

[Original Article]

Conceptual Clothing Design Process Using Cooperative Learning Strategies: Senior Clothing Design Class

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Abstract

This paper identified the source of inspiration to cooperatively design a fashion collection from US undergraduate clothing design students and addressed how to implement team-based learning strategy to conceptual clothing design in class. Data was collected from the total of 51 students in a senior clothing design course at a large 4-year university in the US. The assigned project for this class was to develop a group collection under a same theme. Each student worked with his/her team member(s) to create an outfit and the entire class worked as a group to create a cohesive collection. The study showed that the sources of inspiration for the themes/ concepts came from 11 categories: historic era/old Hollywood glamour, shape/line/structure/architectural, fairy tales movies, nature/abstract, circus/mysterious, occasion/place, object, designer/artist, futuristic, culture, and various movies. To implement cooperative learning strategies in the clothing design class, a total of five class presentation/discussion sessions were held for theme/concept decision, fabric decision, design decision, test garment evaluation and design modification, and final products. Throughout the design process, team-based learning strategy promoted students' engagement and participation and inspired their critical thinking skills for making decisions within a team.

Keywords: Cooperative learning, team-based learning, senior design class, design process

I. Introduction

Due to the increasing complexity of our world, designers must be team members who is skilled in communication and problem solving and has the ability to manage and synthesize broad knowledge (Roth, 1999). Educators in the field of apparel design have tried to implement cooperative learning strategies such as problem-based learning, collaborative learning, and team-based learning in classroom. Researchers found that cooperative learning strategies can increase student engagement and understanding of the subject, and communication skills and improved decision-making

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skills (Banning & Gam, 2013; Gam & Banning, 2011, 2012; Karpova, Jacobs, Lee, & Andrew, 2011). Cooperative learning strategies include student activities that require students' collaboration and engagement to learn and understand subjects. Under the cooperative learning strategies, teaching is not instructor focused, but student centered, and educator acts as a facilitator to engage students.

Design courses including clothing design have traditionally been taught as laboratory-based courses (Johnson, Yurchisin, & Bean, 2003). Under the lab environment, students learn new concepts and knowledge through individual's hands-on practices, and they are evaluated by several concept-led craft-based projects. Potential challenges with this environment are lack of student discussion for the subject matter and lack of student interaction and communication among them. To promote better interaction and communication among students, hands-on design classes are also offered in team-based project format. Fixson (2009) compared the product development courses at 16 leading US school and found that team-based projects were common in the courses. Another project (DeLong, Geum, Gage, McKinney, Medvedev, & Park, 2009) showed a team-based project carried out through cultural exchange between two universities in the US and in South Korea. Students from two different universities made a team, selected a common theme and made a design project by the use of technology and also traveling to each other's country.

The purpose of this project was to demonstrate the implementation of cooperative learning strategies in the clothing design class. Two research questions were examined. (1) To identify popular sources of inspirations to cooperatively design a fashion collection among US undergraduate clothing design students, and (2) to examine cooperative learning strategies in the clothing design class.

II. Team-Based Project Set-Up

Design is often considered as two things: process and product (Metz, 2006). "Design as process is planning to meet a goal, and thus applies to everything intentionally created for a purpose" (Metz, 2006, p. 279). Although teaching strategies can vary among instructors, the goal of fashion design courses is to encourage creative design process and product. This project was designed to promote creative design process by implementing team-based learning.

Data was collected from a CAD pattern making course in 2013 and 2015 in a large 4-year university in the US. Thirty students took the class in 2013 and 21 students took the class in 2015. All students were senior apparel design students who previously had multiple design, patternmaking and construction classes. All students in the class had been a cohort group of apparel design students from their freshman year. They were registering the same studio classes, making the same curriculum progresses towards the same degree. Therefore, by the time they became senior year, they were well familiar with each other's personality, working style and design tastes. However, their design projects had been individual projects in other classes and had not yet been had a chance to work collectively together as a whole class. The assigned project for this class was to develop a group collection under a same theme. It combined work that students completed outside of class on their own with in-class discussion as a part of instructor-formed teams that worked together throughout the semester. During the entire process, from the inspiration to end-products, students made decisions based on their discussion and agreement. In this course, there were five class presentations/discussions for theme/concept decision, fabric decision, design decision, test garment evaluation and design modification, and final product. The goal was to implement cooperative learning strategies through two-way team-based works; first, each student' working with his/her team member(s) to create an outfit and second, the entire

class working as a group to create a cohesive collection. Instructors served as facilitators in a classroom throughout the process. The final products were presented during the annual fashion show in the department.

