

**Exploration of the meaning of sustainability in textiles and apparel  
discipline and prospects for curriculum enhancement**

**by**

**Anupama Pasricha**

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Family and Consumer Sciences Education

Program of Study Committee:

Sara J. Kadolph, Major Professor

Larry Ebbers

Mary Lynn Damhorst

Elena Karpova

Laurie Nichols

Iowa State University

Ames, Iowa

2010

Copyright © Anupama Pasricha, 2010. All rights reserved.

## TABLE OF CONTENTS

<b>LIST OF TABLES</b>	<b>iv</b>
<b>LIST OF FIGURES</b>	<b>v</b>
<b>ACKNOWLEDGEMENTS</b>	<b>vi</b>
<b>ABSTRACT</b>	<b>viii</b>
<b>CHAPTER 1: Introduction</b>	<b>1</b>
Statement of Problem	5
Significance of the study	7
Purpose Statement and Research Questions	11
Definitions	13
<b>CHAPTER 2: Review of literature</b>	<b>17</b>
Historical Development	18
United Nations	20
Ecological Literacy	21
Sustainability	22
The Millennials	24
College and a Sustainability Agenda	25
Ecological Awareness, Attitudes, and Behavior	26
New Ecological Paradigm (NEP)	30
Role of Media and Sustainability	32
Role of Lifestyle Pioneers	33
Textiles and Apparel	33
<b>CHAPTER 3: Methods</b>	<b>38</b>
Qualitative procedures	38
Purpose of the Study	39
Research Questions	40
Research Route	40
Focus Group Interviews	41
My Role and Bias	45
Individual interviews	47
Data analysis	48
<b>CHAPTER 4: Results</b>	<b>52</b>
Q1. Personal Definition of Sustainability	55
Q2. Ecological Challenges Faced by the Society	65
Q3. Issues Related to Sustainability	73
Q4. Sustainable Products	82

Q5. &Q 6. Fibers and Fabrics	91
Q7. Labels	97
Q8. T-shirts	104
Q9. Actions in Personal Life	111
Q10. Challenges to Sustainability	123
Q11. Fashion and Apparel Industry Initiatives	136
Q12. Curriculum	144
Additional Question 1 for Experts	156
Additional Question 2 for Experts	158
<b>CHAPTER 5: Conclusions and Implications</b>	<b>160</b>
Sustainability Literacy	162
Model Development	182
Factors for Sustainability Literacy	186
Sustainability Literacy Assessment/Measurement	188
Implications and Future Directions	189
<b>REFERENCES</b>	<b>197</b>
<b>APPENDIX A: IRB Human Subject Reviews, including the interview protocols for student focus groups and individual academic and industry expert interviews</b>	<b>215</b>
<b>APPENDIX B: Class announcement</b>	<b>241</b>
<b>APPENDIX C: E-mail message</b>	<b>242</b>
<b>APPENDIX D: Moderator's guide</b>	<b>243</b>
<b>APPENDIX E: Focus groups background information sheet</b>	<b>245</b>
<b>APPENDIX F: Interview protocol for focus groups</b>	<b>246</b>
<b>APPENDIX G: Interview protocol for experts</b>	<b>247</b>
<b>APPENDIX H: Selected questions from previous research related to Ecological literacy and meaning of sustainability</b>	<b>248</b>
<b>APPENDIX I: Conclusion themes – Knowledge, attitudes, and action</b>	<b>258</b>

## LIST OF TABLES

<b>Table 1. Major assumptions in the NEP</b>	<b>31</b>
<b>Table 2. Focus groups participant data</b>	<b>45</b>
<b>Table 3. Experts Interviewees</b>	<b>48</b>
<b>Table 4. Color coding for parallel themes from data analysis</b>	<b>55</b>
<b>Table 5. Themes on definition of sustainability</b>	<b>55</b>
<b>Table 6. Themes on ecological challenges</b>	<b>65</b>
<b>Table 7. Themes on issues related to sustainability</b>	<b>73</b>
<b>Table 8. Themes on sustainable products</b>	<b>82</b>
<b>Table 9. Themes on fibers and fabrics</b>	<b>91</b>
<b>Table 10. Themes on labels</b>	<b>98</b>
<b>Table 11. Themes on actions in personal life</b>	<b>111</b>
<b>Table 12. Themes on challenges to sustainability</b>	<b>124</b>
<b>Table 13. Themes on sustainable actions taken by fashion and apparel industry</b>	<b>136</b>

