

## P.L.U.N.G.E into School



P.L.U.N.G.E. (Practical Learning Utilizing New Gadgets in Education) is one part of a comprehensive research agenda at the K-12 developmental research school on the campus of Florida State University. The school's mission includes research, dissemination, and service, in addition to meeting the educational needs of its 1,128 students.

P.L.U.N.G.E. began as an initiative to integrate technology into the middle- and high-school curricula. The idea was to introduce middle-school students to the skills required to produce multimedia projects so they could "show what they know."<sup>1</sup>

In addition to senior projects, students were required to develop a portfolio of the works that best reflected what they learned. Traditional portfolios are increasingly cumbersome – difficult to manage and replicate. So the school developed electronic portfolio assessments.

When student work is saved on an electronic storage medium, portfolios are easier to manage. Objects can be added and deleted, stored and duplicated, very quickly and efficiently. When they apply for employment or admission to institutions of higher learning, students can copy their portfolios and send them as part of their application

### Organizer

**Karl Hook**

Florida State University School

packets. Unlike "paper and pencil" applications, electronic portfolios allow students to send recorded sounds, images, and movies that provide reviewers more insight on the applicant.

The key to P.L.U.N.G.E. is not the product, but the process. As they developed strategies for showing what they know, students became more familiar with the technology. More importantly, they increased their school-to-work skills: planning, problem solving, flexible thinking, working independently and collaboratively, and critical thinking.

In order for the P.L.U.N.G.E. concept to be fully realized, technology can not be isolated. Computers and other electronic tools cannot be limited to special elective courses or used solely for

### Panelists

**Debi Barrett-Hayes**

**David Godwin**

**Marleni Young**

Florida State University School

remediation, enhancement, or as a reward for those who finish first. Technology must be integrated into the curriculum, not to replace, but enhance, the activities taking place in the classroom.

P.L.U.N.G.E. is based on the premise that:

- Learning should be for a purpose (practical). What is learned should be connected to a real-world situation.
- Students should be encouraged to explore and try new ideas, and to take risks and challenge themselves. Through disequilibrium, learning is achieved.
- \* The learner should use the technology. When they are immersed in the tech-



nology, students are better able to identify its strengths and weaknesses.

- Educational institutions should be ahead of the private sector in applying state-of-the-art technology. In order to facilitate this, students should be placed in externships that introduce them to the latest techniques.
- Technology should not divert the learner from the basics.
- Learning should take place in the context of an educational environment that is innovative, substantial, and supportive.

#### History

During the summer of 1994, P.L.U.N.G.E. was initiated to field test techniques for implementing electronic portfolio assessments. Twenty-eight students worked in teams of four to develop multimedia projects focusing on social issues pertinent to them (censorship, teenage pregnancy, teen suicide, etc.).

In the 1994-95 academic year, all eighth grade students at the Florida State University School were enrolled in a course that combined art with computer technology. The purpose of the course was to teach the students how to use the technology so that they could "show what they know" in their science classes and later use their skills in their high school classes as the school embarked on alternative assessment projects.

The multimedia class was such a success that the students began requesting it at the high school level. Since the additional course offerings did not fit the schedule, the classes were scheduled for the summers.

Through the P.L.U.N.G.E. project, the Florida State University School has

increased its use of multimedia as a tool. The students have produced several multimedia products for local and state non-profit agencies and have produced public service announcements for the local cable network.

middle-school curriculum materials on magnetism. The students assisted in production of the graphics for the publication and produced "Magnets, Medicine, and Me," the first of an eventual series of videos on magnetism



Most recently, the P.L.U.N.G.E. team has been collaborating with the National High Magnetic Field Laboratory (Magnet Lab) on a number of projects, including STAR TREE and MagLab: Alpha.

During the summer of 1996, the P.L.U.N.G.E. students worked with the Department of Education's STAR TREE (Science Teacher And Researchers Translating Research Experiences into Educational Experiences) at the Magnet Lab. The purpose of this project was to produce

called the "Many Adventures of Lloyd."

In 1997, the P.L.U.N.G.E. Team collaborated with the Magnet Lab on MagLab: Alpha. P.L.U.N.G.E. students produced all of the graphics for the "Alpha Guide" and did all of the scripting, programming, and design for the Alpha Interface, a multimedia CD-ROM. MagLab: Alpha is being distributed statewide through the Florida Department of Education's Area Centers for Educational Excellence (ACEE) and will soon be distributed nationally.

