



By Tom Gattis, IDSA

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The Large Design Project

BEYOND TRADITIONAL EDUCATION

Large-scale student projects present opportunities to closely simulate experiences graduates will encounter in the workplace, forcing students to fully understand the ramifications of their decisions. The requirement to build a full-scale, fully functional prototype forces issues of design development to be proven and to be taken beyond the theoretical. This is the experience that 23 students from the Savannah College of Art and Design (SCAD) gained while developing and building a 21.5-foot concept boat.



The completed prototype cruising on the intracoastal waterway near Savannah.

Teamwork, a valuable workplace skill in any industry, was a critical component of the project. Student teams were organized to look at various aspects of the consumer boating market: user needs (a key component of the finished design), safety, regulations, competitors, technology, materials and manufacturing, and so forth. Having students research as a large team established precedence for later team-building experiences.

During the design stage, students developed nearly 1,700 sketches and more than 75 study models. These were refined into three full-scale corrugated mock-ups and three 1/8-scale visual models. At this stage, the students had strong ownership of a particular design. An outside team of independent reviewers evaluated progress and helped the students make sound decisions. In the end, the team rallied together to develop a final solution—a compromise of three very different concepts, each of which had particular strengths and weaknesses.

The experience gave students valuable practice working with others, defending sound design concepts and ultimately agreeing on a final solution. Overcoming difficulties led to a team that was committed, that knew how to deal with individual personalities, and that appreciated what it took to work together. Students also learned the value of compromise and consensus.

Throughout the design process, students took advantage of other core disciplines. Human factors were a major consideration in determining layout of the space and seating height. Students investigated materials and manufacturing methods and researched industry trends. Ideas needed to be generated quickly, and model-building and presentation skills were strengthened as students endeavored to support concepts. **The designs not only had to look good but had to function well, forcing**

students to base decisions not only on aesthetics but also on manufacturability.

Students also had to resolve problems throughout fabrication. How would parts be fabricated? What were the structural considerations? Would the boat float? Would it perform as expected? The students could not simply make a pretty model that looked as though it would go 50 miles per hour on the water; the prototype actually had to perform at that level! This essentially raised the bar, making students better attuned to the realities of the real world.

As often is the case with large-scale projects, some work fell outside the realm of the industrial designer and presented an opportunity for cross-disciplinary collaboration. Graphic designers were instrumental in providing collateral material, corporate identity and overall graphic identity. The industrial design students thus became the client, approving the graphic design team's work. The two groups worked extremely well together. The enthusiasm and industry experience of the graphic design professor contributed to a fruitful relationship between the groups.

Corporate Partners

Because large-scale projects are difficult to organize and to fund, corporate participation is essential. Corporations should be viewed as more than a source for monetary contributions, however; they can provide support in technical areas, design guidance, marketing feedback and assistance with other business areas.

The best learning experiences result when corporate participants become true partners. Partners lean over the student's shoulder and provide tips on how to make the process easier. They guide the students toward sound decisions.

One such partner was StingRay Boats of Hartsville, SC. StingRay not only allowed students access to their large gantry CNC mill to cut plugs for molds, the company also provided expertise and professional guidance. Several other companies jumped on board, providing an investment in materials: 3-Tex provided fiberglass, Volvo Penta an engine and drive system. The only compensation these partners received was publicity; their logo was included on printed materials, at tradeshow booths and on the boat. They benefited from national and international exposure through magazines and newspapers, trade publications, industry shows and national design events.

A local partner, InterMarine Savannah, a designer and manufacturer of 100-plus-foot mega yachts, provided many resources, including a crash course in naval architecture and fabrication support. Experts from InterMarine worked hand-in-hand with students to teach them fiberglass and advanced fabrication techniques. The manufacturers did not do the work for the students; rather, they guided them on proper techniques by demonstrating the techniques and letting them make mistakes in the spirit of learning. As a bonus, students gained an understanding that such craftsmanship takes hard work, dedication and on-the-fly problem solving and grew in their respect for the people engaged in such work. By the end of the project, the students referred to them as "professors of fabrication."

Even with corporate support, providing such a large-scale educational experience is expensive. The large budget needed support of SCAD's administration and board of trustees. **Convincing the administration to fully commit to the project required us to present the project in terms they could understand: donations,**



Clockwise starting upper left: One of three corrugated concepts created by the student designers during the design phase. n The student design team is all smiles at the completion of the design phase. n The finished Family Sport Boat Prototype created by SCAD students. n Students preparing center console unit for painting.

recruitment and retention. We were able to show clear benefits in these areas. For example, recruitment into SCAD's industrial design department was growing at an annual rate of better than 20 percent as a direct result of a previous large-scale project, the Exo Spyder Concept Car. After completion of the boat project, the department has close to 200 students, up from a high of 70 three years earlier. The department's retention rate of 90 percent is the highest in the college.

Converting cost in dollars of a project to numbers that college programs use for measuring success is key to obtaining the needed funds. In future proposals, we intend to present the benefits associated with the opportunity to promote the college to a large industry and public audience, to present the projects to potential students and to promote past projects as a way to solicit philanthropic opportunities. Getting the administration to understand that the project is an investment in the future of the institution is imperative to successful funding.

Publicity is another aspect that is difficult to measure. The SCAD boat project has been published in over 40 magazines including *Power* and *Motoryachting*, *Boating Magazine* and *The New York Times*. Exposure in such periodicals enhances the overall positive image of the college and the department. The publicity helps to enlighten and recruit students for all majors and adds to efforts to generate various forms of philanthropic participation. Recognizing that seeing the work of students helps encourage potential donors to support the college, the SCAD development office regularly visits the department and arranges for a ride in the boat for potential donors. It is virtually impossible to create this same exposure and potential with smaller studio projects such as PDAs or toasters.

Large-scale projects are an opportunity for promotion of the school, department and sponsors. They are also an opportunity to promote individual students and their collective achievement. The result is that students become excellent ambassadors for the college. The media, trade show participants and potential students all love to hear the story from the student's point of view. The media would ask the professor about details, but wanted to talk to students to hear about their experience. Students began to give eloquent interviews about how much they learned and how much more they understood about working in the real world.

Bon Voyage!

The proudest moment of the project came when the boat took its maiden voyage. After months of lost sleep and long hours, students were eager to see her in the water but also were concerned about how she would do. Would she really float and perform as expected? Did they address all those small details that could mean the difference between sinking and success?

The boat performed beautifully, and the smiles on the faces of the students complete the story. Not only do these students have a fantastic project in their portfolios—one that presented enormous challenges and great accomplishments—they also have the satisfaction of a job well done and the memories of a lifetime. ●

If you would like additional information on the project, please visit www.scad.edu/mdp. If you would like information on partnering with the SCAD industrial design program, please contact Tom Gattis at 912.525.6432 or tgattis@scad.edu.