## **LIST OF FIGURES**

<b>Figure 1: Kollmuss and Agyeman's Model of Pro-environmental Behavior</b>	<b>28</b>
<b>Figure 2: Participant Model for Decision Making in Personal and Professional Spheres</b>	<b>183</b>
<b>Figure 3: Student Model for Decision Making in Personal and Professional Spheres</b>	<b>184</b>
<b>Figure 4: Faculty Model for Decision Making in Personal and Professional Spheres</b>	<b>185</b>
<b>Figure 5: Industry Model for Decision Making in Personal and Professional Spheres</b>	<b>186</b>

## ACKNOWLEDGEMENTS

*“You must be the change you want to see in the world.”*

Mahatma Gandhi

This project is a reflection of me and my world-view that was shaped while I was growing up in a family that believed in *Gandhian* principles. The path to this work was not easy as it advocates for “conscious consumption,” a term I learned from one of the experts who participated in my research. I had spoken and unspoken conflicts even with my family members and ambivalence because I am a fashion professor. Sailing through all those conflicts, challenges, and barriers did not deter my sustainable being and brought me bliss and triumph, it empowered me to be the change.

I would like to express my deepest gratitude to my adviser, Dr. Sara J. Kadolph for her belief in me and my aspirations. Her tireless work to edit the endless iterations of all chapters is admirable. With her, there is nothing that is impossible; she makes tasks sound easy and attainable. Her patience, dedication, and perseverance helped me through the entire dissertation process and brought out the best in me. I would also like to thank my committee members Dr. Ebberts, Dr. Damhorst, Dr. Karpova, and Dr. Nichols for their insightful and valuable suggestions and comments to improve my research. Their support and flexibility is unparalleled.

I am very grateful to Trudy Landgren, Dr. Mary Lynn Damhorst, and Dr. Elena Karpova for facilitating student focus group participant recruitment through their classes. I want to specially thank all the students, academic experts, and industry experts who participated in my research and were a source of my learning. I want to give my sincere thanks to my colleagues Andrea Olson and Sook Lim who never dissuaded from giving

their help and perspectives when asked for. I also want to thank my department colleagues who constantly supported me and my students at St. Kate's, whose admiration for my work encouraged my heart.

I am extremely grateful to my husband Dinesh and my daughters Sanya and Apoorva for their unrelenting love, care, and support for my academic pursuits. They lived through my stresses, eased my pressures, and believed in me. I also thank my in-laws and my mom who have encouraged me to accomplish my goals.

Last but not the least, friends have inspired and nurtured me. My friend Anuradha has been a pillar of support, a consultant, and a mentor.

This work is dedicated to all who have touched my life!

## ABSTRACT

Sustainability is gaining importance because of heightened ecological challenges. The UN declared 2005-2014 as the decade of sustainable development encouraging educational institutions at all levels to nurture ecologically literate individuals. An ecologically literate person has the knowledge necessary to comprehend interrelatedness among individuals, society and nature, an attitude of care or stewardship, and the practical competence required to act on the basis of knowledge and feelings.

This study focuses on developing an understanding of the definition of the term sustainability, and expectations related to sustainability for education in the discipline of textiles and apparel. Focus group interviews with college students provided an understanding as to how they define sustainability and how they take action to embody sustainable behavior in their personal and professional lives. The focus group interviews describe their ecological literacy level and understanding of sustainability. In order to get a holistic perspective, individual interviews with two additional audiences (academic and industry) were conducted.

Results of focus groups indicated that students use a variety of terms to define sustainability and view it from an *ecocentric* perspective, but complete understanding and a comprehensive definition are absent. Results of individual interviews indicate that a life-long learning focus is critical to understand sustainability and its connection to the textile and apparel industry.

Overall, results indicated that students are engaged with sustainability and take actions based on their knowledge, but that their knowledge is limited. Themes related to environment, longevity, recycling, resource depletion and conservation, mass



engagement, conscious shopping behavior, cost of sustainable choices and a lack of education for sustainability were common among the three types of interviewees.

Student's *ecocentric* perspective focused on environmental sustainability while experts had a balance of social and environmental sustainability.

The results of question on curriculum provided valuable insights on content and pedagogy from all three groups of interviews. Implications of this research address students, educators, textiles and apparel professionals and businesses, and consumers.

