

INTRODUCING SECOND-YEAR STUDENTS TO CONCEPT-BASED PROJECTS FOR INCREASED SUCCESS IN THIRD-YEAR SPONSORED PROJECTS

Richard FRY

Brigham Young University, USA

ABSTRACT

To increase the performance and decrease the stress of students in a third-year externally sponsored project experience, second-year industrial design students are introduced to a critical performance skill for the third year experience - *clarifying a broad conceptual topic and making it usable for an effective design exploration*. The educational goal is for students to gain confidence in their ability to gather insights through interviews, observations, and participatory experiences; simplify this data down to a handful of experience drivers; and use these drivers to create a framework that provides new insight for the more mature design exploration required in the third-year studios. The introduction of this skill earlier than immediately necessary brings tradeoffs. Disconnected from an actual sponsored project, the importance of the skill is not completely evident to the second-year students. However, in course evaluations, students comment that introducing the skill and practicing it earlier than required, helps their initial third-year product studio performance and decrease stress. This paper reports on the introductory project, the simplified process of taking observations and building a driver-based framework, and highlights some of the difficulties and successes in working with students toward this goal.

Keywords: Design Synthesis, Framework, Insight, Design Creativity.

1 INTRODUCTION

The second-year industrial design curriculum helps students gain skills through focused, problem-specific project themes such as “design a table tennis paddle for a person with an identifiable disability” or “design (and sell) 10 stools out of 5/16th steel rod and one other material” or “design a door handle that communicates its function through form-based affordances”. The third-year curriculum transitions to externally sponsored projects with broad unfocused topics such as “Water Management in the Home”, “Lawn & Garden”, and “Millennials and Food Culture”. Third-year students gain experience gathering qualitative contextual research and identifying and defining *opportunity spaces* that help them generate and frame a series of product concepts. In these third-year projects, the identification and definition of the problem (or new opportunities) is just as important as the final product proposal - perhaps even more so. If students use a simplistic approach to the problem definition (or perhaps neglect it altogether) and jump straight to a solution, the educational experience for both the student and the sponsor is limited.

The initial third-year product development studio is often a student’s first experience with an external sponsor, their first experience with a 16-week extended project, and their first experience with a broad, topic-based theme rather than a defined, product-based problem. An important question when working with students is, “How many ‘Firsts’ can be stacked on top of one another without a noticeable loss of overall performance?”

This paper reports on the introduction of a simplified experience with a broad conceptual topic-based project at the end of the second-year curriculum. The primary project purpose is to introduce second year students to the idea that having an effective framework at the beginning of a project leads to the development of more intriguing and compelling ideas over all. The secondary purpose is for the project to act as a bridge to the more complex sponsored projects in third year, and alleviate some of the pressure in the third year caused by the accumulation of “Firsts”.

2 PROJECT DESCRIPTION

This introductory project at the end of the second year is designed to run with the ambiguity of a conceptual third-year sponsored project but without the added burden of actual sponsor involvement. It takes students from a very broad theme to an initial, product-based concept presentation. Themes for this project have included “Recreation”, “Food Away from the Table”, “Connections”, and “Communication”. Topics are purposefully grand in scope, to hamper students’ ability to jump straight to a product-based solution. The focus is on *process* rather than *product*, with more emphasis on understanding the observations, identifying insights, and building a narrative structure that helps them communicate the WHY (insightful clarity) rather than jumping to the WHAT.

Key to the project is giving the students experience with: **1)** a large, perhaps contradictory, set of data gathered through their own observations, self-conducted interviews, and activity participation where necessary. **2)** Experience with organizing and simplifying this data set down to a set of 3-5 key drivers (or major themes) that broadly describe the given situation. **3)** Experience with using the interaction of those drivers to create new problem/product spaces that increase the students’ creative flexibility and help them generate and frame new product concepts (Figure 01). The hope is that students connect the idea of having an effective framework at the beginning of a project to a richer, more mature design process and better ideas.

