DESIGN STUDENTS AS ENTREPRENEURS: MAXIMIZING THE USE OF ONLINE RESOURCES

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Keywords: Entrepreneurship, Online Resources, Crowdsourcing, Crowdfunding.

Introduction

Industrial Design education is going through a rapid evolution with more Design schools incorporating Entrepreneurship elements into their curricula. More students are making use of internet resources and tools such as crowdfunding, crowdsourcing, 3D prototyping/printing services, and other web-based tools to expose and to validate their ideas. Several newer academic papers and publications discuss this current trend in Industrial Design schools (ID-Schools) in general but very few provide examples on how they implemented the new tools or what type of online tool should be used at what stage in the student project.

Most of these internet tools and resources created an environment that allows self learning, immediate production, accelerated collaboration and fast networking. The rise of websites such as Wix, Shapeways, Alibaba and Kickstarter are examples of the current trend. These websites provide the tools and resources that empower their users to create their own business – encouraging them to become entrepreneurs.

Technical design skills that took months or even years to learn are now more accesible and more intuitive for designers and non-designers as well. What were once considered optional skills for industrial designers such as web design or video production and editing, are now becoming almost mandatory. Designer-entrepreneurs need to master these skills and tools quickly if they want to get feedback about their ideas from "the internet crowd" or simply to raise funds online to finance their own enterprises.

ID-Schools need to adapt quickly to the new reality, embracing internet resouces and online tools as core skills that every designer-entrepreneur must have. The implementation method for teaching these core skills may vary among ID-Schools. This paper will discuss one case in particular where entrepreneurial student projects were developed during a 10-week period using online resources.

ID-School Meets B-School

What is the difference between an ID-School and a B-School? In a general sense, ID-School emphasizes traditional Industrial Design education and B-School emphasizes Business and Management. The newer trend in Industrial Design education is the implementation of entrepreneurship elements in the curricula. Although, B-Schools implemented entrepreneurship in their curricula some time ago, their newer trend is to incorporate collaborations with Design and Branding teams.

Several B-Schools require their graduating students to develop a business plan and launch their own business before graduation. The business plan has to be scaled appropriately given the student's limited resources and academic year time constraints. Traditionally, ID-Schools do not require students to develop a business plan, only a design plan or portfolio.

The rise of internet resources and tools allow the implemention of entrepreneurship elements in the Industrial Design curriculum. This is where ID-School meets B-School. Design plans and Business plans could be developed concurrently complementing each other. Developing time management skills becomes critical. New internet resources allow Industrial Design students to use time more efficiently by reducing the time it takes to deliver certain products (such as websites or prototypes) increasing the amount of time they have to develop other important areas of their plans.

The Challenge: "You Only Have 10 Weeks!"

Choosing the right entrepreneurial project to develop within a specific academic timeframe can be challenging. Some schools follow a 15-week "semester" system and others follow a 10-week "quarter" system. Developing and implementing a business plan and a design plan simoultaneously requires good time management skills and a project scope that is realistic for the given timeframe.

Starting a new business while studying at school can be a significant burden on students, regardless of their financial resources. Finding the right balance between learning core design skills and preparing to launch a new business is critical. For this reason, instructors may choose to lead students through the development of a business plan and design plan to the point when the student can start looking for investors immediately after graduation. When school demands are over, the recent "graduate-entrepreneur" can choose to dedicate more time to his or her business.

Having a business plan that is ready for implementation immediately after graduation is ideal. The recent industrial design graduate is fresh out of school and may be in a position to explore and experiment with new career opportunities (Elwell, 2013), one of them as "career entrepreneur". By using the appropriate internet resources, the cost of failure is now significantly lower for beginner entrepreneurs.

For the sake of developing an entrepreneurial student project that could be adapted to either a quarter or semester system, the author has chosen to outline a project with a timeline of 10 weeks. The project was developed during the "senior year" (usually 4th year of studies in most American ID-Schools).

With the objective of covering and testing the initial steps of each student's business plan in the timeframe, the instructor has placed several guidelines on the scope of possible project ideas. These guidelines help to ensure that most students can develop ideas and deliver the results in a timely manner. Student results are evaluated based on the potential to officially open a business after graduation.