## **CHAPTER 1**

### **Introduction**

Sustainability and going green are mantras for today's world. Every day we hear of new sustainability initiatives. Education is the key to support and develop these initiatives. However, sustainability cannot occur without understanding ecology. Today's student must be ecologically literate to contribute to a sustainable world. Ecological literacy and sustainability are interconnected terms. In order for a system to be sustainable, it must be based on ecologically sound information. Well-prepared future professionals must have a holistic perspective on sustainability that builds on their ecological literacy. Despite the omnipresence of sustainability, many educators at colleges and universities are not yet aware of the understanding and meaning of sustainability for students entering a degree program and their ecological literacy level. Thus, educators are not well informed as to the best or most effective ways to incorporate sustainability in the curriculum and teaching agenda.

A holistic perspective on sustainability incorporates social justice and environmental integrity as major goals (Kermath, n.d.). However, several researchers have expressed goals either in terms of social justice or environmental integrity, missing the holistic paradigm of sustainability that Kermath (n.d.) and Lawrence (2005) mention. Carew and Mitchell (2002) compiled sustainability principles from different researchers in their literature review (see Chapter 2); finding a bifurcated view of sustainability in which some researchers focus on the environment while others researchers focus on social issues.

Ecological literacy stems from the tenets of human ecology, which is the study of interrelations among people, their habitats, and the environment beyond their immediate surroundings that form an ecological unit (Lawrence, 2005). Ecological literacy implies a deep understanding about ecosystems, an ability to make choices to protect them, and a personal concern for a healthy planet. All three components of ecological literacy are important; ecosystems, protection of the systems, and personal concern. The human ecology perspective uses a holistic framework that grounds ecological literacy as an important construct. Ecological literacy is also referred to as sustainability literacy; however, some authors consider sustainability literacy as more general than ecological literacy (Stibbe, 2008). For the purpose of this research the terms “ecological literacy” and “sustainability literacy” have been used interchangeably (see definitions). David Orr, known for his pioneering work in ecological literacy in higher education, coined the term “ecological literacy” and explained it as,

Ecological Literacy presumes a breadth of experience with healthy natural systems... a broad understanding of how people and societies relate to each other and to natural systems and how they might do so sustainably... the knowledge necessary to comprehend interrelatedness... an attitude of care or stewardship... in a phrase, it is that quality of mind that seeks out connections... Ecological Literacy is driven by the sense of wonder, the sheer delight in being alive in a beautiful, mysterious, bountiful world... to become ecologically literate, one must certainly be able to read... to know what is countable and what is not... to think broadly, to know something of what is hitched to what... to see things in their wholeness... to know the vital signs of the planet... to know that our health, well-

being, and ultimately our survival depend on working with, not against, natural forces...(1992, pp. 86-87)

This explanation leads to a comprehensive understanding of ecological literacy as knowledge, attitudes, and actions or behavior. The ecologically literate person has the knowledge necessary to comprehend interrelatedness among individuals, society and nature, an attitude of care or stewardship, and the practical competence required to act on the basis of knowledge and feelings (Orr, 1992). Lawrence (2005) states that, “there is a continual interchange among ecological, economic, other social and cultural components of human ecosystems” (p. 142). A study conducted by Robertson (2007) substantiated the interconnectedness of personal, curricular, programmatic, institutional, community, and policy system level bridges and barriers to nurture ecological literacy in environmental education in British Columbia.

Thus, ecological literacy is one path to sustainability and sustainable development. Sustainable development is grounded on three pillars: social (people), environment (planet), and economic (profit), commonly known as Triple Bottom Line (TBL) in the corporate world, a term coined by John Elkington (Anderson, April 4, 2007; Lawrence, 2005; “Principle of..,” n.d.).

How does ecological literacy contribute to sustainability? How can educators build on students’ literacy levels? What does it mean to be sustainable to future professionals? Does this meaning translate into action? Is the meaning of sustainability the same in this globalized world? Different people do not share a uniform view of environment, making an intercultural dialogue important (Gambini, 2006). Merchant’s

(1992) focus on self-reflection for better understanding and realization of abuses of environment and society is an incredible way to awaken individual wisdom and sense.

The world is going through changes in climate, ecology, economics, and society. No one knows if these changes will be beneficial. According to Merchant (1992) all of us know that climate and ecological changes are hitting a crisis situation. Can we keep going on like this? If yes, how long can the earth sustain itself with its abused resources? We need a knowledge base to make behavior changes that embody sustainability. General ecological awareness predicts sustainable behavior or action. With higher awareness, an individual is more likely to be environmentally responsible (Kals & Maes, 2002), behavior that is sought after for both producers and consumers. A better understanding of this behavior will facilitate development of policies and strategies that support sustainability (“Sustainable Consumption and...”n.d).