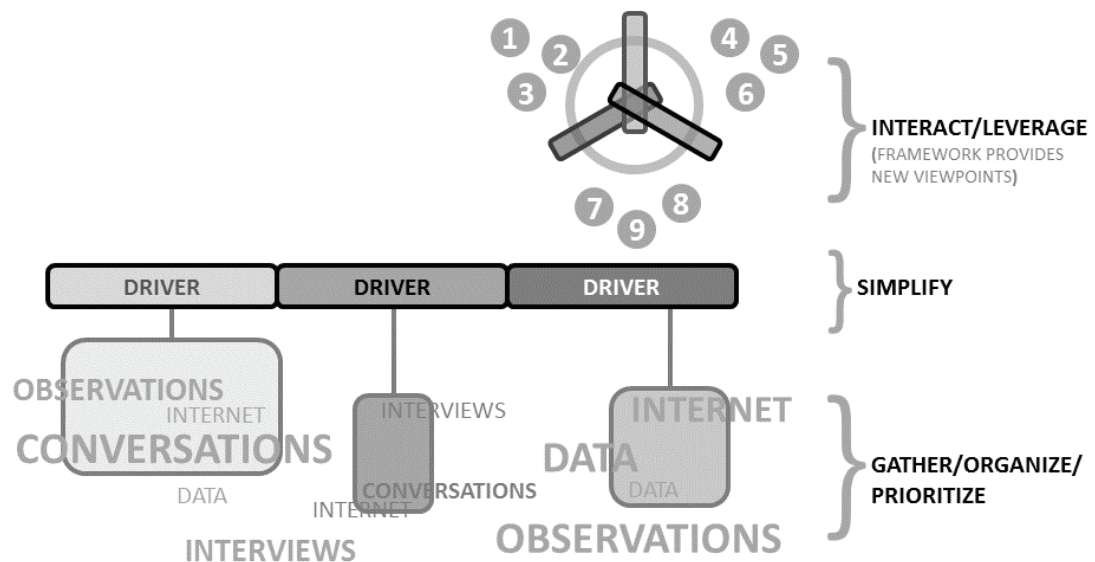


Figure 1. Overall Project Strategy

2.1 Gather and Organize

Gathering data from a variety of inputs, including exploratory interviews, personal participative experiences, and observational opportunities students come together and collaboratively share their information. This quickly creates a large body of knowledge about the assigned topic. Rather than bringing all of their raw data, students are asked to share their observations in a form accessible to their peers and in a way that helps their fellow students understand some of the conclusions that they may have already drawn. However, the shared observations should still be open enough for others to draw new conclusions to add to the growing body of observations.

One significant difficulty that students often have at this introductory level is communicating their observations and insights in a way that makes sense and is therefore impactful to others. They can easily inject too much of their own judgement into the data, or summarize it down to the point where there is no room for others to build on it and add to the conversation. The instructor can help students see the need to communicate more clearly to others, help them bring out the intended meaning from their observations, and help other students interpret the observations differently. For example, in the project based on the topic “connections”, in the initial gathering of observations some students had not considered the idea that connections could be virtual instead of only physical, or that some connections were transient instead of permanent – fading over time. The group effort is important to build the body of knowledge and to start the understanding process.

Once there is a relatively clear group-level understanding of the observations, the next step is to organize the observations into insights. This happens as students group and cluster similar observations together. They begin to see the results from a higher level and begin the shift from specific observations to larger themes. Observations that seemed unique and distinct in the beginning, now start to combine and work together in an interesting way.

2.2 Simplify and Prioritize

After the insights are organized through grouping, simplification happens as students transform the clustered insight-groups into the broader category of drivers. *Drivers* are “A factor that causes a particular phenomenon to happen or develop” and/or “something that makes important things happen” [1]. For example, in the “connections” themed project, the *drivers* identify large, broad factors that describe the nature and variety of the connections that we encounter. In this case, the drivers were created by giving each insight cluster a single *title* that captures the group of insights as a whole, or as best as possible. Turning their insight groupings into simplified drivers, students then must reduce their list to the 3-5 drivers that they feel collectively describes the project theme.

The simplification/reduction effort forces them to combine and eliminate observations or insights that, although once interesting, may have lost value through discussion. They may even need to discard thoughts and themes that DO have recognizable value, but may not be the MOST important. This forced simplification process is ultimately a boost to their creativity, as “Creativity requires limits, for the creative act arises out of the struggle of human beings against that which limits them.” [2]. It is critical for the instructor to be particularly involved in this simplification process because the students’ judgement is immature, and can lead to simplifying “complex realities in unhelpful ways” [3].

At this point the students are mostly separated from their initial preconceptions about the theme and about what product they were going to design and are now ready to tackle the project topic with “fresh eyes” [4]. Unfortunately, this separation can also manifest itself as a sense of being lost, and motivation to continue can wane. It is important for the instructor to be prepared to model the possibilities for creative design solutions that this new, fresh knowledge about the topic offers.