Project Focus / Scope

To encourage entrepreneurship in the classroom, students were asked to work simultaneously on both a design plan and a business plan. The design plan covered the following steps: Market Research, Brainstorming, User Scenarios, 2D and 3D Concept Development, Prototyping and Testing, Website Design and Packaging Design. The business plan covered the following steps: Marketing Plan and Strategy, Branding, Manufacturing, Investor Search, and Patent Application Research.

Each of these steps could take a significant amount of time to create and develop. For this reason students were encouraged to make extensive use of internet resources for their design and business plans. Some of the websites mentioned as possible resources were: Alibaba, Wix, Weeblee, Shapeways, and Kickstarter, among others. Due to time and budget constraints, students were given seven project guidelines.

Project Guidelines / Restrictions

1. Product Categories:
   Accessories for bicycles, scooters, skateboards, strollers (protectors, tools, hooks)
   Accessories for smart phones, tablets and laptops (tripod mounts, cases)
   Accessories for backpacking-camping (hand tools, containers, cases)
   Accessories for sport or leisure activities (hand tools, containers, cases, etc)
   Accessories for cars (bumper add-ons, license plate accesories, cases, etc)

2. Product cannot have electronics involved, cannot be a powered device (unless electronic parts are "off the shelf"). Product has to be small enough to fit into a medium-sized Fedex box. It must have less than 3 parts total (plastic parts or other materials are acceptable). Soft-goods sewn parts are counted differently depending on materials.

3. Product must have a target user/audience (could be a niche market).

4. Funding: $2000 limit for self funding and $10000 limit for Internet funding (crowdfunding)

5. Extensive use of Internet resources (website design or online store design, package design, prototyping and production, crowdsourcing, crowdfunding).

6. Create a 3-minute "elevator pitch" or "kickstarter style video" to be uploaded to crowdfunding websites or for private investors.

7. Create a "brand" including a name for their product and company.

Project Timeline:

Weeks 1-2: Brainstorm Ideas, Market Research and Branding.

Weeks 3-4: Develop a Business Plan, Search for Potential Suppliers.

Weeks 5-7: Website Design, Prototype Production, Promotion and Distribution.

Weeks 8-10: "Elevator Pitch" Video, Patent Research and Intelectual Property

Weeks 1-2: Brainstorm Ideas, Market Research and Branding

The first two weeks can put significant pressure on the students because they have to look for a partner and both have to brainstorm and do market research before they present and justify their business idea-proposals. Each week, they have to present to the class, advisors and industry guests; and, be open to feedback to either revise or change their ideas. Business ideas can be presented using a combination of market research, drawings and user scenarios. Their enthusiasm and passion about their business ideas is also evaluated. The business idea also includes the proposal of a brand name. Two weeks is appropriate for most groups. In our experience, some groups may struggle to find the "right idea" and their brianstroming and research may extend into the third week, which is considered acceptable. Not all groups move at the same pace.

Their market research can be based on primary (when they are the source of the information) or secondary research (when they research for data online). In the first case (primary research), the student group may already have an insight into the industry they want to target. They may have easy access to the target customers or they are the customers themselves. For example, students who are surfboard enthusiasts, already have practiced surfboarding, have experienced many of the surf products and have discussed surf products with fellow surfers.

In the second case (secondary research), the student groups may want to research online the different brands and product categories; thus, allowing them to understand their potential competition. In addition to this market research, they will also research potential suppliers to satisfy the requirements of the business plan. Students need to have an idea where their product will be manufactured or assembled. As future entrepreneurs, students need to explore their potential network of suppliers. This is where websites like Alibaba, Amazon and Design-2-Part websites are helpful resources.

Weeks 3-4: Develop a Business Plan, Search for Potential Suppliers

Business Plan

Once the market research and brainstorm phase has ended, then students are ready to work on a business plan. The business plan has to be simple and work concurrently with a design plan. First is the mission, the company's ultimate goal, the reason the business is being created. The mission has to be written using simple words that anyone can understand. All groups are required to explain and revise their mission statements multiple times.

