Abstract

For many industrial designers the object continues to remain a central focus of their practice. In industrial design education it is important for students to learn about making beyond an abstract notion and beyond the construction of one-off prototypes to appreciate the complexity and challenges actually involved. It was the need to address this limitation in industrial design education that the id.shop emerged.

The id.shop was developed to expose students to the challenges involved in managing design, manufacture and sales of an object they designed.

The value of making is appreciated across society. Pedagogically it has long been valued as a vital part of education. The emergence of new digital technologies together with online retailing now present unlimited opportunities for designers to establish their own design based enterprises. The id.shop now in its fifteenth edition, is combining the small batch production focus with an experience in students’ managing their own designer maker enterprise.

Objects and Industrial Design

The objects that accompany us in our daily lives are commonly the fruit of industrial designers, who, working either as an employee, or as a client of businesses that manufacture objects, define how objects are made, how they work, who they’re for and what they look like. Industrial design is generally known as the ‘the professional service of creating and developing concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer. Industrial designers develop these concepts and specifications through collection, analysis and synthesis of data guided by the special requirements of the client or manufacturer. They are trained to prepare clear and concise recommendations through drawings, models and verbal descriptions’ (Cliver, 2010).

The profession of industrial design is comparably new, the term does not emerge until the 20th century however the practice can be traced back to the Industrial Revolution of the late 18th century. The Industrial Revolution generated numerous developments such as mechanisation, steam power and division of labour and the impact on society was substantial. These changes were also the catalyst behind the emergence of industrial design, and of the many protagonists during this period, Josiah Wedgwood and his earthenware company Wedgwood, made a number of important contributions to commerce, manufacturing and also to the field of industrial design. One such contribution emerged following his breaking down of the making of a piece of earthenware into different stages and that each stage was carried out by a single worker, previously a worker would engage with the entire making process for a single item. It became evident to Wedgwood that communicating to the various workmen the specific instructions as to what to make, was a new stage that became a distinct addition to the manufacturing process (Green, 2005). The positioning of workers to operate in this
newly identified space with a key role to define object related attributes is one of the key characteristics of the modern industrial designer.

As industry and manufacturing grew and new processes evolved so did the need for specifically trained workers. In response to this growth, the beginning of the 20th century saw numerous institutions offer training in the technical and artist trades, it is from these institutions that the foundations to the modern teaching of industrial design are formed.

Training to become an industrial designer is now gained through the study of a higher education qualification. Industrial design education has developed a curricula and scholarly profile that has resulted in the delivery of industrial design programs around the world. Most of these programs revolve around dismantling the process of design into smaller, easily managed segments, for example, ergonomics, technical communication, user studies etc. This approach has largely been successful and students make the transition from higher education to professional practice with relative ease. However, one part of the industrial design process that continues to elude higher education is the practical exposure to the challenges associated with the manufacture of final production ready designs. This part of the design process presents numerous hurdles none the least being cost, time and resources. This absence in higher education is the central theme of this paper.

Currently the actual making of objects is widely adopted in industrial design curricula because model-making and prototyping are an important reflection of what occurs in professional practice, it is also understood that there is vital learning that occurs by engaging with the making process (Loy & Canning, 2013)

The Value in Making

From the single idea inside a person’s mind to the economic health of a nation there is broad acceptance to the value associated with making. The value of making is understood in many ways such as; economic, political, therapeutic, social, personal, cultural, professional and historical. In developed economies around the world they see important and strategic value in having a healthy manufacturing sector. In less developed regions, small scale industries that craft exemplifies are seen as the answer to overcome the formidable barriers to large scale enterprise. Design can be defined as ‘making sense of things’ (Krippendorff, 1989) which supports the notion that for industrial design the thing or object remains a central focus.