In summary, in the context of the “connection” themed project, an *observation* might be that an individual has both familial connections AND work connections. An *insight* from that might be that groups provide a natural way to form connections. A *driver* might be the acknowledgement that there is a whole spectrum of connections along the continuum between *systemic* situations and *individual* circumstances. Drivers begin to explain WHY something occurs, and how it motivates the observed situations. It is important to help students understand that there is a difference between observations, insights, and ideas [5], and that they are being challenged to create a strategic base of insights and drivers that can potentially generate even more ideas than they would have without this knowledge. The shift from insights to drivers is shown in FIG 02.

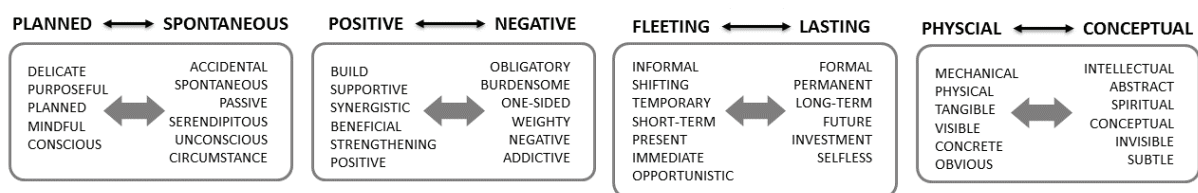


Figure 2. Clustered Insights with “Driver” Titles

2.3 Interact/Leverage – New Product Spaces

With the 3-5 key drivers identified and agreed upon as a group, they now can be used as the components of a framework that forces interactions and creates new product spaces to facilitate further investigation and ideation. In practice, there are many ways to force the interaction of multiple variables. For this introductory second-year project the interaction happens through a diagram of some sort – usually a 2x2 matrix created from the intersection of two of the 3-5 drivers identified by the students. Using only two of the drivers at any given time allows students to make a variety of combinations, and have a degree of flexibility and individuality (FIG 03) as they move on to the product concept generation phase.

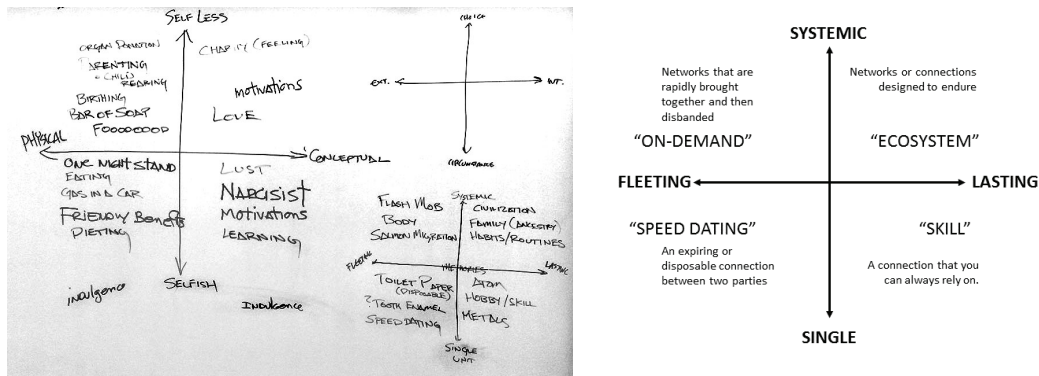


Figure 3. Forced Driver Interactions for New Product Spaces

Whatever the interaction, students are asked to describe and name and summarize the new landscapes. What manifests itself in these new situations? What opportunities exist? What describes someone who is attracted to these situations? What type of problems are faced in these new spaces?

2.4 Final Ideation and Presentation

From this point on, the project begins to play out in a way that is more familiar to them. Having a defined problem space, students move forward with basic Exploration, Refinement, and Presentation of a product concept. In terms of the engagement of the students at this point, having worked through a more drawn out, and unfamiliar beginning to a project – with more emphasis on data collection, data summary, insight identification, and creating a framework that highlights new and novel problem spaces – their attention spans at their limits. This final phase of the project then just becomes a way for them to reach a quick conclusion, and to see an end to the process in a way that brings closure and provides raw materials for their portfolio. The final deliverable consists of the 2x2 matrix that they based their product exploration off of, a summary of their product exploration highlighting their creative flexibility AND fluency, and then a presentation of the final product concept (Fig 04).