Many critics claim that our education system has flaws. The US Partnership on Decade of Sustainable Development created the National Education for Sustainability: K-12 Sustainability Learning Standards that integrate all aspects of sustainability throughout K-12 education. Orr (2004) stated that the education system prepares graduates without any broad and integrated idea of things. According to Bird (2008), we should prepare individuals to know the target market perceptions and barriers as they relate to sustainability and try to remove barriers to bring positive life-style change. However, according to Bowers (1996), ecological literacy does not happen just in structured school education, it is more like a cultural phenomenon reflected in everyday life through assumptions, values, products and technology, and actions.

### *Statement of The Problem*

There is an increased awareness of global problems as there is a realization that humans and their lifestyles are harming the environment (Abdul-Wahab, 2008; Merchant, 1992; Schulz & Zelezny, 1998; Sia Su, 2008). University students typically fall in the millennial generation that is defined by birth years between 1977 and 1994 by the Center of Digital Education (CDE, 2007). There is substantial evidence that university students are ecologically literate. They have undertaken several initiatives related to sustainability (Boekeloo, 2008; Ruben, 1993). For instance, Muhlenberg College's students published a sustainable living guide with a focus on recycling, reduction in energy consumption, green cleaning products, etc. (June, 2007). According to Tom Kelly, Director of the Office of Sustainability at the University of New Hampshire, students come to college imagining that they would have the power to change the world for better ("Sustainability from A..", 2007). Lipka (2006) states, "On many campuses, students have become watchdogs for sustainability (p. 4)." Students have also started inquiring about campus sustainability during admissions (Lipka, 2006). There is evidence of growing ecological literacy by participation in environmentally-conscious actions and behavior (Mertig, Dunlap, & Morrison, 2002). Boekeloo states that the millennial generation is the most dynamic and the most willing to take action and bring positive changes in their environment (2008). Thus, it appears that the millennial generation is somewhat ecologically literate in that their behavior is reflecting their knowledge and attitudes.

According to J. Ottman Consulting (1991), "the majority of Americans claim to be environmentalists, and worldwide membership in environmental organizations has been growing at a rate of 20 percent a year" (Cited in Kim and Damhorst 1998, p. 127).

Membership in student environmental groups is on the rise, too (Boekeloo, 2008).

However, there is little research on values, attitudes, and pro-environmental behavior (Schulz & Zeleny, 1998). Furthermore, there is little scholarly literature that addresses awareness of sustainability by the public and more specifically by college students. There is even less literature addressing the meaning college students attach to the term “sustainability.” According to Kim and Damhorst (1998), “there is limited research on consumers’ level of knowledge (or awareness) of the impact that apparel products have on the environment.” In 1998, Kim and Damhorst identified studies that had found that the general population and college students have limited knowledge of environmental issues. In 1998, there was little research on environmental or ecological literacy of college students. The literature review revealed that environmental responsibility is researched separately from social responsibility or these terms are used interchangeably; however, sustainability entails both behaviors. Lawrence (2005) stated that the study of sustainability is divided between social and physical sciences and that this compartmentalized approach should be replaced with interdisciplinary and trans-disciplinary concepts and methods.

The scales including New Ecological Paradigm (NEP) that have been used are either focused on environmental aspect of sustainability or on social responsibility aspect of sustainability. This research aims to use the interdisciplinary and holistic nature of human ecology as a framework to explore the meaning of sustainability and ecological literacy of college students in textiles and apparel. To address the overall research purpose, first, it is necessary to learn about how ecological literacy in the discipline of textiles and apparel is conceptualized by experts and non-experts.

### *Significance of The Study*

Sustainability is a buzzword, a trend, and a cultural movement in the *zeitgeist*. Sustainability is a strategic initiative in 44% of the companies surveyed by Retail System Research funded by DigiPOS Stores Solution and IBM (Wilson, 2008). Worldwide, universities and other educational systems are increasing efforts to incorporate sustainability issues in their curriculum despite the confusion and debate about what sustainability means and how it is relevant within the context of the educational system (Calder & Clugston, 2003). National Education for Sustainability: K-12. Sustainability Learning Standards is a step toward preparing students to be ecologically literate by the time they enter colleges and universities. The declaration of the Decade of Sustainable Development and Agenda 21 Document, a global action plan for delivering sustainable development, asserts the importance of sustainability and the role of education in preparing individuals to be in-charge of the future of the earth. The documents prepared by UNESCO suggest several modes to implement the goals of sustainable development. According to Calder and Clugston (2003), “The United States has barely acknowledged Agenda 21, let alone attempted to implement it.” Implementation can only be effective if educators understand where pupils are in their understanding of sustainability.