III. Cooperative Learning Strategies in Clothing Design Process

1. Theme/Concept Development

The popular sources of inspiration to cooperatively design a fashion collection was identified since deciding a collection theme is the most important first step of design processes to not alone student designers, but also professional designers. In order to find a theme/concept for a group collection, every student participated in theme/concept development. Each student was asked to develop a theme/concept through her/his research individually outside of class as an assignment. Then, every student presented their research and inspiration with PowerPoint slides in class. One theme/concept was selected through the votes from entire students. Once the theme was chosen, students were instructed to discuss more in details including specific colors, garment styles, and textiles.

A total of 50 themes from 2013 and 2015 were classified into similar categories to identify the popular fashion design theme to cooperatively design a fashion collection among US undergraduate apparel design students. The findings showed that a variety source of design inspiration influenced the students. The sources of inspiration for the themes/concepts were classified into 11 categories: 1) historic/old Hollywood glamour, 2) shape/line/structure/architectural, 3) movie: fairy tales, 4) nature/abstract, 5) circus/mysterious, 6) occasion/place, 7) object, 8) designer/artist, 9) futuristic, 10) culture, and 11) movie: others.

Main source mainly came from the visual effect such as styles of historic costumes, exotic patterns and colors, shape and line. More specifically, historic/Old Hollywood Glamour category was the most brought up themes among the US apparel design undergraduate students. Among all titles, 1920s/Art Deco was the most frequently presented by the students. Old Hollywood Glamour, which is an inspiration mainly coming from gorgeous gowns from old Hollywood films primarily in 1930s and 1940s. More rebellious and risk-taking historic influences such as 1950s James Dean and Marilyn Monroe styles and 1970s Rock and Roll styles came up a few times.

Shape/Line/Structure/Architectural theme was another popular theme. This theme was about using garment to create a structure, shape, and line around the body. It has architectural influences and considers object-space relations. Movie was another commonly presented category of the inspiration. Among many movie types, fairy tale movies such as *Mirror Mirror*, the story about Snow White, and different princesses from Disney animation series were most popular source of inspiration. Whimsical, exaggerated and elaborate designs were inspirational styles with exaggerated silhouette and dressy fabrics. Students had tendencies to favor whimsical theme, and another source of inspiration came from circus. The theme consisted of aspects associated with the circus such as the performer costumes, the big top, and animal with dramatic pieces such as ruffles and jumpsuits.

Abstract theme frequently inspired by nature such as starry night, astronomy and galaxy was another commonly brought up theme. In the contrary, students were also inspired by concrete objects. For example, candy, flower, silverware, and American flag were presented as inspiration source. Some students were inspired by mixture of other cultures around the world. Famous fashion designers such as Alexander McQueen and Oscar De La Renta and artists such as Edward Degas had an impact on other students. Historic era played a major role as inspiration. However, students also thought of future to find a source of inspiration. Students looked Sci-Fi films and imagined futuristic and space age styles.

The most voted theme in 2013 was “Reflection in time: a new look at fashion history” and one in 2015 was “Space: the final frontier”. The 2013 theme—Reflection in time: a new look at fashion history— was about displaying garments that reflect and enhance historical garment silhouettes which convey the culture, art, and lifestyle of the historical periods, but with a new age fashion flare. The 2015 theme—Space: the final frontier—was about a futurism expressed by the color white, black, and silver, and unconventional materials such as vinyl and metallic trims. The sources of inspiration and titles from the entire students are presented in Table 1.

