In recent years, the consumer movement under the guidance of Consumers International added four more rights and they include:

- The satisfaction of basic needs—to have access to basic, essential goods and services; adequate food, clothing, shelter, health care, education, public utilities, water and sanitation.
- Redress—to receive a fair settlement of just claims, including compensation for misrepresentation, shoddy goods, or unsatisfactory services.

- Education—to acquire knowledge and skills needed to make informed, confident choices about goods and services, while being aware of basic consumer rights and responsibilities and how to act on them.
- A healthy environment—to live and work in an environment that is non-threatening to the well-being of present and future generations.

Retrieved from Consumers International, July 22, 2008, from http://www.consumersinternational. org/Templates/Internal.asp?NodeID=89647# rights

## Consumer Power Noted in 1901

As part of the Lake Placid Conference Proceedings, this excerpt of consumer power was read to the participants on June 29, 1901 by Caroline Hunt from her "Reevaluations" a theoretical study of "the teachings of home economics."

"Our highest duties come from our powers as consumers. Take the homemaker for example. She is the greatest consumer and as such holds greatest power over the producer. It is not only her duty to spend her income for the best welfare of the family but also her duty to say that no article should be procured for consumption which has removed from the maker, thru unsanitary conditions of labor and thru insufficient pay, all hope of the freedom which comes from bodily health; that for her consumption

there shall be produced no inutility which by forcing useless toil upon the maker has taken from him the hope of the freedom which comes from opportunity for useful labor. She holds it in her power to say that, for her, no article shall be made that necessitates child labor, that forces upon the young at a time when his values are not yet established, unnatural work that shall bring him to manhood enslaved in an underdeveloped body and an undeveloped intellect. She holds in her power to say that, for her no human being shall do a slave's work when machinery is available for the work."

East, M. (1982). *Caroline Hunt, Philosopher for Home Economics.* State College, PA: College of Education (reprinted by AAFCS in 2001), 60–61.

# Sustainable Design Practices and Consumer Behavior:

## FCS Student Perceptions

The purpose of this study was to gather information on the perceptions of sustainability in design held by family and consumer sciences (FCS) students majoring in interior design and apparel design/merchandising. Likert-scale responses were used to explore differences and similarities between students in the two majors. Overall, interior design students' mean scores were higher than those of apparel design/merchandising students, suggesting a greater awareness of sustainable design practices and principles. Understanding students' perceptions provides a basis for considering the inclusion of sustainability and sustainable products and systems in FCS curricula, which may alter professional practice and consumer choices.

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The concept of understanding the need for sustainable consumer practices is a major tenet of family and consumer sciences (FCS). FCS educators have an ethical responsibility to teach students to help protect the planet and public health, safety, and welfare as they participate in the merchandising and design industries. Students are the future educators, leaders, and consumers who will participate in changing unsustainable design, production, and consumption patterns. (For the purposes of this study, sustainability was defined, according to the definition outlined in the report of the World Commission on Environment and Development, as "the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs" [1987, p. 24].)

The issues FCS educators consider in teaching include the social, economic, and environmental factors that work together to drive sustainable merchandising and design solutions. As FCS professionals, "we understand the necessity of speaking out for, and working on, public policies that could improve individual, family and community well being" (Braun & Williams, 2002, p. 13). It is understood that the clothing, footwear, and textile industries are second only to agriculture in consuming the most water and contaminating waterways with the chemicals used in bleaching, dyeing, and finishing products (Stockinger, 2006). With global textile consumption estimated to be more than 30 million tons a year, the issue of the environmental consequences of textile production is important (Chen & Burns, 2006).

The primary purpose of this study was to examine the use of sustainable design practices by merchandising/apparel and interior design college students enrolled in consumer family

studies. Concomitant goals were to examine these students' perceptions and understanding of sustainability and to explore differences as they relate to the fields. As future consumers and developers of design-related products, design and merchandising students are in a unique position to educate their clients and customers on the merits of sustainable design.

## METHOD

In this study, students were surveyed in a cross-sectional, quantitative design. Data analyses were aimed at developing a greater understanding of the current sustainable design–related practices and principles of university students by major area of study. In the spring semester of 2006, students were invited to voluntarily complete the eight-item survey instrument used in this research. The sample of 158 juniors and seniors included 85 apparel design and merchandising (ADM) majors and 73 interior design (ID) majors. At San Francisco State University, where this study was conducted, students within the Consumer Family Studies/Dietetics program can major in either ADM or ID. A key aspect of this study involved exploring similarities and differences between ADM and ID students and highlighting areas of instruction requiring sustainability-related concepts.