Van Den Berg acknowledged that the acceptance of *ecocentric* ideas is becoming so widespread that new and effective tools are needed to measure these ideas (Van Den Born, 2008). However, according to a survey ( $n=1600$ ) conducted in January 2007 by Hartman Group Inc., just about 54% of individuals claim any familiarity at all with the term “sustainability,” but most of these individuals cannot define it. The current perceptions of sustainability are activist and political, fear-based with focus on



environmental elements whereas evolving perceptions are personal and hopeful with a focus on social elements (L. Demeritt, President and COO, Hartman Group, Inc., Power Point, E-mail communication, November 14, 2008; “The Consumer Side...”, 2008).

The concept of sustainability is not widely understood and may mean different things to different individuals. Some examples include health, wellness, organic, environmental consciousness, fair trade, simple living, and buying locally. Scully (2000) affirmed:

Several authors have tried to define sustainability including the most popular definition that was coined in 1987 by the *United Nations' World Commission on Environment and Development*: Sustainability means "meeting the needs of the present without compromising the ability of future generations to meet their own needs (§ 2).

However, Oskamp (2002, p. 305-306) suggested that this definition is lacking in completeness and she provided a more explicit definition, while cognizant of the fact that her definition also needs further development. According to Oskamp, sustainability has four key domains: ecological, social, economic, and political/institutional/cultural.

Other terms associated with sustainability are equally ambiguous. Organic, fair trade, energy-efficient, environmental, biodegradable, and recycle are some of the terms that are used in association with ethical and green behavior. However, these terms have multiple meanings and interpretations because there is no established definition of them (Connolly & Shaw, 2006). In addition, ozone depletion, deforestation, loss of biodiversity, climate change, and global warming are additional major terms associated with environmental concern (Dunlap, Van Liere, Mertig, & Jones, 2000).

Social responsibility, too, has a multitude of meanings and definitions. Dickson and Eckman (2006) have developed a description of *socially responsible apparel/textile business* synthesizing perspectives of International Textiles and Apparel Association (ITAA) members. The description includes three conceptual dimensions and includes environmental sustainability. According to Dickson and Eckman (2006, p. 188),

Socially responsible apparel and textile business involves

- An *orientation* encompassing the environment, its people, the apparel/textile products made and consumed, and the systematic impact that production, marketing, and consumption of these products and their component parts has on multiple stakeholders and the environment.
- A *philosophy* that balances ethics/morality with profitability, which is achieved through accountability-based business decisions and strategies.
- A desire for *outcomes* that positively affect, or do very little harm to, the world and its people.

This definition resonates with the UN definition of sustainable development. The special *Clothing and Textiles Research Journal (CTRJ)* issues, July and October 2006 on social responsibility, provide evidence of a wide spectrum of social responsibility as a construct. The focus of the papers includes a variety of perspectives such as workforce justice, ethics, responsible buying/sourcing, environmental footprint, recycling, sweatshops, and negative media influence.

Maguire (2008) stated that Dr. Henry Boyter from the Institute of Textile Technology asked the question, “what does “sustainability” and “green” mean?”, thus reiterating that these meanings are yet not clear. This emphasizes the question that is

central to this research: What is the contribution to the body of knowledge on sustainability within the purview of fashion and apparel education and industry?

According to the World Trade Organization Report, textiles and clothing [apparel] is considered one of the major product groups in the world trade of manufactured goods. Textiles and apparel industries are considered among the most environmentally damaging and other features of the industry such as fast changing trends and premature product replacement are anti-ecology. The textile industry itself is considered one of the biggest consumers of water (Anderson, August, 2008). Currently, apparel textbooks attend to social and environmental issues briefly but they are not addressed in depth or from post-modern and critical theory perspectives; hence, there is a need to incorporate sensibility toward these issues (Morgado, 1996). It is very important to understand the student mindset to incorporate profound sensibility to such issues and transform education. Martens (2006, ¶ 40) stated,

Today's students will be the business leaders, scientific researchers, politicians, artists, and citizens of tomorrow. The extent to which they will be prepared to make decisions in favor of a sustainable future depends on the awareness, knowledge, expertise, and values they have acquired during their studies and in the subsequent years. For this reason, the concepts and themes of sustainability should be integrated into all levels of education. Curricula must be revised so that sustainable development forms a guiding principle throughout the entire period of their studies—and afterwards too (see Orr, 1992). With an increasingly widespread awareness of this need, the United Nations has now proclaimed the coming decade as the “Decade of Education for Sustainable Development.”

