

Industrial Design

Your brain on paper

By Joanne M. Anderson / jmawriter.com

They sketch. They think outside the box. They get bogged down in the store analyzing package designs. They study human behavior, mathematics of design, cultural traditions, materials and processes, scientific reasoning and computer-aided design.

They are industrial designers, and because of them, we have flip top shampoo bottles, ergonomic power tool handles, brand logos and streamlined manufacturing processes.

"We major in coloring and drawing with markers," quips Howard Chen, one of thousands of industrial designers who make our world functional and aesthetic. Part artist, designer, engineer and psychologist, industrial designers are usurping geeks, nerds and ad agency types for center stage.

An *EE Times* online article headline reads: "It's design, not technology – a warmer, fuzzier engineering realm is emerging, one that puts a priority on humanity rather than geek trip."

It's been said that anything not made by nature is designed. "It can be designed well or poorly by people educated or not, but someone decides how it will look, feel and function," says Ed Dorsa, associate professor of industrial design at Virginia Tech and vice president of education for the Industrial Design Society of America. "I can choose from 2,000 phones. Why do I pick what I pick?"

Industrial designers are concerned with human factors as they relate to man-made products. Your shoes, furniture, car, backpack, cooking utensils, computer mouse, food containers, weed trimmer and everything else are designed in a certain way for a particular use. It's a company's desire to influence you to purchase its product.

"Competition for customer mindshare and loyalty are at all-time highs," says Darrin Caddes, vice president for corporate design at Plantronics, Inc., in Santa Cruz, Calif. "From consumer electronics to automobiles, the market is constantly flooded with new products from around the world that provide yet one more option for your customers to choose from. One misstep and customers will abandon you for a product that looks similar, has more features and costs half the price online."

The role of industrial design, also called product design, is critical in the global marketplace. The well-educated, creative designer looks at all facets of product development, including manufacturing processes, material costs, safety, form and maintenance.

"People have the traditional notion of car designers when they think of industrial design," adds Robert Dunay, professor and chair for the industrial design department in the College of Architecture at Virginia Tech. "But it's

everything you touch, all products. Industrial design embraces strategic thinking, trend identification and branding, as well as shape and style design.”

“The best design firms look at collaborative design in three areas: technology (electrical, mechanical, computer science, for example), business (sales) and human values (what people want),” Dorsa explains.

Chen, content technology and design specialist at LevelVision in Roanoke, wanted to major in design but not necessarily building design. “My brother was an architecture student, and he pointed me to industrial design. I love to draw and think of crazy ideas, so it was the perfect major for me,” he explains.

He was surprised it involved so much graphic design and is challenged learning about business, working with software and technology and designing a variety of creative projects. “This is my dream job,” Chen says, a 2007 Virginia Tech graduate.

While no one personality type slips conveniently into the industrial design profile, Dunay says “give me an intelligent person with a passion for design.”

Virginia Tech senior Laurel Thomas came to Blacksburg without a major in mind. “I chose Blacksburg for its small town atmosphere and enrolled in university studies. I stumbled across industrial design in the course catalog, and the hands-on curriculum appealed to me,” she explains.

The daughter of artists – her father a blacksmith, her mother a potter in small town West Virginia – Thomas doesn’t go too many places without her sketchpad. “It’s your brain on paper,” she says of the industrial designer’s relentless drawing of ideas, concepts and product visualizations.

In fact, artistic rendering is the main communications tool. Thomas explains “foam can give us detail on smaller objects. We use cardboard mock-ups for understanding volume, and we have a wood and metal shop [at Virginia Tech].”

Student teams are given product development assignments, often with challenging constraints. One group created a portable research laboratory, which needed to be transported from the U.S. to Tanzania via four shipping modes. It had to be self-assembled with simple instructions and no tools, and it needed to endure a severe climate and keep out wild animals.

“I’m involved in a project to develop a portable immunization kit for disaster areas,” Thomas explains. “It must be compact and self-contained, have cold chain storage and disposal capabilities and, ideally, be user-friendly so recipients of a vaccine are not intimidated by the equipment.”

Creativity is paramount in design, and so is a good understanding of mathematics and technology. It’s an unusual blend of right- and left-brain thinking.

Chad Durham, owner of Durham Imaging & Design in Roanoke, was one course short of a math degree at Radford University when someone suggested he take a design class elective.

“The counselors tried to push me in the other direction saying I couldn’t use both sides of my brain,” he says.

With lots of math and computer science coursework already completed, Durham got his bachelor's degree in art. "I can focus on making 3-D visualizations look nice, and I can troubleshoot and be the nuts and bolts guy, too." While not an industrial designer, Durham has that creative bent that's always looking for ideas that may spark something innovative for a customer.

"It's kind of a curse," he says. "Something as simple as running to the store for a pack of razors can turn into a two-hour event, studying packages, lettering, logos and color."

"Industrial design has matured and come into its own over the past decade," states Mitzi Vernon, associate professor in Virginia Tech's College of Architecture. "Not a lot of students out of high school know about it, so we get migration from both engineering and architecture." She says the Virginia Tech program is developing a medical specialization and already has a strong studio curriculum.

Thomas enjoys studio, the industrial design lab where students have their own desk and space. "We get constant design feedback from classmates and professors. We learn early to ask ourselves questions, be self-critical, self-motivated and understand what's important to a successful project."

Industrial design graduates are finding more opportunities at higher salaries than some other majors. They are instrumental in making our lives easier, not to mention increasing sales by merely changing the design of a product or package.

Take Listerine, the mouthwash known for its disagreeable taste. The same product in a newly re-sized bottle featuring a hand grip and wider mouth boosted sales by double digits. Easier to hold, more enticing to drink from the bottle, higher consumption, need to buy more often, same odd taste.

Apple reigns with sex appeal design. Its products are flashy, colorful and well-shaped. Gatorade sales rose when a new bottle came out from which one could suck or chug the drink.

If your product or service needs a shot in the arm, consider hiring one of these innovative, trend-watchers who majored in coloring and drawing with markers and can put their brain on paper. Ms. Thomas will be looking for a job next spring.

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