“By approaching the subject in a light and fun way, the game is successful at reaching not only kids with its interactive animation, but also adults by means of the nostalgic game show theme,” Zoo staff members, as well as middle school students, have reviewed the game and given it a “thumbs up,” Hezlep adds.

IMTC staff designed “The Mating Game” to run on a kiosk in the Zoo; that kiosk will be installed soon. Then to give the game a wider audience, IMTC staff created a Web version. The game is intended for students in fourth grade and up, and is available online at www.animalexplorers.org as the first installment of programming in the Caring for Gorillas initiative. The Web site is hosted by PeachStar, a division of Georgia Public Broadcasting.

In the introduction, Zoobanks explains to players that the methods for selecting individual gorillas to breed are sort of like computer dating for animals. The goal is to keep populations healthy by choosing the right individual gorillas for captive breeding. To do this, zoos need a good understanding of genetics, animal behavior and logistics, Zoobanks adds. To demonstrate, he invites players to participate in “The Mating Game.”

The game can be played by one to three people at the same computer workstation. With one player, the game offers a choice of three gorilla bachelors. The player answers for the other two. The gorilla bachelorette asks the bachelors randomly selected questions — via signs, not voice — to determine the right mate. “How old are your parents?” the bachelorette inquires in one game. “Where do you live?” and “What are you afraid of?” are other questions. Zoobanks asks the three bachelors to answer by choosing from the three possible answers provided. The host awards the bachelors five, 10 or 15 points based on the explanation that he gives after the answers have been entered. If the players tie, Zoobanks asks a tiebreaker question.

Before revealing the best bachelor, the game presents a brief animated “commercial” for bananas. Then Zoobanks is back to announce which “lucky bachelor” wins a date with the bachelorette. The winners receive an all-expense-paid trip to Zoo Atlanta’s Ford African Rain Forest, a naturalistic habitat for gorillas.

While IMTC has vast experience in digital media processing, the staff got its first taste of creating an interactive educational game when they

Computer Dating for Gorillas

Georgia Tech computer scientists develop “The Mating Game” for Zoo Atlanta.

An interactive Web-based game designed for Zoo Atlanta by Georgia Institute of Technology computer scientists is teaching Zoo visitors about the conservation of gorillas.

“The Mating Game” teaches players how zoos use science to select which individual gorillas to breed for the captive management of these animals. The concept, created by Zoo personnel, is based on 1970s game shows and is hosted by Bob Zoobanks.

Brian Jones and Tiffany O’Quinn in Georgia Tech’s Interactive Media Technology Center (IMTC) implemented the Zoo’s idea with their computer programming and graphics expertise.

“Educators agree that interactive learning like this is very valuable to students,” says Jones, the lead researcher.

Richard Hezlep, the video production manager in Zoo Atlanta’s Department of Conservation Technology, says, “Zoo staff members, as well as middle school students, have reviewed the game and given it a “thumbs up.” — Richard Hezlep
MedEPSS is being tested, enthusiasm for the system is high. Beyond the patient’s bedside, MedEPSS could provide technical support and an educated workforce for southwest Georgia chemical firm. Like its predecessor, MedEPSS offers a secure and mobile source of reference material, specialized training materials and ready access to vital records. For time-pressed nurses, ready access to patient history, drug information, medical references and automated diagnostic tools could be a lifesaver — literally, Welch said.

Training, including refresher training, also could be enhanced by the device, increasing throughput as nurses receive less classroom and more in-service training. In the military, where the MEPS5 is in use, classroom instruction is supplemented or even replaced. This on-demand training has already resulted in fewer errors and a marked improvement in performance results among maintenance workers, Welch said.

At Grady Health System in Atlanta, where MedEPSS is being tested, enthusiasm for the system is high. “The system will be useful for our nursing staff,” said Rosiland Harris, director, Patient Care Quality Management and Education at Grady. “It will give them better access to policies, procedures and performance improvement tools.” She noted the need for increased efficiency in large environments like Grady, the largest receiving hospital in the Southeast.