The survey sought information related to students' design practices and perceptions of sustainable design. Students were provided with a printed statement that included the following definition of sustainable design: Sustainable design seeks to meet the needs of the present by reducing the consumption of nonrenewable resources and without compromising the ability of future generations to meet their own needs. Students were instructed to consider this definition in their responses to the survey items, which were rated on a Likert-type scale ranging from *never* (1) to *always* (5). Students also were asked to list the name of all companies, professional design organizations, and retailers that, in their opinion, integrated sustainable practices.

Statistical analyses examined variances between ADM and ID majors through independent-sample *t* tests. Pearson correlation coefficients were used to examine correlations between responses to survey items.

## FINDINGS AND DISCUSSION

Statistically significant differences between ADM majors and ID majors were found on four of the eight survey items (see Table 1). Responses to items focusing on integrating sustainability in projects and seeking sustainable products for projects indicated that ID students were more inclined to consider sustainability than were ADM students. An explanation for the variance between majors may be the extent to which aspects of green design are being adopted in the interior design profession through written and electronic formats (i.e., websites used for product sourcing, television, design magazines and publications). The apparel industry is beginning to embrace sustainability in product development, design, and marketing campaigns, which may lead to greater overall awareness of the issues by students. The responses to the item addressing responsibility to educate customers/clients illustrated ID students' tendencies toward perceiving their professional roles as educators, perhaps as a result of the consistent and often personal interactions between interior designers and their clients.

Responses to the item focusing on the extent of integration of sustainability into design processes revealed that ID students considered integration in the design process more often than students in ADM. The emphasis on both the potentially harmful effects of nonsustainable practices and the long-term benefits of sustainable design in the field of interiors has entered the mainstream through multiple outlets. For example, sustainable certification exists through organizations such as Leadership in Environmental Energy and Design (U.S. Green Building Council, 2008). This exposure offers students a tangible basis for their decision making. At present, there is a lack of consistent and clear sustainable standards in ADM.

No statistically significant differences were found between ADM majors and ID majors with respect to the other four survey items (see Table 1). Overall, responses did not indicate the perception that sustainable design requires more effort or more time, highlighting that sustainability, regardless of discipline, can be thought of as an integral element of design. However, the sustainable design process was perceived as both requiring additional and alternative thought and

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**Table 1.** Interior Design Students' and Apparel Design and Merchandising Students' Survey Scores

| SURVEY ITEM | INTERIOR DESIGN STUDENTS ($n = 73$) | | APPAREL DESIGN AND MERCHANDISING STUDENTS ($n = 85$) | | $t$ |
|---|---|---|---|---|---|
| | M | SD | M | SD | |
| To what extent have you considered integrating sustainability in your school project when it was not a requirement? | 3.08 | 1.25 | 2.59 | 1.12 | 3.11* |
| I always seek sustainable products to design with on my school projects | 2.83 | 1.20 | 2.19 | 1.04 | 3.56** |
| It is my responsibility to educate my customers/clients/fellow students about sustainable design | 4.28 | 0.98 | 3.42 | 1.28 | 4.73** |
| To what extent do you consider the integration of sustainability into the design process important? | 4.46 | 0.81 | 3.79 | 1.05 | 4.44** |
| Does consideration of sustainability in design require more effort/work? | 3.25 | 1.22 | 3.33 | 1.06 | −0.44 |
| Does sustainable design require you to think somehow differently about how you would approach the design process? | 3.54 | 1.16 | 3.76 | 2.20 | −1.20 |
| Sustainable design is more expensive in the long run | 2.56 | 1.11 | 2.74 | 1.04 | −1.08 |
| Does sustainable design have a positive global impact? | 4.68 | 0.58 | 4.53 | 0.72 | 1.39 |

*Note.* Items were rated on a Likert-type scale ranging from *never* (1) to *always* (5).
*$p < .002$; **$p < .0005$.

being more expensive in the long run. Students from both majors perceived sustainable design practices as having a positive global impact, and the positive global impact item had the highest mean score.

> The sustainable design process was perceived as both requiring additional and alternative thought and being more expensive in the long run.