Table 1. Source of inspiration and titles in the theme/concept development process

| Source of inspiration (n) | Titles |
|---|---|
| Historic/Old Hollywood Glamour (13) | Art Deco The 1920's Art Deco, 1920s silver screen glamour Roaring 1920's Art Deco 1920's Flapper The Great Gatsby-1920s theme (movie) 1930's Hollywood Glam Shine bright like a diamond: Hollywood glamour, elegance, and royalty The silver screen (Hollywood black & white movies) Rebe without a cause: 1950's counter culture Glam Rock (1971-1975 rock and roll fashion) Reflection in time: a new look at fashion history Renaissance revival |
| Shape/Line/Structure/ Architectural (6) | Armor Interpretation of blocks Skylines and city lights ANGST (movie) Deconstructivism Graphical structure |
| Movie: Fairy tales (5) | Mirror Mirror Snow White & The Huntsman Once upon a time Disney princess The Wizard of OZ |
| Nature/Abstract (5) | Starry sky Shine brighter than the stars Forces of nature Astronomy Galaxy |
| Circus/Mysterious (4) | Dark and mysterious Dark circus Dark circus: AHS freak show A day at the circus |

| | |
|---------------------|---|
| Occasion/Place (4) | Beach glamour Silver party dress An elegant celebration: Silver Masquerade Winter in Paris |
| Object (4) | Candy Flowers Timeless silverware: No beginning & no ending Murica: American flag |
| Designer/Artist (3) | A tribute to Alexander McQueen Oscar De La Renta Ballet Reveries: Edward Degas |
| Futuristic (3) | Silver Maiden: Futuristic woman 2001: A Space Odyssey (movie) Space: the final frontier (TV series) |
| Culture (2) | Global fusion Trip to Cuba |
| Movie: Others (2) | Every cloud has a silver lining Mission Possible |

Note: The shading indicates the selected themes

2. Fabric Decision

After the class theme was decided, the next step was to select the collection fabrics and color schemes that are in line with the theme. Through class discussions, students with the guidance of the instructor, selected the ranges of the fabrics and colors for the collection. After the discussions, each student went to fabric shops and got swatches. They were made sure to bring in swatches that have enough quantity left in a stock in the stores so that classmates could purchase the fabrics even after several days passed. Students stapled each swatch on an index card with information on fabric name, fiber content, price, fabric width, and store name written to share with the classmates.

In the next class, all swatches were placed in a big table and were arranged to group similar fabrics. All teams examined the fabric choices and worked together to select the most appropriate fabrics, which could express the class theme the best. Fabric drapes and weights were considered to ensure selecting variety of fabrics to be suitable for different types of design. At the same time, choosing too many numbers of fabrics were refrained as it could interfere making the collection cohesive. The final selection of fabrics was pinned on a foam board with each index cards numbered. Students referred to the fabric board when designing outfits.

3. Design Decision

Based on the previously defined criteria of theme, color, materials and silhouette, students worked as part of teams and collaboratively developed four looks with their team mate in class and outside class. Each team was made up with two or three student.

Students were asked to design four outfits including different types of designs. They considered specific fabric choices for the outfits. As this class was CAD patternmaking class, they were advised to design garments, which can be created using flat patternmaking technique using Tukatech CAD patternmaking software. To improve team skills, the instructor emphasized the importance of team members to engage in developing all four looks together.

In class, each team presented their ideas of four outfits and explained how the outfits were inspired by the class theme. Each team was asked to bring a front and back flat drawings of four outfits for the presentation (See Figure 1). Following the presentation, other teams had a time to ask questions about the presented design in order to further communicate design ideas. Then, one look was chosen among the four through class discussions and votes taking into consideration the variety of styles in the group collection. Students were encouraged to collaborate with each other and consider the best interests of the group collection when picking the best designs. In order to prevent each team choosing simply their one most preferred design, but to implement cooperative selection process, each team worked with her/his team member to vote on other team's works to decide the most fashionable and suitable look to make a group collection. The final design board for the group collection was completed and shared with students (See Figure 2). This promoted an environment where students spent more energy understanding other people's designs than their own and also were able to view their own designs from a more objective perspective. By using a source of inspiration effectively, it maintains collection unity.

