as to where to go, give us some ideas of what we needed to be looking for," Ertzberger said. "It really helped and saved a lot of time. We had some very good results."

In Greensboro, Shiman Khan and her second-graders from Pilot Elementary demonstrated a lesson on dinosaurs created using LEARN by the system's technology specialist. The lesson included word hunt, math exercises and Web link to an exhibit from the Children's Museum of the Piedmont.

Dr. Jim Causby, Johnston County superintendent, said both new veteran teachers are benefiting from LEARN. "First of all, educators will have the ability to talk with people in similar positions who have the same concerns."

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Scientists Use Beneficial Bacteria to Battle Germs on Fresh Produce

Even though Americans enjoy the world's safest food supply, highly publicized occurrences of bad hamburger, tainted raspberries and other contaminated foods have shaken public confidence in recent years.

Heat, chemical washes, refrigeration and preservatives are among the most common weapons used to combat the germs that cause these occurrences. But scientists at North Carolina State University are taking a different tack: They're fighting fire with fire, by using beneficial bacteria to stop the growth of harmful bacteria on fresh produce.

"We've found that by treating fresh produce with a small amount of lactic acid bacteria, we can prevent the growth of disease-causing bacteria such as listeria," says Dr. Fred Breidt, a senior researcher in biological and agricultural engineering and food science at NC State.

Lactic acid bacteria (LAB) are microscopic organisms found naturally on many foods, including yogurt and fermented vegetables. "They're nature's own preservatives," says Breidt. "They prevent the growth of other bacteria. And they don't affect food's taste, smell or texture."

LAB previously has been studied for use in improving the safety of meat and dairy products, but Breidt and his colleagues are among only a handful of researchers worldwide investigating LAB's use on fruit and vegetables.

Produce could be treated with LAB in a two-step process, he says. First, chemical treatments or heat would be used to reduce the bacterial population on the produce. Then, a small amount of LAB, cultured earlier from the same type of vegetable or vegetable product, would be reapplied.

"The idea is to reintroduce just enough LAB to beat any harmful bacteria that may develop later, without measurably shortening the vegetable's shelf life. Too much bacteria — even beneficial ones — will shorten shelf life."

It's a delicate balancing act, complicated by the fact that many different kinds of LAB may be present on vegetables, each with different antibacterial properties and strengths. Identifying which of these will be most effective in inhibiting the growth of harmful bacteria must likely be done on a specific vegetable, or in a specific food processing environment, is the focus of Breidt's current research.

Working with Dr. Henry Fleming, USDA research leader and professor of food science at NC State, and other researchers in the university's USDA-Agricultural Research Service Food Science Research Unit, Breidt is developing a computer-based mathematical model that weighs various factors to calculate the growth rates and interaction of good and bad bacteria.

"In essence, the model tells us what's going on between the microorganisms: how they battle and inhibit each other, and whether they also inhibit themselves," he says. The model also reveals which external factors — such as environmental pH or proteolytic acids — play a significant role in bacterial growth. Based on all this data, researchers will be able to choose rationally which LAB is best suited for inhibiting bacteria in a given environment.

In contrast to Breidt's proposed LAB treatment, most food-safety treatments now used on fresh or minimally processed produce rely on refrigeration and washing — procedures which have been shown to be largely ineffective at reducing bacterial populations.

Breidt and his colleagues also are investigating the use of DNA forensics to evaluate LAB's efficacy as a biocontrol.

Funding for his research comes from a two-year, \$86,000 grant from the USDA's National Research Initiative Competitive Grants Program.

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- 2 pints (4 cups) assorted fresh berries (strawberries, hulled and sliced; blueberries and raspberries)

• Place sour cream in a large bowl; with wire whisk gradually stir in milk until smooth. Continue stirring, gradually adding pudding and lemon peel, until well mixed and thickened (1 to 2 minutes).

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