DESIGN ASSISTANCE FOR ENTREPRENEURS

Percy Hooper
North Carolina State University
College of Design

Where does the design school meet the community? One place is in an academic initiative called Design Assistance for Entrepreneurs. This initiative invites local inventors, not only to explore a design studio, but to become the hub of an energetic design team focused on bringing the entrepreneurs' dream a bit closer to reality.

Hearing the Needs of the Community

It is not uncommon that a design school might receive requests from an eager inventor to have students work on the inventor's project for him. Many are the instructors who have entertained the idea to their regret. This may be because of a difficult working relationship with the inventor, project creep wherein the original goals of the project continually change according to the evolving ideas of the inventor, or conflicts with the inventor over the ownership of Intellectual Property. Nevertheless, one professor in a land grant university found himself fielding telephone calls from local inventors at a rate of two to three per semester. The requests were similar. "Can your students help me with my invention?"

Attempts to Help

When the inventors were advised of the university's policy, that work done by university students belongs to the university, there was an often audible sigh of discouragement at the other end of the telephone line. Few inventors would be willing to lose ownership of their ideas on a technicality. But, in the spirit of consolation, the professor would often invite the visitor into his office for an hour or two to listen to the concept, offer suggestions or provide guidance on what to do next with the prototype.

Meeting with Administrators

When the professor confessed his clandestine experience to a member of the Chancellor's Extension and Engagement Office, the officer immediately recognized an opportunity to serve the community more fully. After all, it was a "land grant institution" founded to serve the needs of the local and state community. When reminded of the university's policy on ownership of Intellectual Property, the administrator picked up the telephone and smiled, "All we need to do is get the right people sitting at the same table." Within a few days the professor found himself at a conference table with representatives of the Office of Legal Affairs, the Office of Technical Transfer, the Office of Sponsored Programs and the Chancellors Representative. Once convinced that there was an unrecognized community need that could be satisfied on the university campus, that administration team's focus turned to how to structure the service legally.

New Policy Terms

Within six months the university announced the initiation of an official procedure designed to govern collaborative work between students and non-university affiliated agents. In this document, the university stated among other things that the main concern about IP ownership could be resolved if the student voluntarily agreed to share any studio work with the sponsor. The sponsor, on the other hand, must agree to financially support the student research and agree that the student may use the collaborative work as part of his or her portfolio.

Enter the Entrepreneurs

From that time forward, inventors who called the College of Design asking for help with their creations would be directed to the Industrial Design program's "Design Assistance for Entrepreneurs". Some

individuals called by telephone while others enquired by email. Some just appeared at the front door. But, regardless of how the inventor found or approached the program, it was essential that the inventor's intended product be evaluated first. Why? First of all, the project should fit the academic needs of the students and closely parallel the Industrial Design curriculum. Secondly, the stage of development needed to be assessed. If the subject matter was promising, but had already been developed to an advanced stage, this would not have allowed the students to practice what they came to the College of Design to learn.

Evaluation

For this reason and more, a face-to-face interview was essential. The director, upon receiving a request for design assistance, sent a questionnaire to the inventor for two reasons. First, it helped the inventor see in advance what the program required in terms of prior thought and planning. Secondly, it served as a record of exactly what the sponsor requested, so as to avoid the previously mentioned "project creep". The questionnaire included the following questions:

1 What is the name of your product?
2 What is the purpose of your product?
3 How might it function?
4 What features might it have?
5 Who would use it under what circumstances?
6 Why is it needed?
7 Why are existing products inadequate to serve the need you have observed?
8 What drawbacks must yet be resolved for your product?
9 Where do you think your product might be sold?
10 How much do you think the product should cost?
11 Do you know of any similar products currently on the market?
12 What other applications could your product have?
13 Do you know of any US Patent files for similar products? If so, please list their patent file numbers.
14 Do you know of any books, magazine articles, periodicals or websites that might have useful information on this topic? If so, please list them.
15 Do you know of any experts (local or remote) who might be consulted about technical aspects of the product? If so, please list them.
16 Do you have any lawyers, manufacturers, distributors, or industry reps with whom you are already working on this product?
17 Have you made any models or prototypes of your product that you can bring to our studio?
18 Will you be able to visit our studio a minimum of three times during the project to consult with the students?
19 If you have had experience as an inventor/ entrepreneur, would you be willing to make a presentation to our students about your work in that realm?
20 Would you be willing to be videotaped interacting with our students during the project, and offer a recorded statement of your reactions at the end of the project?

The inventor was asked to bring the finished questionnaire to the interview with the program director. There the two would discuss the product, the design process, the suitability of the project to the curriculum and the expectations of each party. While the expectations of the sponsor were mostly crafted by the university, what the sponsor might expect of the students would be determined by the faculty according to what he thought necessary to bring the project to fruition. Also, the director and sponsor would agree upon a list of deliverables in advance. These might include a PowerPoint presentation of the design process, a printed documentation of the process, as well as, digital and physical models of the final solution.

Semester Schedule
The sponsored project is typically handled in the last eight weeks of the semester. This permits the instructor to work closely with the students for the first half of the semester, making sure they are practiced in the skills necessary to assist the entrepreneur. Keeping the project to eight weeks in length helps keep the students from getting tired out or bored with the project. It also permits time for an additional well-crafted project to be completed as part of the students' portfolio.

Results
While many of the Design Assistance for Entrepreneurs projects cannot be divulged due to concerns over public disclosure, some can since they are now duly patented.
Recently, a retiree approached the College to seek assistance in designing and building an apparatus to assist individuals who might fall, but have difficulty getting back to their feet. Within eight weeks, the team of five sophomore ID students had researched, designed and constructed three working prototypes of distinct configurations.
Similarly, a team of third year students helped a geriatric specialist devise a product for use in nursing homes. The radio frequency security bracelet is designed to inform assisted care facility staff when a patient approaches an exterior door. The staff can intervene to keep the patient from wandering away and getting lost. (The most immediate solution of keeping the doors locked was vetoed by the fire marshal.)

Other past projects include:

- A novel way for advertising in a public space using lighted ceiling fans
- A means of protecting long-distance hikers from the elements
- A means of prolonging the shelf life of fruit by using ozone gas
- A means of keeping young children quietly engaged while dining in a restaurant

Outcomes for Students/Inventors
What do the students receive from the interaction? They get to work closely with true entrepreneurs. Many consider the spirit of entrepreneurship as something to be "contracted" through close contact rather than to be learned. The students receive the experience of working with a real client. They learn the practical application of the design process they have learned in school. They have a worthwhile portfolio piece with which to demonstrate collaboration and seek employment. Also, they have their sponsor to thank for paying for their building materials and design supplies.
What do the inventors receive from the collaboration? They receive the opportunity to partner with others who understand their passion and complement the passion with design skills. They receive documentation they can take to potential buyers and manufacturers. They receive a product that has all the hallmarks of design quality.

The Measure of Success
Has the program been successful? In six years the Design Assistance for Entrepreneurs program has hosted collaborations leading to some 30 new products. If success is measured in expanding interest, then the program is indeed a success. Once the word became public that the College of Design was welcoming local inventors, the ID Department started getting calls from the Agricultural Extension Office branches in other parts of the state. Soon the calls started coming in from adjoining states. But, the winner of the long distance award goes to a sponsor who collaborated with the students by conference call from 2,300 miles away. For future growth, the Design Assistance for Entrepreneurs program has arranged to involve both engineering and business management programs to further assist local entrepreneurs as they start their own product-based companies.