



Teaching design research through practice: a pilot study for collaborative exploration

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As design educators, we experience tension between devoting the precious little time we have in class to educating our students in ways of making (i.e., skills in sewing and patternmaking) and ways of thinking (i.e. design ideation, creativity, etc.). In fact, it is a conundrum somewhat unique to fashion design in that, as Sjöberg (2009) states, “the design student has to acquire craft skills to be able to make the designed artefacts [sic] and he or she has to be involved in the whole design process from the first briefing to the final end product” (page 72) while industrial designers or architects may not realize an object full scale (working with models only) or may only realize models virtually. And in contrast to the makers of purely aesthetic objects (fine artists and crafts persons), the overarching need a fashion design student must meet is the functional concern of fitting a human body (Sjöberg, 2009).

While there may be debate about which technical skills are most necessary for today's students, the ways in which to cultivate those skills are vast and well documented. However, the ways of thinking that we must also cultivate in our students so that they may arrive at creative solutions to problems old and new alike are much less documented. In an effort to foster the creative thinking of design students and promote research through practice (Bye, 2010), the purpose of the pilot teaching studies was to develop two consecutive projects (the second adapted based on analysis of initial pilot results) that can serve as design precedents on which future student projects may be modeled. Two pilot projects, outlined below, provide examples of the creative processes of several design professionals working from the same design brief for each project.

The first project was a design challenge to create a shirt dress using white linen. Six designers participated and agreed upon the parameters of the project at the outset. They used one shared source for design inspiration (the photography of Yann-Arthus Bertrand), one common fabric (white linen), and one common pattern foundation (the shirt dress). Limitations were also set regarding use of trims, dyes, and extra yardage. The designers worked independently on their design development with no sharing of process until all six garments were complete, at which time they shared the final garments as well as the journals used to record their individual approach to the creative process.

The second project involved eight designers working on an outerwear challenge. Again, the guidelines were collaboratively set, with an agreement that a different type of inspiration

would allow for more abstract thinking leading to more creative design. After brainstorming and voting, the word *translate* was chosen for design inspiration. Reflection also led to abandoning the shared foundation pattern in lieu of working within the agreed upon category of “outerwear,” defined as a garment that is meant to be worn over season appropriate apparel and removed when indoors. Fabric was maintained as an important common factor, and a medium weight wool was selected, with half of the designers using an aubergine color and the other half using an oyster color. Again, a yardage restriction was agreed upon and the same dyeing and combination fabric limitations were used as in the prior project. Journaling about the process as a means of data collection continued, and the communication restrictions were opened up to allow for a sharing of ideas midway through the time period.

With an emphasis on discovery occurring during practice and the reflection documented in the designers’ journals, students can be shown ways in which their ideas can grow and evolve beyond initial thoughts, and also how ideas can be analyzed for adoption or elimination, depending on the design brief. Additionally, communication between groups of designers is more readily accessible, via technology. For instance, the second project teams met repeatedly via Google+ Hangout ©, to discuss and compare design ideas, challenges and chart progress. As opposed to vague restrictions (e.g. design must be creative), research practice guidelines involved in the aforementioned projects work to increase levels of creative production, as evidenced through design journal entries. Design faculty across courses, universities, and geographic regions can partner to implement guidelines on design briefs intended to increase the level of creative production, while building creative scholarship through documented design practice. As evidenced in the success of the two pilot projects, multiple design faculty worked within the guidelines to create unique pieces developed through documented design practice, a teaching model easily transferred to the classroom.

By using the shirt dress and outerwear projects as models, the steps toward research through practice can be furthered in our design students so they can better reflect on their process, thereby strengthening their abilities to apply creative solutions to design problems. Furthermore, the concept of several institutions doing a collaborative design project with similar structure during comparable skill level courses could be an exciting challenge. For students to see the variety of design culled from a solitary inspiration and similar materials is always enlightening, and works to broaden a student’s design competency. This presentation will be made available on-line so that all interested educators may access it to use in their classes. It will include images, journal notes, and outcomes from the shirt dress and outerwear projects.

Bye, E. (2010). A new direction for clothing and textile design research. *Clothing and Textiles Research Journal*, 28(3), 205-217.

