



Problem Based Learning: Jeanswear Design for Rare Disease Day

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Introduction There are about 7,000 rare diseases identified in the United States; however, information regarding the diseases has not been sufficiently provided to the general public (Griggs et al., 2009). Thus, there are lots of efforts to raise awareness among the general public and decision-makers about rare diseases and their impact on patients' lives. As a part of such efforts, an international event, *Rare Disease Day*, has been held for several years. To raise awareness of rare diseases among members of the public as well as to help undergraduate students majoring in apparel design learn problem-solving approaches to garment design for a specific population, a problem-based learning project was created and implemented in an undergraduate design course. Considering the fact that research regarding problem-based teaching methods specific to apparel design is scant (Gam & Banning, 2011), this research will contribute to teaching methods in apparel design.

Literature Review 1) *Rare Disease Day* A common definition of “rare disease” is the low prevalence of a disease and the perception that treatments and research related to a specific disease are inadequate (Griggs et al., 2009). About 80 percent of rare diseases are genetic in origin, and it is estimated that about half of all rare diseases affect children (U.S. Department of Health & Human Services, 2015). Rare diseases can be chronic, progressive, disabling, severe and life-threatening. However, information is often scarce, and research is usually insufficient (Merkel, 2009). Therefore, it is critical to raise awareness of rare diseases among members of the general public. To do so, *Rare Disease Day* has been held to encourage people to wear the blue denim genes ribbon and their favorite pair of jeans because of the similar pronunciation of “gene” and “jean.”

2) *Problem Based Learning: Apparel Design for underserved population* According to Savery (2006), “problem-based learning is an instructional learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem (p. 12)”. PBL has a good fit in apparel design curriculum (Gam & Banning, 2011). In an apparel design course, instructors usually serve in advisory roles while students are provided appropriate information and resources for solving their problem (Gam & Banning, 2011). Based on the reviewed literature, a design project regarding *Rare Disease Day* was created and implemented in an undergraduate design course.

Method Upon request of a non-profit organization, the researcher assigned a design project to seven teams consisting of two students (a total of 14 students). Students were expected to design five denim wears for population who has a rare disease. The organization assigned seven rare diseases for the project, such as Morquio syndrome, Marfan syndrome, Achondroplasia, Apert syndrome, Glycogen storage disease type, von Girke syndrome, Proteus syndrome, and Holt Oram syndrome. The organizers came to the class and briefly explained each disease in detail.

Based on the assigned disease and provided information, students researched the disease, developed five design criteria for their design, and came up with one moodboard, illustrations and technical drawings of five jeanswears. The project was performed from January 12th to February 27th in 2014, and students' results were presented on February 28th at the wellness center of the organization. Parents of patients with the disease attended the event and gave us written feedback on students' design solutions. After the event, students answered seven open-ended questions: (1) Please describe your typical process in an apparel design project. What steps do you usually take in completing a design project? (2) Please describe your typical process in an apparel design project. What steps do you usually take in completing a design project? (3) What were your challenges in completing the project? (4) What were the strategies you used to overcome the challenges? (5) How do you feel about design and sustainability? Would you do a project for an underserved population again? (6) If you would repeat the project, how would you design it differently the next time? (7) In your plans to become a professional designer, what role do you think sustainability will play? The collected data were analyzed based on the reviewed literature.

Results & Discussion Students reported that they needed to have spent a significant amount of time on research in order to conduct the design project. Since they were not familiar with the subject as well as had less experience with designing for an underserved population, they needed to consider various design constraints as well as the population's human factors to design jeans for them. One student also reported that she needed to think about the design constraints analytically to perform the project. In addition, students indicated that the design project broadened their perspectives on designing for an underserved population. Three students agreed that they wanted to continue to design for an underserved population in the future. Lastly, students' response to the project was highly positive.

Conclusion A PBL project was created and implemented in an undergraduate design course. Students designed five denim wears for populations who have a rare disease for *Rare Disease Day*. Students' responses to the project were highly positive. The research will help instructors who want to promote students' analytical skills on design as well as widen their perspective on design for an underserved population.

References

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