The industrial design process employs making as a method to understand a diverse range of issues ranging from the understanding of how a material behaves, to the testing of a design hypothesis or to engaging with user trials, importantly, making is used as a means to uncover problems that otherwise would have gone unnoticed (Ilpo Koskinen, Zimmerman, Binder, Redstrom, & Wensveen, 2011) If making in higher education is restricted to model-making and prototyping of single examples, how then are the questions relating to the manufacture of multiple objects addressed? Design for manufacture is an existing area of study dedicated to how industry manufactures objects. However, in the context of higher education, design for manufacture learning remains abstract and conceptual, which prompts a modification to the original question - how could the tangible challenges of multiple object manufacture be addressed and experienced within higher education?

The following represents an attempt to address this question, it is not definitive but it is hoped that critical engagement with this topic may provide opportunities for continued discussion
and further development. A vehicle was needed to establish a project that could be repeated and tested over a period of time, not a one-off attempt but an ongoing project. The vehicle was a project called the id.shop and it was developed for design students from the School of Design, University of Technology Sydney (UTS), Australia. Two student groups are allowed to participant, the first are second and third year undergraduate design students and they will be referred to as novice design students. The second group are the more mature and experienced master of design students and they will be referred to as advanced design students. The project is divided into three stages; design, making and selling. The design stage involves engaging with the design process - research, ideation, embodiment and detailing of a proposed final design. The second stage of making moves beyond the conventional production of a representational model or working prototype to the manufacture of a number of exact replicas of the final proposed design. The third stage of selling, challenges students to package and market their design to a level that is convincing to consumers. The selling is conducted via the id.shop which is a symbolic shop front and gateway to the buying public. Be it on campus, in an art gallery or in large shopping centers, the id.shop allows students the opportunity to confront and test themselves against the challenge of dealings and interacting with potential consumers.

The Project

The goal for students to design, manufacture and sell an object of their creation within the context of a higher education project is an ambitious one. To ensure a reasonable possibility of completion the project is structured around a series of parameters. Theses parameters stipulate; object type, object size, object complexity, object shape, object material, production process and production quantity. It is a project requirement that students understood these parameters prior to engaging with the project.

Object Type Stipulating the type of object for the novice design students was an important parameter. It was seen as a threat to the project timeline to leave them this choice, as it is often a very time consuming process that of deciding what object to design. Informing the novice design students to design a fruit bowl or a flower vase allowed them to engage with the creative part of the design process immediately. Conversely the advanced design students were awarded more flexibility, they were asked to design a container, what type of container was entirely up to them.

Object Size Modern industrial design programs, like many resource dependent programs, operate under constant pressure regarding efficient use of these resources. Occupying large spaces for the development of large objects such as furniture would present a considerable challenge, let alone if a group of students were to engage in manufacturing ten of each of their designs. Furthermore, large objects become prohibitive in terms of materials, processing, storage and transport. Equally, objects that are too small face issues of maintaining precision and accuracy in the production process and being too fragile to handle, store and transport. The approximate size of a dinner plate and height of a wine bottle were seen to fall within an acceptable size range that could be managed by both the students and the institution.
Object Complexity Teaching in higher education occurs in blocks of time that range between block mode or intensives lasting days or weeks to regular classes held over of a teaching period, sometimes known as semesters or terms. It was decided that the project needed to be completed with a six month or half-year time frame, this would enable the project to be offered twice a year. With a clearly identified time-frame it was then possible to determine what level of complexity the objects could have. Objects with multiple components were considered unfeasible in terms of being able to complete the project within the given time-frame. Therefore, for the novice design student the object was restricted to a single part, and the advanced design student was allowed to design with multiple parts, but advised not to go beyond four or five.

Object Shape The simpler the shape of an object, the less chance for errors or defects to emerge and the quicker and easier it is to process the design. However, designers by their very nature, in particular student designers, are less interested in designing objects of simple geometry, therefore the challenge for the students, both novice and advanced was to design an object that was appealing and innovative but not time consuming, costly or difficult to make.

