

Abstract. Each fall, the Design Technologies Student Exhibit presents the talents and accomplishments of the students in the program in a Rotunda exhibit. Indirectly, the exhibit also represents the teaching, learning, and assessment perspectives of the faculty in the discipline. Michael Stern, Department Head, Design Technologies, discusses some of these perspectives in an interview with Jay Howard, Viewpoints editor.

Pulling up a Chair to Discuss Creative Problem Solving

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Architecture, Design and Construction

J.H. The Design Technologies Student Exhibit has become a key campus event each fall. Why is it so important to have students produce items which are shown in the exhibit?

M.S. The main reason for the show is for our students to receive recognition for their achievements and to increase awareness of our programs in the larger college community. This year's show focused on first year students and "process." They displayed shadow boxes, CAD and manual drawings, written statements, and chairs.

J.H. What about the chair?

M.S. The cardboard chair brings together multiple issues that apply to nearly all forms of architecture: it has to stand up, holding the weight of an adult, it has a function, sitting comfortably, and the design has to have a visual coherence. The chair incorporates three core architectural principles "firmness, commodity and delight." which go back to ancient Greece and are recorded in the oldest surviving treatise on architecture (Roman, first century AD).

The students worked on their design idea from sketches through a series of increasingly detailed prototypes. Along the way, they learned the properties of a material, in this case corrugated cardboard, and how to join materials. They built their chair within constraints and evaluated the quality of materials. The end result is important: creating a design that has a consistency and rigor, but the process is

even more important, developing an idea, testing it, learning from failures, refining the design. It is also important to see a reinterpretation of a familiar object. You cannot achieve the same design in cardboard that you would find in a typical wood, metal, or plastic chair because of the nature of materials. It also pushes students to think in three dimensions and to learn by doing. We learn through the making.

I enjoy the project in that I am surprised every year by what students can do with four sheets of corrugated cardboard, sometimes doing what I previously thought would be "impossible." For example, they have produced folding chairs, woven chairs, lounge chairs. Students understand that you could take a sheet of cardboard and, using a bit of glue or tape, make it into a box that can be sat upon. But how can they take that much further to create an object that provides comfort, craft and even the sometimes controversial goal, beauty?

J.H. An exhibit is a type of informal assessment since the public viewers evaluate what they see even though they may not share these evaluations with the students. Assessment is always an issue in education. How do you assess the products which the DT students produce?

M.S. What we look for is the richness and thoroughness of the design exploration. How much does the student investigate the design and try alternatives? How much does he or she address and challenge preconceptions? ("A chair must have four legs") How do they refine their designs to create a coherent

three dimensional design for a particular human use? How do they use analytic tools to understand the problem, such as the possibilities (and constraints) of materials, the necessary functions of the object, and provide a solution? How is this brought together in a way that is convincing and complete? Does the design show an appreciation of a bold concept as well as the details of making it work?

In order to respond to these assessment issues, I use a rubric to grade some student work. I was introduced to rubrics at a Professional Development activity presented by faculty from the English Department. Also, I use the “desk crit,” which is a long-standing component of architectural education. In a “desk crit,” the student and faculty together look at the student’s work. The faculty member questions, probes, and is immediately and directly engaged with the student.

J.H. Are students able to incorporate and apply these assessment standards/protocols?

M.S. We make the process and outcomes as explicit as possible. I always introduce a project with both the immediate objectives—design a space that fosters conversation or contemplation—along with the larger thematic ideas, such as those involving the individual or society. Students are aware of technical issues and understanding how elements are joined. In one course, the activities are planned so that the first is more pragmatic, the next requires

more abstract conceptualization, and the last combines both the pragmatic and abstract.

We also want the students see each other as resources, both as a source for diverse opinions and for specialized expertise. Those enrolled in our program have a real advantage in having fellow students with advanced experience in carpentry or general contracting. We respect the background, knowledge, and experience the students bring with them.

I have noticed that a strength of our program is that the students look to each other for support and information. I have heard them ask each other, “How do you do that?” They give feedback and share information and build an environment for mutual support.

J.H. You mentioned that the DT courses teach “creative problem-solving.” What is that?

M.S. I look at all of our projects as creative problem solving, although with a three dimensional and visual emphasis. This approach can be applied to solutions outside of architecture, such as business, when you need to bring multiple skills and viewpoints to solving a problem involving critical thinking, analysis, and synthesis. You cannot typically apply a formula and then get a proscribed outcome in design, perhaps in contrast with engineering, which involves a different kind of creativity. You may wind up with a solution that is very different than the initial assumption. Allowing for that kind flexibility is valuable in many contexts