Welch and officials at Grady hope that MedEPSS ultimately will provide the healthcare industry with a new generation of performance support systems that are user-friendly, integrated and secure, Welch added.

— Patricia J. West

For more information, contact Gisele Welch, Electro-Optics, Environment and Materials Laboratory, Georgia Tech Research Institute, Atlanta, GA 30332-0834. (Telephone: 404-894-0155) (E-mail: gisele.welch@gtri.gatech.edu)

Patricia J. West is an Alabama-based freelance writer.

Right: A Web-based software program called the Medical Electronic Performance Support System (MedEPSS) acts as a job aid and reference tool for nurses, admissions personnel and other hospital workers. It offers access to patient history, drug information, medical references and automated diagnostic tools. "The Medical Electronic Performance Support System (MedEPSS) acts as a job aid and reference tool for nurses, admissions personnel and other hospital workers. It offers access to patient history, drug information, medical references and automated diagnostic tools. The tool is intended to improve the performance of nurses and other hospital personnel."

Electronic job aid to benefit patients, hospitals and healthcare workers.

Called the medical electronic performance support system (MedEPSS), the technology is based on the award-winning maintainer’s electronic performance support system (MEPS5) developed by Gisele Welch, director of GTRI’s Logistics and Maintenance Applied Research Center (LandMARC) and her colleagues. MEPS5 was designed for military maintenance workers who repair P-3 aircraft for the U.S. Navy.

“I have other applications in the healthcare industry. In a hospital’s business office, for example, the same technology could be used to speed admissions procedures and reduce billing and paperwork errors, a common problem in hospitals. Likewise, laboratories could use MedEPSS to input lab results as they become available and transmit them directly to physicians. The possibilities are enormous,” Welch explained.

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Improving Performance and Saving Lives

Facing high-pressure situations and the potential for fatigue and error, nurses and aircraft maintenance personnel have a lot in common.

To help the healthcare system address these problems, researchers at the Georgia Tech Research Institute (GTRI) have adapted an electronic job aid and reference tool they designed for aircraft maintenance workers.

The tool is intended to improve the performance of nurses and other hospital personnel.

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Expertise and Education

Gene Williams, president of Optima Chemical Group, remembers all too well his experience after graduating from college in 1977. “When I got out of school in the mid-70s, there was a big brain drain,” he says. “Students from Georgia with in-demand degrees like chemistry and engineering were finding employment outside the state.”

Optima Chemical, a manufacturer of specialty pharmaceutical chemicals in Douglas, Ga., has consulted with Georgia Tech researchers for many years. Also, the company employs a number of Georgia Tech graduates. Optima President Gene Williams, left, leads the company with Jagvir Singh, vice president of research and development at Optima.

Now, IMTC is proposing to the National Science Foundation and the National Endowment for the Humanities to develop a Web-based 3-D environment for use in a gallery setting.

IMTC built “The Mating Game” for the kiosk using Flash, a Java-based animation program, and then optimized its operation for better performance via the Internet. For users with dial-up access, a lite-audio version is available. A Pentium II 660 mHz processor is the minimum configuration required to run the game properly.

“The Mating Game” includes a congratulation screen, which is displayed when a lucky gorilla bachelor wins a date with the bachelorette gorilla.

“The Mating Game” includes a congratulation screen, which is displayed when a lucky gorilla bachelor wins a date with the bachelorette gorilla.
Now, the Douglas-based Optima provides opportunities for such students.

“It’s important for us to have qualified chemical and engineering candidates. Georgia Tech assists us by providing the engineers and chemists we need to run the plant,” Williams says. “I’m proud that Optima Chemical provides opportunities for students to stay in Georgia and contribute in their communities.”

But Georgia Tech’s involvement with Optima does not end with providing an educated workforce. In fact, Tech began consulting with the company before it was ever located in Douglas, and the university continues to provide advice today.