Object Material When deciding which material to use the following considerations was made. Firstly, is the cost of the material going to be prohibitive? especially if each student will be requiring ten times more material than for standard model-making or prototyping projects. Secondly, can the material be easily manipulated? Transforming raw or sheet material into a finished object is possible using many diverse methods, but in the context of this project, material workability is guided by what resources are available and easily accessed by the student. Thirdly, availability of material is essential, new developments in technologies have resulted in an enormous array of possible materials, many of which are difficult to locate and even more difficult to access in small quantities.

Production Process How an object is made is largely dependent on the available resources and the factors that determine this in the context of higher education include; are the resources in suitable condition? i.e. could they withstand a cohort of students using it repeatedly over a short period of time? Is it a time consuming resource which may hinder the flow of student use? and, is it a resource that students can use without supervision? In this project the novice student designer was assigned a particular production process whereas the advanced student designers were allowed to utilise any process they wished but importantly, one they had access to.

Production Quantity We accept that making one example of a design will not satisfy the objective of this exercise, then how many will? Clearly, engaging with mass production quantities in the thousands even hundreds would prove to be unrealistic, therefore it was proposed to operate within a batch production framework. Batch production is a term commonly used in industry and it reflects the systematic nature of the manufacturing process. The use of the term batch production is encouraged as it helps positions the exercise in a space that is both large scale industry and studio based hand-craft. It also differentiates between what students experience in other classes where similar activities such as model-making and prototyping occur. Defining the quantity of units to make was based on the need to ensure the challenges of manufacturing are experienced by the student without it becoming a financial and resource burden. Greater than fifty was considered unfeasible and below five did not reveal any economies of scale, a production quantity of ten seemed to present a happy
medium. Production quantities along with all the other parameters were established with the understanding that they would be regularly evaluated and modified if deemed necessary.

The project parameters listed above are highly prescribed, students engage in a controlled, concentrated and manageable task of designing and producing an object and they are provided with the methodology as to how they should approach the task. (Pandolfo & Samaha, 2013) The process is suggested so that students have the best possible chance of completing the task within the timeframe. If the parameters were not implemented a risk existed that valuable time would be lost in student’s extended experimentation and investigation.

**Stage 1 – Design** The above mentioned parameters are implemented for the first time in the design stage. The design stage requires the student designers to engage with the research, ideation, embodiment and detailing of a proposed object design. The parameters assist focus on creative solutions and increases efficient use of time. The design stage concludes with a final design and a single example of the actual object. The making of the object is used to confirm the aesthetic, technical and interactive aspects of the final design, it is also serves as an important tool in planning and administering the next stage of the project.

**Stage 2 – Making** This stage requires the student designers to plan and execute a strategy for the production of ten replicas of their final design, packaging and point of sale material. Implementing this stage is a key part of the new learning that both the novice and advanced design students experience. By referencing the actual object made in the Stage 1, students have a greater understanding of their final design and they use this to guide their decision making to facilitate a more streamlined, error free and improved quality production stage. During the Stage 1, students received weekly mentoring and guidance from teaching staff. Stage 2 is carried out by the students with minimal supervision, the making phase is repetitive and very much about the student completing the required task and ensuring the project deadline can be met.

**Stage 3 – Selling** The third stage of selling requires the student designers to present both themselves and their design to consumers with the goal to sell as many of their designs as possible. To assist the selling process the id.shop was established as the vehicle for this to occur. The id.shop operates twice a year and follows each teaching semester. It has no physical or fixed location, this ensures it remains flexible and capable of responding quickly to opportunities that transpire, as such, id.shop events have been held at a variety of locations.

To diversify between the two student groups and to ensure a rewarding and appropriate learning experience another project constraint was established. Firstly, the novice design students have all costs associated with the production of their designs i.e. materials, laser cutting, firing, glazing etc., covered by UTS. The products are then sold at a price that covers expenses, ensuring the novice design student id.shop
remains a not-for-profit exercise. All production related expenses and sales transactions are managed by teaching staff, which removes the element of financial risk away from the novice design student.