Universities have a compelling responsibility to increase awareness and knowledge to prepare future leaders and professionals for creating an environmentally sustainable future (Calder & Clugston, 2003). This study will provide insight as to ecological literacy and the meanings of sustainability that textiles and apparel students hold. It will explore meaning of sustainability, ecological literacy, and educational expectations related to sustainability for textiles and apparel students. The goal of the research is to provide information for the development of appropriate curriculum and courses for textiles and apparel students. Inclusion of students' points-of-view and expert-generated concepts from higher education and the industry will ensure inclusion of the perspectives of learners, educators, and the real-world practitioners and more balanced curriculum. Because there has been no assessment of textiles and apparel students' understanding of sustainability, this study will make a significant contribution to the body of knowledge about these students. This study will also inform educators so that they are better able to build the curriculum at the appropriate learning level for content and pedagogy. The transformed curriculum will contribute to ecologically literate graduates and professionals. This will enable new professionals within the discipline to be sustainable in their choices and actions.

### ***Purpose Statement and Research Questions***

As a first step in understanding ecological literacy an exploratory study was necessary. This study focuses on developing an understanding of the definition of the term sustainability, and expectations related to sustainability for education in the discipline of textiles and apparel. This study will provide a better understanding of students' positions and contextualize sustainability-enhanced content and curriculum. In

order to get a holistic perspective two additional audiences (academic and industry) were included. Thus, this study may inform educators so that they are better able to build the curriculum at the appropriate learning level. The transformed curriculum will contribute to ecologically-literate graduates and professionals. This will enable new professionals within the field to be sustainable in their choices and actions. The research questions guiding this project are:

Q. What is the meaning of the word “sustainability” in the discipline of textiles and apparel? What mental picture and notion of sustainable do individuals in the discipline of textiles and apparel subscribe to?

Q. How do individuals in the discipline of textiles and apparel define sustainability? How do they feel about sustainability and its multiple dimensions (social responsibility, environmental issues, etc.)?

Q. Do these individuals take actions related to sustainability? If yes, what type of actions? If no, why?

Q. What are the expectations among these individuals for textiles and apparel education relative to sustainability?

### ***Definitions***

#### ***Anthropocentric***

Considering human beings as the most significant entity of the universe.

Source: <http://www.merriam-webster.com/dictionary/anthropocentric>

#### ***Awareness***

Knowledge that something exists, or understanding of a situation or subject at the present time based on information or experience

Source: <http://dictionary.cambridge.org/dictionary/british/awareness>

#### ***Ecocentric***

A philosophy that claims moral values and rights for both organisms and ecological systems and processes.

Source: [highered.mcgraw-hill.com/sites/0070294267/student\\_view0/glossary\\_e-l.html](http://highered.mcgraw-hill.com/sites/0070294267/student_view0/glossary_e-l.html)

#### ***Ecological Literacy***

An assessment of a person's knowledge, attitudes, and behaviors related to understanding and appreciating interrelatedness among individuals, society and nature.

#### ***Egocentric***

Concerned with the individual rather than society.

Source: <http://www.merriam-webster.com/dictionary/egocentric>

#### ***Green***

A supporter of a social and political movement that espouses global environmental protection, bioregionalism, social responsibility, and nonviolence.

Source: <http://www.answers.com/green&r=67>

***Green Product*** (Elkington et. al, 1990, p. 6-7)

Ideally a green product is one that

- Is not dangerous to the health of people or animals,
- Does not cause damage to the environment during manufacture, use or disposal,
- Does not consume a disproportionate amount of energy and other resources during manufacture, use or disposal,
- Does not cause unnecessary waste due either to excessive packaging or to a short useful life,
- Does not involve use of cruelty to animals,
- Does not use materials derived from threatened species or environments, and
- Does not trade price, quality, nutrition, or convenience for environmental quality.

***Going Green***

Taking steps to reduce one's negative effect on the environment.

Source: [kansascity.bizjournals.com/kansascity/stories/2007/11/12/focus13.html](http://kansascity.bizjournals.com/kansascity/stories/2007/11/12/focus13.html)

***Green Washing***

Green washing or greenwashing is the unjustified appropriation of environmental virtue by a company, an industry, a government, a politician or even a non-government organization to create a pro-environmental image, sell a product or a policy, or to try and rehabilitate their standing with the public and decision makers after being embroiled in controversy.