After the mission is clear, then comes the implementation phase of 1 to 3 weeks each depending on objectives. Since the total time is 10 weeks there must be a clear strategy to achieve the proposed goal in each step of the process. Using online resources is part of the strategy.

Alibaba, Amazon, Design-2-Part

The rapid developmet of Internet resouces to connect designers, businesses and manufacturers are best exemplified by the rise of Alibaba.com, a chinese website based in Huangzhou, China. Alibaba.com combines elements of American websites such as Amazon and Ebay where businesses and sellers connect directly, but the real attraction is that companies and designers –-or in this case, students-- can use the website as a directory where they can connect, network, find specific suppliers and quickly get online quotes for a specific project. This represents a significant advantage especially for start-up companies or beginner entrepreneurs that have not established a network of suppliers. The Alibaba

website only represents the first step in the process of finding suppliers and cost-production estimation. Other steps would eventually include traveling to the Hong Kong and Shenzhen areas in China to visit the local Chinese supplier events or trade shows. Visiting American trade shows such as the Design-2-Part show also represents a significant opportunity to meet local suppliers, without the significant expense of traveling to China. Design students and graduates should carefully consider both options when writing a business plan.

Weeks 5-7: Website Design, Prototype Production, Promotion and Distribution

Wix, Weeble, Shapeways, Amazon Marketplace

Most start-up companies do not have the resources to invest in a brick-and-mortar retail store due to the associated start-up costs. The natural first step for a beginner entrepreneur would be to create a virtual store online, or to associate with an existing one. Since designers prefer to have control over the whole design process, one would think that –-as part of the design skills training and development at school-- they would have to design and create their own website. Building a webiste from scratch can require learning desktop software tools such as Adobe Photoshop, Illustrator, InDesign, Flash, or Dreamweaver. Learning all of these software packages alone could take more than 10 weeks.

Since the student project only allows 10 weeks to have a business and design plan put together and ready to kickstart by graduation, it is recommended that they do not spend more than 2 weeks building an online retail store or catalog. Industrial Design students need to take advantage of online tools to build their websites faster and more efficiently. This is where websites such as Wix, Weeble become relevant. They let you build a website through the use of templates and/or online drag-and-drop tools. Their business model is more of the "freemium" type, meaning, you can create a basic website and they will host it for "free", but more advanced options such as animation and e-commerce features would cost a "premium" fee, therefore "freemium."

The disadvantage of using host websites such us Wix or Weeble is that if somebody wants to "google search" your brand name or product, they may not be able to find it unless they include the words "Weeble" or "Wix" in the search query, and, it still could be difficult if the newly created brand name happens to be a common name or words. Design students may want to include letters and numbers in their new brand name to make it more unique and easy to search online (Ball 2012). For this reason, it is preferable to register a unique Domain Name through websites such as GoDaddy and others. Since GoDaddy is an internet domain registrar and web hosting company, they offer different packages at different prices, some of them reasonable for students and recent graduates.

Finally you need to attract potential buyers to the online store or website. This is difficult since most design students do not have the financial resources to run a campaign through traditional media (e.g. commercials) or online ads (Google or Facebook). Typically, design students rely on their own network and word-of-mouth to spread their message to the public. They have to be very creative since the budget for initial promotion is insignificant. As an alternative they can promote and sell their new brand / product through an established online store such as Amazon Marketplace.

Figure 1. Examples of websites designed by students.

Guerilla Marketing and News Advertisement

Depending on the brand and the type of product created by the beginner entrepreneur, they may want to try Guerilla Marketing, a low-cost promotion by unconventional means, generally used in a localized fashion to draw attention to an idea, product or service. (For example, one student group designing a "special type of bag accesory" for cyclists could consider promoting their product directly at several cycling events throughout the country. They could literally walk through the event crowds and offer a "product trial").

In the online world Guerilla Marketing has expanded with new tactics such as Flash Mobs, Viral Videos and the Advert-News. These are all considered low-cost alternatives to campaining through traditional media and represent a more realistic strategy for a start-up business with a minimal budget. In the case of Advert-News, several online magazines and blogs are in constant need of more "news-articles" to atract traffic to their websites. These online magazines sometimes present a new brand or product disguised as news-article.