In contrast, the advanced design students are expected to manage and fund all aspects of their project including the purchase of materials. In exchange they are allowed to set their own sale price and claim the profit (if any) from eventual sales. This format allows the advanced design students the opportunity for a more thorough and realistic experience.

In addition to the individual work that each student is expected to carry out, it is also a requirement that they participate as a group in the setting up and dismantling of each id.shop event. It is also mandatory that they remain present at the event for the entire duration, even if they sell out in the first hour. In the case of multi-day events students establish a roster so that a representative of the group is present at the id.shop at all times. Each id.shop begins with a set-up or bump-in that occurs either the day before or on the morning prior to opening. Each student designer is allocated an equal amount of ‘retail’ space which they are then encouraged to personalize.

Once the id.shop opens there is evident tension and apprehension as the students await their first enquiries. The nervousness soon dissipates as the id.shop event unfolds. There is a distinct flow of consumers to and from the student displays, some linger and engage in discussion with the student designers eager to learn more about the student and the story behind their design. Sales are made, tables are re-stocked and displays are modified. The energy of the event is not lost on the students, there is a definite sense of relief, excitement and accomplishment at arriving to this point.

Students were assessed according to a variety of criteria including engagement with the batch production process, completion of assigned tasks and ability to work in teams. Importantly, the number of objects a student sells sold is not used as criteria for assessment.

Observations

The following observations were made as a consequence of the planning, execution and reflections of the id.shop events completed, by August 2014, fifteen editions of the id.shop have been conducted. The observations are brief and could in the future form the basis for a more in-depth inquiry.

The first and most obvious observation is the enthusiasm that students have taken to this project, it appears to be the challenge and application of they own creation to a real-life test that has galvanised their energy and desire to do well.

During Stage 2-Making, it was observed that the batch production task did indeed provide a new learning experience for the students particularly in project planning, understanding defects and imperfections and how seemingly insignificant or small tasks when multiplied against ten objects can quickly devour a student’s time.

Selling their objects was partially an exercise in confronting the student’s idea of good design with those of the consumer. During the id.shop three levels of sales success were identified, the first was the student that was able to completely sell all their stock, sometimes very quickly and others, over the duration of the event. This gave those students a sense of
satisfaction and achievement and a clear demonstration that their design was well received by
the purchasing public. The second level of success were those students that achieved some
degree of sales, between one and not quite all their stock, and the third level of success were
those students that were unable to sell any of their stock. At first not selling any stock is an
unfortunate and cruel end result, and in terms of commercial success it could be considered a
failure, however for the student, this confrontation with the market crystallises the sometimes
fickle nature of consumers and the commercial process. It should be noted that any unsold
stock is presented for sale the following id.shop, and in each case every design has managed
to sell.

The id.shop performs another important function through its engagement with consumers,
even those that visited and left without making a purchase. The consumer-designer
interaction that occurs during the id.shop validates the student work through actually being
present, this is deepened when a discussion ensues between potential consumer and student.
The id.shop events have gained a following that is now seeing customers return, this supports
the notion that objects produced in small quantities offers consumers something unique
(Scott, 2011) and that supporting student designers is a strong motivator for the returning
customers to attend multiple id.shop events.

Conclusion

Changes in the way objects are developed, made and sold is setting a platform that is
generating real change, this is coinciding with developments in digital technology, market
fragmentation and globalisation. It is expected all those associated with object making on a
small batch production scale represent an important part of the future of the manufacturing
industry (Deloitte, Touche, & Tohmatsu, 2014)

This project has developed over a period of time which has paralleled the emergence of
similar initiative the ‘maker-movement’, which has returned the act of making objects back
into the psyche of the broader community. The principal objective of exposing industrial
design students to the finer points of object production has resulted in them being able to tap
into this global phenomenon of enterprise-based design as well as a deeper understanding of
the mechanisms that impact on object manufacture, which happens to be a core aspect of
their discipline.
References