Source: <http://www.sourcewatch.org/index.php?title=Greenwashing>

### ***Knowledge***

Understanding of or information about a subject which a person gets by experience or study, and which is either in a person's mind or known by people generally.

Source: <http://dictionary.cambridge.org/dictionary/british/knowledge>

### ***Sustainability***

- Meeting the needs of the present without compromising the ability of future generations to meet their own needs (UN World Commission on Environment and Development).
- Sustainability: the successful meeting of present social, economic, and environmental needs without compromising the ability of future generation to meet their own needs; *derived from the most common definition of sustainability, created in 1987 at the World Commission on Environment and Development.*

Source: <http://www.brownflynn.com/RESOURCECENTER/Glossary.aspx>

- Sustainability is integrating human well-being with natural integrity (Fletcher, 2008).
- Social responsibility encompasses sustainability with specific issues like resource consumption, pollution, consumer well-being, human rights, health and safety, product affordability and quality (Dickson, Loker, & Eckman, 2009).

### ***Sustainable Development***

The term refers to achieving economic and social development in ways that do not exhaust a country's natural resources. See, also, Ashford (1995) and The World Commission on Environment and Development (1987). In the Commission's words: "... sustainable development is ... a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and



institutional change are made consistent with the future as well as present needs" (Ibid: 9).

Source: <http://www.census.gov/ipc/www/wp96glos.html>

### ***Sustainability Literacy***

Knowledge, skills, and understanding required to fashion a more sustainable future.

Source: [http://arts.brighton.ac.uk/\\_\\_data/assets/pdf\\_file/0010/6202/Sustainability-Literacy-Blewitt-and-Vare.pdf](http://arts.brighton.ac.uk/__data/assets/pdf_file/0010/6202/Sustainability-Literacy-Blewitt-and-Vare.pdf)

### ***Textiles and Apparel Students***

Students majoring in any field related to textiles and apparel such as apparel design, merchandising and production, fashion design, apparel design, fashion merchandising, apparel retailing, and fashion communication.

## **CHAPTER 2**

### **Review of Literature**

“Green” is yet to be defined clearly (Ottman, 1992). Sustainability means different things to different people, and its definition is elusive (Lawrence, 2005). It can be described as survivability, greening effort, health, wellness, organic, fair trade, simple living, or buying locally. In addition, the level of engagement with ecological thoughts and actions is being described by shades of green. Selby (2000) states that the individuals with a dark green philosophy view an integrated version of issues that encompass culture, development, environmental and social justice, equity, health, and peace. According to Selby, “green” only encompasses “environmental” dimensions (Selby, 2000).

The Hartman Group, Inc. is a consumer research company that published a report on sustainability in 2007, and a second report on sustainability outlook is forthcoming (“The Hartman Report...”, 2007). One of the major insights from their first sustainability report is that there is inconsistent understanding of what sustainability is and should be. The report divided consumers in three segments, periphery, mid-level, and core, based on a continuum of choosing sustainability from three dimensions: convenience, personal benefit, and the greater good. The individuals who fully understand the concept and relate it to greater good are referred as “core” and formed only 18% of the surveyed population (“The Hartman Report..”, 2007). The ultimate goal of creating ecologically literate individuals would be to transform all individuals to be members of the “core” group. In the UK, 80% of the population is aware of sustainability and are demonstrating their understanding by making choices/actions such as buying local food, reducing packaging, and recycling rubbish (“Green Consumerism,” 2007). According to a survey, many MBA

students are trying to incorporate green in their personal lives by switching brands and using products that have natural ingredients; however, the survey also found that in the current economic recession, students are not necessarily looking for a “green” employer (Knight, 2008).

### ***Historical Development***

*Silent Spring* (1962) by Rachel Carson and *Tragedy of Commons* in 1968 by Garret Hardin were eye-openers creating an arena for further thought and action. These publications initiated public concern for environmental problems (Dunlap & Catton, 1994). Increased level of education, affluence, and urbanization facilitated the pro-environment movement (et al., (2002). According to et al. (2002, p.448), the environmental movement is a very important force of change, “The US environmental movement has been one of the most successful and enduring social movements of the twentieth century.” This era of change is known as the postmodern era in that lifestyle and attitude changes are expressions of postmodern thought. Postmodernism is characterized by nature of contemporary society in which there is a break with and reaction against modern society and transformation of norms and values. It is described by pastiche as opposed to order and harmony of the modern society (Henderson & DeLong, 2000; Morgado, 1996).

