

Glynn Integration of Systems Thinking (GIST)

*This article is a compilation of descriptions of the project sent by the members of **GIST** and their administrative supervisor and advocate- Pam Lewis, Assistant Superintendent for Instruction*

GIST began in the Spring of 1992. The project participants included the Glynn County School System, Glynn County, Georgia; Georgia-Pacific, Inc.(GP), a pulp and paper company; and High Performance Systems, Inc.(HPS), a computer software company. The goals of the project are to:

- Build Systems Thinking skills among 1st through 12th graders
- Increase the capability for using these skills to accelerate learning
- Increase the capability of Georgia Pacific employees to use Systems Thinking skills in their jobs
- Create a capability within the community for applying Systems Thinking to the issues affecting the Glynn County populace.

Currently, the Glynn County School System consists of two high schools, three middle schools, and eight elementary schools that service a total of approximately 10,500 students. It has a diverse population, ranging from those who live on resort islands to those who live in government projects. The outlying areas of the county are rural. With this kind of diversity, the teachers are faced with a challenging array of students every single day.

Glynn County Schools is an enthusiastic school system that strives to improve the quality of the education for students. The school system's efforts to decrease student under-achievement have been extensive and the teachers have been exposed to many different programs and projects. From the outset, there has been concern that **GIST** not become just one more in a series of projects. The goal of **GIST** is to involve the entire district in Systems Thinking and remain viable for many years.

In the first year, **GIST** involved ten teachers from the three middle schools. Teachers had ten weeks of release time during the 1992-93 school year to create learning environments in the classroom. These core teachers created three interdisciplinary, systems thinking-based learning environments (LEs) for use in middle schools. During the 1993-94 school year, the teachers will begin using these learning environments in the classroom.

During the summer of 1992 workshops were put on by High Performance Systems for interested teachers in the Glynn County system. The ten core teachers then took another, more intensive, workshop. Another innovative feature of the project was the inclusion of a process steward from outside the district . She was familiar with the software, although she fielded any questions to the experts at HPS, who were involved with the project throughout the year. The Steward's job was to make the project work, to help the teachers focus, to give them support, and to help resolve personnel issues which arose during the year. The teachers felt she was a big help and a major reason why the project was successful during the first, learning phase, year.

Goals and Purpose

The goal of the project is to help students recognize their individual skills and abilities so that they may reach their full potential as responsible citizens, problem solvers, and clear communicators.

Traditionally education has concentrated on building students' skills and abilities in individual subjects. This has enhanced their knowledge in specific subject areas and has allowed some students to excel in specific disciplines. However, we also need to give students the tools necessary to visualize, understand, and communicate how these subjects relate to each other in order for them to become effective problem solvers.

Many students lack motivation for learning academic skills. If they can extend the effort to master any skill they want to learn (sports and hobbies), then educators must create an environment which gives them the same reason to learn an academic skill they think is too difficult or has little meaning for them.

Systems Thinking and STELLA II give us a way to achieve both of these purposes. Systems Thinking gives students the language to communicate the relationships between subjects. STELLA II is the tool which allows teachers to create environments which give students a reason to learn skills in which they might previously have lacked an interest.

Systems Thinking helps students address the increasingly interdependent issues with which people must cope in their personal lives, their jobs, and in their communities. The technology, STELLA II, allows for the compression of space and times so that people can "experience" the full consequences of their decisions over distance and time.

Learning Environment Development

The project plan includes developing a critical mass of materials to be used for instruction. These Learning Environments include a combination of models and curricula.

1992-1993- The following Learning Environments were created. They will be field tested during the 1993-1994 school year. After refinement they will be ready for use in Glynn County and marketing elsewhere.

- **Eat or Die Island-** A four-week interdisciplinary unit.
- **Predator and Prey -**A one-week interdisciplinary unit.
- **Financial Dreams or Budget Nightmares -** A four-week interdisciplinary unit.
- **A Matter of Balance -** A four-week interdisciplinary unit.
- **Slope -** A one-day Algebra lesson.
- **Fever -** A one-day Science lesson.,
- **Body temperature Maintenance -** A one-day Science lesson.
- **High Wire Balance Act -** A one-day Science lesson.
- **Immigration-** A one-week Social Studies unit.
- **Ozone Layer -** A one-day Science model.
- **Wiz Kid Mission -** A Math problem-solving game.
- **Perimeter, Area and Volume -** A one-day Math unit.
- **Part to whole -** A one-day Social Studies lesson.
- **Landfill-** A one-week Science and Social Studies unit.

1993-1994 -Plan for creating Learning Environments. The program emphasis for this year is to field test existing LEs and develop and teach courses for other teachers in the county. Because of these demands on time and limited financial support, no major interdisciplinary LEs will be created this year. The concentration will be on creating single discipline LEs. Listed below are the LE titles and planned release time for teachers for development and writing.

- **Health and Weakness -** two weeks, two teachers.
- **Salt Marsh** (its use and protection) - two weeks, two teachers.
- **Communication -** two weeks, two teachers.
- **Acceleration of Change** (revolution) - two weeks, two teachers.
- **Graphs and Relationships -** one week, two teachers.
- **Hurricane -** two weeks, two teachers.
- **Plot and Character Development -** two weeks, two teachers.

Staff Development

From the very beginning in this project there has been an acknowledgment that it is critical to train teachers and give them the resources, including time, for them to learn. To the extent that it has been

possible, **GIST** has accomplished just that. Three teachers from **GIST** attended the Networking Conference this summer in Tucson and later in the summer three went to an HPS workshop at HPS headquarters in New Hampshire. One of the major goals for this year at **GIST** is the dissemination of the knowledge the core group gained last year out to the other staff in the Glynn County Schools.

They are offering three courses for the staff this year:

- **Introduction to Systems Thinking**- 5 sessions. In this introductory course, participants will investigate the principles and tools of systems thinking including a definition of a system, how feedback loops work in systems, how our mental models of systems influence our behavior, and how systems can be manipulated. Participants will also develop maps of systems, an introductory activity for the modeling skills to be taught in the second systems thinking course.
- **Simulating Systems** - 5 sessions. Participants will be introduced to stocks, flows, converters and connectors and how they are used to represent elements and relationships of systems. The modeling will create simulations of systems and provide a tool for challenging our mental models of these systems.
- **Developing Systems Curricula**-A summer course- Participants will develop their own curriculum materials using the principles and tools of systems thinking that they have learned in the previous courses. They may work individually or within teams to develop material. These materials may be content specific or interdisciplinary and may cover whatever topics the participants wish.

As the project enters its second year, there is excitement and enthusiasm for what has gone on in the past year and what is to come. As with any project of this sort, funding has been and will be an issue. Georgia Pacific has provided most of the funding for the first two years of the project. The goal is for **GIST** to become self-supporting as the program expands. As the program reaches beyond the middle schools, the need to broaden the base of financial support becomes crucial for the survival of the project.

GIST has many elements to help it meet its goal of being a project which makes a difference in Glynn County Schools over a multi-year period. It has strong administrative support, a core of committed and enthusiastic teachers, and support from main industry in the community which has a vested interest in high-quality education.

*The CLE has more detailed descriptions of the three interdisciplinary units created by **GIST**. For more information about the project itself, contact Pam Lewis, Assistant Superintendent of Instruction, Instructional Services, Glynn County Schools, 2400 Reynolds Street, Brunswick, GA 31520, (912) 267-4220.*