## P.L.U.N.G.E into School

The P.L.U.N.G.E. project has also led to student opportunities in higher education and career preparation. Many P.L.U.N.G.E. participants have been placed immediately in highly skilled positions, even as they continue their education, fulfilling our "school-to-work" initiative.

Although the P.L.U.N.G.E. team has worked on numerous projects, this is our most recent accomplishment, and it has the greatest potential for impacting education, so it has become the focus of our attention. In addition, we are hoping P.L.U.N.G.E. will become the basis for future endeavors. For those reasons, we have adopted a pseudonym: The Alpha Team.

### Alpha Team member David

Through P.L.U.N.G.E. and working on MagLab: Alpha, I have been able to learn many new things and use some of the latest graphics and computer technology. Working on MagLab: Alpha helped to further my knowledge and interest in high-end computer graphics technology. The kinds of resources available to me through the P.L.U.N.G.E. team would not be accessible through a normal classroom setting.

I was given a lot of responsibility for completing my part of MagLab: Alpha. This gave me a feeling of working on a job, rather than a school project. In this project, like on a job, the better work produced, the more responsibility given.

Through working with P.L.U.N.G.E., I have learned a lot about science, computers, and graphic design, which I might not otherwise learn or even experience.

### Alpha Team member Marleni

I feel that P.L.U.N.G.E. was a very essential part of my learning experience. Due to the high standards demonstrated by the P.L.U.N.G.E. Team, we were able to collaborate with the National High Magnetic Field Laboratory. This gave us the opportunity to acquire new skills and knowledge while working on a practical project. The end result would be a real product to be used in schools by middle school students.

This "work-like" opportunity allowed us to work in a lab with a wide range of technology. It was a lot easier to learn to work and run new programs that required a lot of RAM at the Magnet Lab. If we had been in a regular technology lab, the computers would not have had enough memory to run half the programs we needed. With so many more options at our fingertips, it was easy to have an excellent product. The group could focus on what we wanted the product to do instead of dealing with hardware limitations.



Also, there wasn't just one teacher or administrator we could get help from. When we needed information, there were multiple scientists and other people who could give us a first-hand look at whatever it was we needed. We also learned to use the expertise of our peers. We found that many times the students could find the solution to the problem and help the adults.

It was exciting to know that the work that we were doing as part of a class assignment would be turned into a tool for middle school students to learn from. We all wanted to make sure the work we did was as perfect as possible, because our names would be on the final product. We all made sure to put the extra effort to ensure the highest quality product possible.

The entire experience involved a creative process. We would work on a portion of the project or try a new idea and then demonstrate it and discuss it with the team. We were always stopping to review, reflect and edit, or start over, if necessary. We critiqued each other's work and sought out other options. Also, our work depended on real-world feasibilities, such as what an average school could spend to acquire this product.

After we finished working for class credit, some of us were asked to return to work for pay. This has thus led to some of us getting jobs after the summer was over.

I feel that my influence in the group was just as important as anyone else. We were all part of the team, and we each contributed something unique to

the project. That has also carried over into the new school year, and we still consider each other members of the team.

I was responsible for the Translator, a section that listed terms, and gave their definition. In some cases, we also included diagrams or videos to better explain the terms. I was then responsible for the layout of the exploration section, which gave a supplementary view to that of the Alpha Guidebook. I was also responsible for completing the section on the Alpha Team Members. In this section, I used the animal characters and explained their relationship to magnets and magnetic fields. Also, I included graphics that led to a look at the adults and students involved in creating the Alpha Interface. The last section that I was responsible for was the Careers section, which described various jobs at the National High Magnetic Field Laboratory. For this section, I had to collect sound clips, pictures, and quotes from the lab's employees.

These many different experiences helped me to see the many different windows of opportunity that can be opened with the right guidance. There were many other students who passed up the chance to be part of the project in order to stay at home all summer, or to take a class that they thought would be "easier." But for me, the fact that this was something that I had to work hard at and make sacrifices for made it more worthwhile. The fact that it was a bunch of teenagers and teachers coming together with some of the most talented people in the world was just amazing! It made education a life experience instead of a class credit.

I would take this course any day! I had some of the most rewarding experiences and wouldn't trade them for anything!



- 1 Dana, T., Lorschbach, A., Hook, K., & Briscoe, C. (1991). Students showing what they know: A look at alternative assessments. In Kulm, G. & Malcom, S. (Eds), *Science Assessment in the Service of Reform*. Washington, DC: AAAS.