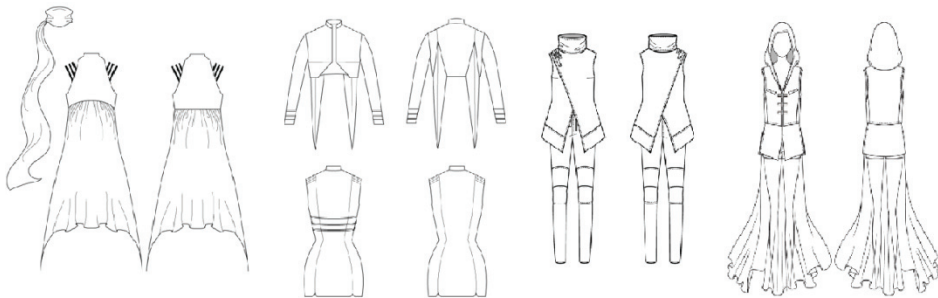


Figure 1. Sample of four flat drawings for the design decision presentation



Figure 2. Selected designs from the class discussions and votes

4. Test Garment Evaluation and Final Product Presentation

Once all the designs were selected, each team worked as a team to create patterns and develop test garments. The patterns were developed by using TukaCad, computer patternmaking software, and plotted out in a real-scale. Each team had two weeks for pattern development and test garment construction. The test garment was constructed with muslin. Although the level of proficiency with a CAD pattern making software varied among students, they learned from each other to solve the problem in developing a pattern.

Garment designs were modified and improved by test garment evaluation. The test garments were presented on the dress form with front and back flat drawings of the original design (see Figure 3). Each team explained its design about shape, silhouette, and detail, and discussed how to use materials and colors for each garment design in order to fit into the cohesive group collection. If they needed to change designs, they also mentioned why they did it. The fit of garment was also evaluated. The neckline, armhole, crotch, and the length of garments were main areas to ensure the correct fit of garments. After each team's presentation, all students participated in the discussion about the designs and use of materials and colors for the designs. Construction techniques were discussed when unconventional materials including mesh and vinyl were used for the 2015 collection. After much discussion and debate, a final decision was made with the agreement of the majority of the students. Over the course of a week, the final garments were constructed and presented. All of the students completed their tasks in a timely manner. The final products were presented during the department annual fashion show successfully. The class collection opened the fashion show as the first order before showcasing each individual student's own collection.

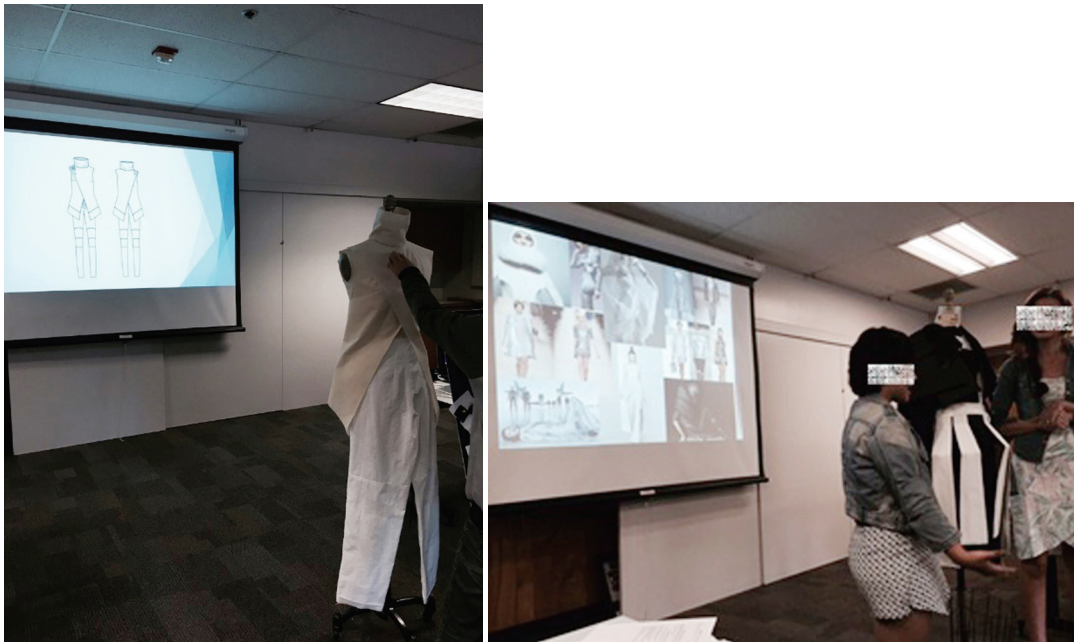


Figure 3. Test garment evaluation and final presentation

IV. Discussion & Conclusion

This project demonstrated how cooperative learning strategies could be implemented in clothing design class through team-based project. This paper identified the source of inspiration to cooperatively design a fashion collection from US undergraduate apparel design students and addressed how to implement cooperative learning strategies to conceptual clothing design in design course.

