

# SCHOOLED IN PLANTS, FISH, LIFE

Students learn about hydroponics and aquaculture—and prepare for the day when they step into the adult world of jobs and money



When school's in session, Liberty students check greenhouse plants daily for presence of disease and insect pests.

In a Tennessee classroom, Liberty Technology High School students incorporate hydroponics and aquaculture with the study of business and marketing. Along the way, they also learn about the real world of work and making a living.

“Students come in motivated to learn,” said school principal Johnny Reynolds. “Our students are being provided with opportunities to learn in environments that match their learning styles as well as their educational interests. The work here includes not only agriscience but business, biology, math, and others.”

In a first period class, Liberty students prepare a soilless mixture of ingredients that support the root system of new tomato plants. Later in the morning, a class arrives to feed several thousand koi in large tanks in the greenhouse at the Jackson, Tenn., school.

Meanwhile, a business and marketing class estimates how many heads of lettuce can be marketed to customers. Also, where can they find new customers? And how can supply and demand determine next season's produce?

A small group checks for insects and yellow leaves on summer annuals. As they work they talk among themselves. “This class is so different,” said a senior who plans to enter college on an agriculture scholarship. “Unlike other classes, talking is allowed—as long as we continue working.”

Program director Teresa Crouse said:



Student teacher Jake Mallard pulls a flat of flowers for a customer. Many businesses and churches purchase Christmas poinsettias from Liberty during the holidays. These funds help support the hydroponics program and provide money to pay expenses for the annual Future Farmers of America Convention.

“The program's been in effect for three years now. Liberty High, built three years ago, is one of our magnet high schools,” said Crouse, a faculty member at a community college prior to coming to Liberty. “With all the agriscience center has to offer, it's no wonder that approximately 100 students (10 percent of the student enrollment) choose to participate in this department. Only one or two students that I recall enrolled in the class and didn't like it.

One said he was allergic to plants. Another one didn't want to get her hands dirty. It's not for everyone.”

## Hydroponic Gardening and Koi

A timer controls the watering system in the greenhouses. An automatic shade cloth opens at 7 a.m. and closes at 7 p.m. Appropriate protective gear such as glasses, gloves, mask, respirator and disposal suit are donned before spraying or dispensing chemicals. During the summer when

# IN THE CLASSROOM



*Left, top to bottom:* Greenhouse plants including these hydroponic tomatoes are checked daily for insects and disease. Gloves protect delicate plants as well as personnel from allergens. Student Matt Tomlin checks the tomatoes gathered and placed stem side down to ripen. *Right:* Teresa Crouse, director of the agriscience program at Liberty, inspects a lettuce crop. Students in the school's culinary program serve vegetables grown in the greenhouse in the campus restaurant.



school is not in session, the greenhouses are solarized to kill bacteria. Only the aquaculture section is maintained year-round.

The habitat of the approximately 4,000 koi consists of two 18,000-gallon tanks which measure 8-feet wide by 6-feet deep. “Two of the fish developed parasites and had to be given antibiotics and hand-fed until they recovered,” said Crouse. Then there is the blind koi. The students named it Ray Charles. Even in this agriculture department, we can still teach compassion and that life is valuable even with handicaps. The big one is, of course, Samson. These two will never be sold. They belong here—this is home.”

Greenhouse technician Tammy Nanny said: “When possible, we buy from local vendors to save on shipping. Stuppy installed the greenhouses, fans, everything except tables. CropKing supplied the hydroponic equipment, timers, buckets and some other items.”

The community has helped supply the hydroponic department. Donations of materials and labor came from Carter’s Nursery, Randolph’s Greenhouses, Water Wonders and Premier Landscape. Liberty’s Partners in Education support the program through donations and encouragement.

## **A Self-Supporting Program**

“The program at Liberty is run like a business,” says Crouse. The plants and koi we sell goes to purchase material and supplies for the department. For the most part, we

are self-sufficient.”

Plus, the fund-raisers support students who attend the Future Farmers of America (FFA) Convention. Liberty students have received honors in floriculture and horticulture, soil testing, public speaking and leadership skills.

And how does Liberty market and sell plants and koi? The department set up a booth at the area’s Lawn and Garden Show at the fairgrounds. Several times during the year they advertise Saturday Sales for both fish and plants. “However, it’s 99% word of mouth,” said Crouse.

Students learn marketing skills by telling friends and neighbors about products offered for sale at the greenhouses. For example, Phillip Williams, a senior agricultural student, told his church about poinsettia plants offered at Christmas. Church members purchased 30 as tributes and used them to decorate the church for the holidays.

## **Turning a Dream into a Reality**

Roy Weaver, superintendent of the Jackson-Madison County School System, is an advocate of the agriscience program at Jackson High.

“As we made plans for a new technology magnet high school...there were those who thought that teaching agriculture was a thing of the past—something taught years ago. But I’m convinced that teaching students to grow plants is as relevant today as yesterday.

“Another feature of the department is supplying some of the vegetables and herbs





Left: Lettuce roots flourish in the hydroponic greenhouse. Tammy Nanny, greenhouse technician, checks for a healthy root system. Right: Freshman Matt Tomlin checks on the koi. The agriscience department purchased 4,000 koi as starters three years ago. Students sell the fish to water garden and pond suppliers in the area.



Carolyn R. Tomlin writes for numerous educational magazines from her home in Jackson, Tenn.

## Resources

CropKing

[www.cropking.com](http://www.cropking.com)

Stuppy Greenhouse Manufacturing

[www.stuppy.com](http://www.stuppy.com)

served in the Taste of Liberty, a culinary arts department. Students enrolled in this program prepare a Wednesday luncheon for visitors—often numbering 100 or more. Students gather a variety of lettuce, tomatoes and cucumbers, plus herbs—all grown in the greenhouse.”

Recently, while shopping for gardening supplies, Weaver noticed two Liberty students employed at the store. “The training they receive is enabling them to find work now, and preparing them for college. It’s a way out—it helps young people find themselves.

“Ms. Crouse and the staff have been instrumental in promoting this unique program—not only in our area but across

several states. It’s not unusual for school systems in our region to make a site visit, planning to incorporate hydroponics in their area. The agriscience department has far surpassed our expectations. “It’s one of our more successful programs in our school system.”

And what is next for Liberty? “I hope the department will continue to develop and possibly include some edible fish and even shrimp,” said Weaver. “This area of west Tennessee has numerous centers that market koi. We need to expand in the area of aquaculture.”

Then, I would like to work on a trial garden where other schools can visit and learn from our work. 🍃

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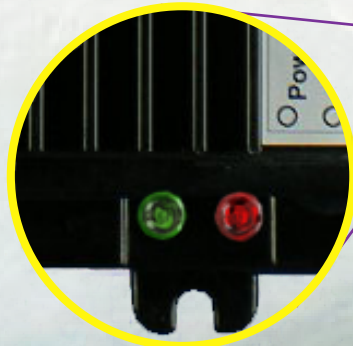
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