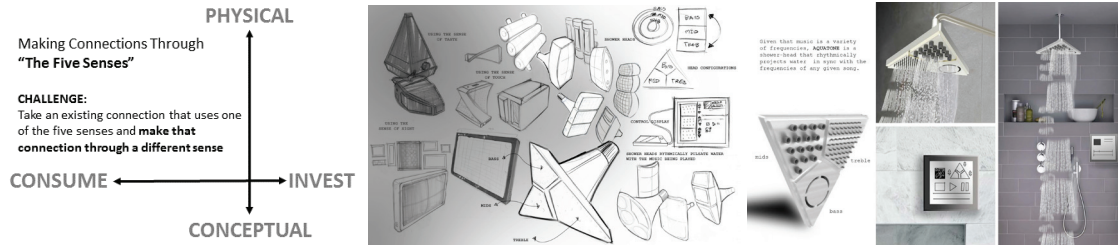


Figure 4. Example of Final Project Deliverable

3 DISCUSSION

An in-class survey was conducted with the students at the conclusion of the project, and full-course evaluations were gathered at the end of the term. Additionally, a discussion was held with the third-year students at the end of their first sponsored project, with a question referencing the introductory, concept-based project in the second year. Overall, creating an introductory experience with a concept-based project and moving it to the end of the second year has been positive. Rather than just being a single portion of a complex, pressure-ridden semester of firsts, consciously creating a specific project focused on translating a broad concept or topic into a usable product-centric design brief increases student understanding, performance, and satisfaction.

Students made the following observations:

“This project allowed me to focus and hone in on VALUE and CONCEPT before I began sketching and looking for a product idea. It was a process of refining concept and value, and using it as the primary framework for a physical product. Using words and constructing 2x2’s was difficult, but helpful in discovering and refining a valuable concept for a product.

“The conclusions from the [exercise] gave meaning and value to my ideation efforts. Since I had established beforehand that my ideas would have a specific connection [to the theme] I did not have to worry about giving my ideation concepts meaning as I went along...it is definitely more difficult to

give meaning & value to an idea after I've come up with it. It was easier for me to start with the value & meaning that I want (through a framework) to develop a better product."

The introductory work with second year students can be difficult. There is resistance to spending time in the research, problem finding and defining space when the need is not immediately obvious outside the context of a sponsored project. In this introductory project, each step is new to them, and they do not easily comprehend how each step contributes to the whole.

Because the second-year students are only "playing" at the process, a significant amount of work needs to be orchestrated by the instructor while giving the students the impression that they are participating at a greater depth than they really are. The students can become bored easily, and need constant encouragement and summary moments to keep them moving forward. During the reduction process when information is eliminated and simplified, students hold on to their own insights fiercely, and are reluctant to abandon hard-earned data. The instructor needs to re-assure students of their contributions, and the opportunity for independent work later in the project.

Though based on anecdotal observation, student performance has improved in the up-front, problem identification and definition portion of the third-year sponsored projects. Completing this second-year introductory project, third-year students are more familiar with the process, can work more independently in research related project tasks, and understand the "pattern" of looking for insights and allowing that to influence their ideation process. Being allowed to struggle and experiment when performance is *less* critical, students are more comfortable later, when performance is *more* critical – i.e. with actual sponsor involvement. Third-year students can put more effort into the specific needs of the sponsored project rather than the mechanics of design synthesis.

REFERENCES

- [1] Oxford Dictionary of English *Driver*, 2015, (Oxford University Press).
- [2] May, R. (1975). *The Courage to Create*, 1975 (Norton, New York).
- [3] Lowy, A. and Hood, P. *The Power of the 2x2 Matrix: Using 2x2 thinking to solve business problems and make better decisions*, 2004 (Jossey-Bass, San Francisco).
- [4] Higginson, T. W. *The Oxford Book of American Essays*. Matthews, Brander, ed. 1914 (Oxford University Press, New York) (Bartleby.com, 2000. [www.bartleby.com/109/.](http://www.bartleby.com/109/)) [Accessed February 14, 2017].
- [5] Leighton, T *The insight is not the idea*. Available: <http://www.jackmorton.com/blog/the-insight-is-not-the-idea/> [accessed January 25, 2017] (created July6, 2010).