Prototyping and Production: Shapeways, SolidConcepts, Stratasys and Others

With the expansion of rapid prototyping tools and online services such as 3D printing, laser cutting and engraving, waterjet cutting and CNC machining, the boundaries between prototyping and final production are blurring, especially for small volume production (under 1000 copies in most cases) of simple plastic and metallic parts. Smaller volume production is typical for start-ups or internet businesses (Anderson, 2004). Depending on the number of units or copies, the first batch produced (typically under 1000 copies) may take a signficant percentage of the initial investment or "seed money" to kickstart the business. Students and beginner entrepreneurs should be mindful of the production costs at all times.

Online 3D printing service websites such as Shapeways, SolidConcepts, Stratasys and others, can provide price estimates for files uploaded online but due to the higher cost per unit, students and beginner entrepreneurs may want to consider a more "traditional" manufacturing process (such as low-cost injection molding, for example) for the final production of plastic parts. In this regard, contacting a local small injection molding supplier through an event such as the Design-2-Part show may represent a better alternative to online 3D printing services.

Weeks 8-10: "Elevator Pitch" Video, Patent Research and Intelectual Property

Funding and Investment:

Working full-time dedicated to his/her own enterprise immediately following graduation is the ultimate goal of the 10-week project. The recent graduate can concentrate on the last step of the initial plan: filing for a provisional patent and pursuing investors. In most cases, seed money is needed to kickstart the business. One of the guidelines required students to raise $10000 ($8000 coming from investors/crowdfunding and $2000 from self-funding). Sharing the risk of investing in a new enterprise can motivate a student to perform as an entrepreneur after graduation, because they have a significant equity stake.

In order to win investors other than friends and family members, the new entrepreneurs can prepare an "Elevator Pitch". This brief summary consists in a 2-to-3-minute video that presents the basic facts about the new business idea and its potential to generate benefits for both customers and investors.

ID-School Meets F-School (Film School)

The "Elevator Pitch" video has to be simple and compelling. No special filming skills or equipment are needed to shoot the video. A hi-end mobile phone with video capabilities and editing software or "apps" is sufficient. The goal of the elevator pitch video is to invite potential donors or investors. A simple script spoken by the new entrepreneur is all that is needed. If the entrepreneur is too shy to speak or even appear in front of the camera, then there are several alternatives to substitute his/her face or voice, such as 3D animation or stop-motion techniques. Once the video is finalized, it could then be uploaded to crowdfunding websites.

Figure 2. Examples of elevator pitch videos created by students

KickStarter and IndieGogo

Crowdfunding is the latest online resource available to new entrepreneurs that represents an excellent alternative comparing to "angel investors" and "venture capitalists". The cost of failure is significantly lower because the risk is spread across a larger number of "investors" or "donors" that may only interact with the entrepreneur through a crowdfunding website such as Kickstarter or IndiGogo. If the funding goal is reached then the seed money goes towards the manufacturing and delivery of the product. If the funding goal is not attained, then the pledged money is returned to the original "investors".

Patent Research and Intellectual Property

Filing for a patent in the U.S. can represent a significant expense for new entrepreneurs. The patent certificate is only valid in the country where it is registered. Protecting the intelectual property of a design

is important before the idea is presented to potential investors. New entrepreneurs may want to consider the option to file a provisional application for patent.

After the filing of the provisional application, the new entrepreneur has only 12 months before the pendency expires. During that time, he or she should look for investors to secure more funding for the project.

Conclusions

The implementation of a 10-week entrepreneurial project has been critical in the evolution of the Industral Design curriculum at California State University, Long Beach. The use of online resources and tools allow students to understand the basic initial steps involved before the launch of their own business.

Some of these initial steps may not be completely finished by the time they graduate due to complexities arising from the project or topic itself. For example, the design of their online store may be only a work in progress because the site has not been fully tested for e-commerce, a partially constructed website can, at least, provide them with a sense of what is needed to place their product in the market.

Finding the right business partner is critical for the success of a new enterprise. At the begining of the school project students were only allowed to partner with a classmate. By the end of the project students were encouraged to seek additional partners (outside their area of expertise). The difficulties and complexities of their own project made them realize the need to partner with someone who can complement their own skills.

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