Sjöberg, B. (2009). Design theory and design practice within Sloyd education. *The International Journal of Art & Design Education*, 28(1), 71-81.



A Method for Materials Research

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An understanding of textiles is essential to an apparel designer. A textile course is a key component of a designer's education, and crucial to develop apparel that serves the needs of the consumer. Dramatic changes in our world demand new understandings and strategies for designers to meet consumer and industry expectations. The explosion of technology, the increased exchange of information, strong funding for military, space, and medical research has introduced many innovations. The purpose of this study was to develop and test a method for materials research for worn products.

Material selection plays an integral role in the innovation of worn products. New materials offer designers infinite possibilities. Typical apparel methods for shape manipulation, construction, and manufacturing have the possibility to drastically change (McQuaid, 2005). Most design processes used in apparel design encourage in-depth research and synthesizing information that leads to creative design solutions (LaBat & Sokolowski, 1999; Watkins, 1988), however, many neglect the central role of materials. A broader approach is necessary and requires a material research method that can be used in conjunction with current processes.

A method for materials research was developed based on a review of literature and current design practice, including projects using non-traditional materials for apparel. Starting with the design criteria, possible material options are selected. The first step is to determine if the material bends and allows movement. When working with the human body, the material must have the ability to move and bend with the body, or be modified through patterning, joining, or material manipulation. If the material cannot be manipulated to create movement, then an alternate material should be selected.

The second step is to determine if the material can hold adequate shape and structure. Shape and structure can be built into the pattern or achieved with additional material components such as interfacing, boning, or an applied substrate. Based on the design criteria, the designer must determine if the design and/or material has sufficient support to function. If the material cannot hold adequate shape and structure, then an alternate material should be selected.

The third step is to determine if the material can be joined to itself or other components. There are methods for joining materials in addition to stitching such as welding or adhesives. Designers should test the selected material(s) to determine if they can be joined successfully. Closures play an important function in many designs for the human body. The designer must determine what type of closure is best suited to the material and design criteria.

As a final step, user expectations and perceptual qualities must be evaluated. For example, the material may have the appearance of being warm (vinyl film) or cool (cotton rib knit) based on past experiences. Perceptual qualities may be difficult to define, but are crucial to a positive end user response.

The method has been used by the researchers during multiple projects and is illustrated here on the redesign of a nursing bra. Design requirements were developed based on research and interviews with current nursing mothers. It was determined that the design and material had to allow for breast size change, rapid body change, provide breast support without being restrictive, should not irritate sensitive breasts and nipples, be machine washable, and be feminine. Three potential materials were selected to move through the process based on the design requirements; a bamboo/spandex knit blend, a jacquard nylon knit blend, and polyester lace were chosen. The table below summarizes the findings of the material research method.

Select Potential Material	Does material bend/allow movement?	Can material hold shape and structure?	Can material pieces be joined?	Can material support closures?	Does material address user expectations and perceptual qualities?	Select Material for Prototype
Bamboo Jersey 95% Bamboo 5% Lycra	✓ Tested on dress form and body. Drapes and moves with body.	✓ Material can hold shape on its own and through patterning. Two layers of material best--based on design requirements for support.	✓ Joined material with coverstitch and narrow zig-zag stitch	✓ Tested different types of elastic, nylon straps and nursing bra clips	✓ Material is very soft and ideal for sensitive breasts, stretchable to allow for expansion, and supportive with two layers of material	✓
Jacquard Nylon Blend 92% Nylon 8% Spandex	✓ Tested on dress form and body. Drapes and moves with body.	✓ Material can hold shape on its own and through patterning. Two layers of material best for support. Tested with a cotton jersey blend for supporting layer	✓ Joined material with coverstitch and narrow zig-zag stitch	✓ Tested different types of elastic, nylon straps and nursing bra clips	X While material is soft and stretchable, it does not address perceptual qualities most consumers would want in a nursing bra due to material texture	X
Polyester Lace 100% Polyester	✓ Tested on dress form and body. Shape and movement can be added with patterning due to minimal stretch	X. Support must be added through the use of a flexible, molded bra cup, however this does not allow expansion	X	X	X	X

The findings suggest that the method for material research is useful in selecting appropriate materials for an end design. Further work will include testing in an industry setting, as well as investigation into how this methodology could be useful in other areas of design.

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