Correlations between survey items were explored in an effort to further examine the students' perceptions and practices. A correlation of .44 ($p < .01$) was found between seeking sustainable products in school projects and considering integrating sustainability into the design process. This finding underscores the notion that embracing the concept of sustainability may lead to responsible practices and outcomes.

A correlation of .41 ($p < .01$) was found between seeking sustainable products in school projects and perceiving that educating customers, clients, and fellow students is an important aspect of sustainability. Educating others on the importance of sustainable design may involve a dedication to the values found in using sustainable products. Students can have a positive impact on the future of design while helping to maintain societal needs and growth.

Finally, a correlation of .70 ($p < .01$) was found between integrating sustainability in school projects when this was not a requirement and seeking sustainable products for projects. This correlation highlights the interconnectedness of these two concepts. Through continued practice beyond the classroom, sustainable product specification and purchase can provide a means of enhancing students' future development while perpetuating their responsible behavior.

## CONCLUSIONS AND APPLICATIONS
This study investigated student perceptions and practices as they relate to sustainability in design and consumer behavior. The study findings relate to the means by which students approach the concept of sustainability on the basis of their currently held perceptions, the importance of sustainability, and the analytical processes inherently or otherwise used in school projects.

The differences found between ID majors and ADM majors draw attention to the subtle variations that can play a major role in sustainable design education. They bring to light the need to reflect on content that might receive more emphasis in curricula (Kim & Johnson, 2007). Understanding differences provides a means to consider the inclusion of sustainability and sustainable products and systems in curriculum objectives, course content, and student experiences.

This study's findings suggest a greater need to consider objectives of sustainability in ADM courses. Assignments to support such objectives might include student-initiated research and projects in textiles (e.g., research papers on organic and renewable fibers), product development (e.g., garment design using renewable resources), and merchandising and visual display (e.g., themes representing responsible practices). FCS educators can make a significant contribution by examining content in which sustainable concepts and practices can be integrated into their courses. Such integration can have important effects on the considerations and decisions involved in the design process. Educators must consider the investments in time and knowledge needed to teach students to perceive themselves as agents of change who can affect the environment through design (Miller & Kato, 2006). This is underscored by the finding that students who seek sustainable products in their school projects more often consider educating others on the importance of sustainability.

> **Students who seek sustainable products in their school projects more often consider educating others on the importance of sustainability.**

FCS faculty are challenged to inspire and engage students in methods and practices of sustainable design. As FCS educators develop and update design and merchandising curricula,

they cannot assume that students have a basic understanding of the breadth of this topic. They must define clear objectives and develop assignments that will stretch students to think in new ways to achieve different and inspiring ends. Courses and curricula should challenge the status quo (and often the values of those involved) and offer students alternative perspectives that inspire them to become agents of change both as professionals and as consumers (Dickson, Rudd, & Lennon, 2006).

The challenge is to institute change within FCS programs and develop generations of consumers who recognize the value of sustainable and socially responsible products and services. These challenges and methods require understanding and comprehension of not only project requirements but also the processes of product development and production and where systems are established. By including sustainability in their curricula, FCS educators can influence perceptions that promote informed consumer behavior.

## REFERENCES

Braun, B., & Williams, S. (2002). We the people: Renewing commitment to civic engagement. *Journal of Family & Consumer Sciences, 94*(3), 8–19.

Chen, H., & Burns, L. D. (2006). Environmental analysis of textile products. *Clothing and Textiles Research Journal, 24*(3), 248–261.

Dickson, N. A., Rudd, N. A., & Lennon, S. J. (2006). Focused social responsibility: Part 2. *Clothing and Textiles Research Journal, 24*(4), 279–281.

Kim, E., & Johnson, K. K. P. (2007). The U.S. apparel industry: Futuring with undergraduate students in apparel majors. *Clothing and Textiles Research Journal, 25*(4), 283–306.

Miller, B. M., & Kato, S. L. (2006). Greening our future: Health and global motivators for teaching environmentally responsible design. *Journal of Family & Consumer Sciences, 98*(4), 52–55.

Stockinger, B. (2006). The fairest of them all. *Sportswear International.* Retrieved August 30, 2006, from http://www.katharinehamnett.com/Press/00s/Sportswear+International/?popup=tr.

U.S. Green Building Council. (2008). LEED certification process. Retrieved August 21, 2008, from http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222.

World Commission on Environment and Development. (1987). *Our common future.* Oxford, England: Oxford University Press.