This study showed that a variety source of design inspirations influenced the students to cooperatively work to create a group collection. The sources of inspiration for the themes/ concepts came from historic era/old Hollywood glamour, shape/line/structure/architectural, fairy tales movies, nature/abstract, circus/mysterious, occasion/place, object, designer/artist, futuristic, culture, and various movies. Historic periods or Old Hollywood Glamour was the most brought up themes among the US apparel design undergraduate students. The results support that fashion designers are influenced by history and past, which are then apply to the current fashion (Metz, 2006). Another popular theme was about using garment to create a structure, shape, and line around the body. This coincides in trends with famous fashion designers inspired by architectures (Metz, 2006). Movies played as an abundant source of inspirations including from old Hollywood films and fairy tales to mysterious, adventures and futuristic films. Whimsical, exaggerated and elaborate styles from fairy tale movies were the most inspirational movies to the students.

In order to promote cooperative learning, students worked in teams of two or three to collaboratively develop one look for a group collection. A total of five class presentation/discussion sessions were held for theme/concept decision, fabric decision, design decision, test garment evaluation and design modification, and final products. These five class sessions helped students to have a better communication among them during the entire process, and a better understanding of their group project. Instructors served as facilitators for students throughout the process.

The course was designed to promote students' engagement and participation and inspire critical thinking skills for making decisions within a team by implementing cooperative learning strategies. Every student as individuals or every team was asked to contribute to class presentations/discussions. All students were participated in finding and selecting a theme/concept for the group collection. Each student developed a theme/concept through her/his research and one theme/concept was selected through the votes from the entire students. After the theme/concept decision, all teams suggested potential fabrics and worked together to select the fabrics that could represent the selected theme/concept the most. They also considered fabric drapes and weights for different types of design. In a design decision process, a cooperative selection method was also used. Students discussed how to make a collection interesting with a variety of styles and how to use materials and colors for each garment. Then, each student voted for the most creative design, yet designs that fit into the cohesive group collection. Garment designs were modified and improved by test garment evaluation. The test garment was evaluated by shapes, silhouettes, details, and fit. Most concerns and feedbacks were about the design modification and use of materials and colors for the designs. Construction techniques were also mentioned. Each final design decision was made by all students.

Team-based learning can improve students' motivation to attend class (Banning & Gam, 2013; Kreie, Headrick, & Steiner, 2007). Outcomes of cooperative learning strategy through two-way team-based works include increased student engagement and understanding of the subject, a more dynamic class environment. Students were strongly motivated by sharing the same goal as a team. They were encouraged not to be too self-centered and biased towards their own design, but accept other perspectives and think in terms of the best interests of the group as a whole. This group mentality served to motivate the students to work more efficiently and in a timely manner than if they were on their own. This is especially evident by looking at the number of students who either perform poorly or struggle to understand class concepts. Through a group learning environment, there were far less students who fell behind the others.

Learning to work as a group was particularly important for the students during their senior year before starting their professional career in the fashion industry. Although students had progressed toward their degree as a cohort group developing design skills and styles, they did not have a chance to do team projects as a whole class. As working as a team member respecting the company's design style, not clinging to his/her own style is important in the industry, implementing the cooperative learning strategy in the senior design course was especially beneficial to the students. Students developed interpersonal and communication skills essential for the workplace, and critical thinking skills for making decisions as an individual and within a team.

Due to the amount of discussion and debate required for a cooperative learning environment, creating an open environment where all students can participate is critical. With active student participation, this teaching strategy may encourage creative behavior as well as evaluate creative apparel products.

The data to identify the source of inspiration to cooperatively design a fashion collection for this study was limited from classes of two years. More data need to be collected to further analyze the inspiration source for a future study.

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