The Optima story began in 1986 when chemical company Aromatic Fragrances and Flavors (AFF) won a contract with the U.S. Department of Energy’s (DOE) Savannah River Site (SRS). The contract was for the manufacture of sodium tetraphenyl borate (STPB), a chemical that precipitates the separation of highly radioactive material from nuclear waste.

At SRS, the radioactive waste contains cesium-137, the most common radioactive form of cesium produced when uranium and plutonium absorb neutrons and undergo fission. Cesium-137 can move easily through the environment, and thus cleanup is difficult. But since workers use STPB to extract cesium-137 from nuclear waste, the remaining material is treated as low-level nuclear waste and encapsulated in glass.

To compete for the DOE contract, AFF hired Gene Ashby, a professor in Georgia Tech’s School of Chemistry and Biochemistry, and Daniel Tedder, a professor in the School of Chemical Engineering, to help develop a chemical manufacturing process for STPB.

Ashby and Tedder worked with several Georgia Tech graduate students — including Jagvir Singh, now vice president of research and development at Optima — to design the STPB manufacturing process based on several patented methods. Williams credits the project’s success to the Georgia Tech connections.

“If you go back and look at the STPB process, Ashby and Singh deserve a lot of the credit because they developed the chemistry for this. On the engineering side, there were some tremendous challenges to get the unit operations to perform this chemistry,” Williams says. “Tedder and his experience with liquid-to-liquid extraction provided the real breakthrough that made this a viable process.”

Once the chemistry had been developed, AFF worked to locate a suitable site for its future plant. Again, Georgia Tech assisted the company in several ways. Along with Tech’s Economic Development Institute (EDI), the chambers of commerce and development authorities in Douglas and Coffee counties worked to recruit AFF. Tech personnel served as a moderating force within the community, recalls Sherman Dudley, a retired EDI senior research associate.

“There was a public concern over what was perceived as potential environmental hazards,” he explains. “Georgia Tech and EDI shed a positive light on what Optima could bring to the community.”

The complex was eventually built in Douglas, and the company began manufacturing large quantities of STPB. But then SRS decided not to pursue STPB to isolate cesium-137, so AFF was left without a customer for its only product. In 1992, a new owner stepped in, and Optima Chemical — a manufacturer of specialty pharmaceutical chemicals — came into existence.

“For a while, Georgia Tech was just another supplier. But then we made a commitment to health and safety. As a result, Safety, Health, Achievement, and Recognition Program (SHARP) was launched,” Williams says. “They worked really hard and spent a lot of money in the past year to make this happen.”

In the past year, the company has done a lot of work to meet OSHA’s expectations, Chapman says. “We’ve always wanted to be as proactive as possible,” says Phoenix safety director Brandyn Chapman, explaining the company’s decision to seek SHARP status. Investing in this program made good business sense for the 4-year-old company.

The Occupational Safety and Health Administration (OSHA) program is designed to assist — and reward — Georgia’s small businesses in high-hazard industries with exemplary safety records. SHARP is only a few years old, but the idea is already paying off for some companies.

SHARP focuses on small businesses that have already demonstrated a commitment to health and safety. Safety audits conducted by GTRI personnel give these businesses the opportunity to strengthen their safety records and then become certified in SHARP. As a result, many companies have renewed their focus on safety. Certification means more than just a pat on the back: SHARP-certified businesses are exempt from regularly programmed safety programs for the period of certification.

The program is aimed at small- and medium-sized businesses — those with no more than 500 employees — that may not have the resources to implement a large-scale safety program.

Companies seeking SHARP certification must also meet other criteria for acceptance into the program. They must have: a safety management program in place; an incident rate below the national average; on-site safety audits by GTRI personnel; and removal of any hazards that auditors find. Also, companies must agree to inform GTRI if they make any major facility or operational changes that may introduce new hazards.

In Georgia, five companies are seeking SHARP status — including Atlanta-based Phoenix Stamping, a metal-stamping company that makes connectors for the material-handling business. With only 50 employees, a strong commitment to safety and a desire for improvement, Phoenix was an excellent match for the program, Fratto says.

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