The first Earth Day in 1970 sparked interest further and the 1970s witnessed the prominence of environmental issues in the nation’s political agenda (Dunlop, 2000; Oskamp, 2002). In the global arena, 1972 witnessed the United Nations Stockholm Declaration on environmental concerns (Calder & Clugston, 2003). The Tbilisi Declaration of 1977 focused on environmental education (Tbilisi declaration, n.d.). The

Bruntland Report of 1987, an outcome of the UNCED Rio De Janeiro Conference, focused on sustainable development and further precipitated the concern for sustainability (Corral-verdugo et. al., 2008; Degenhardt, 2002). The Talloires Declaration in 1990 was an epiphany for higher education. It recognized that universities have a compelling responsibility to increase awareness and knowledge to prepare future leaders and professionals for creating an environmentally sustainable future (Calder & Clugston, 2003). November of 2001 saw development of a significant document, *The Doha Declaration*; which was a collaborative effort of 142 countries. The focus of this declaration was on the sustainable development of trading systems (Worldwatch Institute Report, 2006). Early 2005 saw the formal launching of the UN Decade of Education for Sustainable Development. Recent literature such as Barbara Kingsolver's *Animal, Vegetable, Miracle* (2007) provides evidence of the economic, social, and health benefits by producing organically and buying locally. Organic products and buying local are huge components in sustainability.

Late twentieth century activism referred to as "ecologism" with an ecocentric worldview has a primary goal of maintaining ecological sustainability with the ideology that ecosystems should be protected for the benefit of all species ( et al., 2002). The strategies of ecologism include lobbying, litigation, electoral action, direct action, and lifestyle change. On the other hand, the impediments are status quo, excess human production, consumption, and population ( et al., 2002). Both the strategies and impediments reflect post modernity.

### *United Nations*

The United Nations General Assembly listed many goals under the purview of the United Nations Decade of Sustainable Development 2005-2014. Education, public awareness and training are the focus of Chapter 36 of Agenda Item 21. Agenda 21 was adopted in 1992 and was included in the International Work Program on the same theme in 1996 (Education and Awareness, 2006). UNESCO's definition of Education for Sustainable Development (ESD) (UNESCO, n.d.) is:

It is fundamentally about values, with respect at the centre: respect for others, including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit. Education enables us to understand ourselves and others and our links with the wider natural and social environment, and this understanding serves as a durable basis for building respect. Along with a sense of justice, responsibility, exploration and dialogue, ESD aims to move us to adopting behaviors and practices which enable all to live a full life without being deprived of basics (¶ 3).

According to the International Implementation Scheme (IIS) (n.d.)

ESD is for everyone, at whatever stage of life they find themselves. It takes place therefore within a perspective of lifelong learning, engaging all possible spaces of learning, formal, non-formal and informal, from early childhood to adult life. ESD calls for a re-orientation of educational approaches – curriculum and content, pedagogy and examinations. Spaces for learning include non-formal learning, community-based organizations and local civil society, the workplace, formal

education, technical and vocational training, teacher training, higher education educational inspectorates, policy-making bodies, ...and beyond (UNESCO, 3).

Under the Johannesburg plan of implementations, the Agenda 21 document suggests that one should, “Integrate sustainable development into education systems at all levels of education in order to promote education as a key agent for change.”(“Johannesburg Plan of...” n.d.)

### *Ecological Literacy*

David Orr is known for his pioneering work on environmental literacy and ecological design. He states

Ecological Literacy presumes a breadth of experience with healthy natural systems... a broad understanding of how people and societies relate to each other and to natural systems and how they might do so sustainably... the knowledge necessary to comprehend interrelatedness... an attitude of care or stewardship... in a phrase, it is that quality of mind that seeks out connections... Ecological Literacy is driven by the sense of wonder, the sheer delight in being alive in a beautiful, mysterious, bountiful world... to become ecologically literate, one must certainly be able to read... to know what is countable and what is not... to think broadly, to know something of what is hitched to what... to see things in their wholeness... to know the vital signs of the planet... to know that our health, well-being, and ultimately our survival depend on working with, not against, natural forces...(1992, pp. 86-87).

O’Brien (2007) conducted research on environmental literacy and developed a survey instrument to measure awareness and knowledge about environmental issues and

attitudes toward environmental issues for the Midwestern United States. O'Brien's research focused on Iowa State University (ISU), students and found that ISU students had moderate levels of environmental knowledge based on her survey. She also found wide variation in the knowledge level across campus and that the students in the College of Human Sciences had a low level of environmental knowledge

### *Sustainability*

According to Kermath (n.d), sustainability is a condition with environmental integrity and social justice. Kermath further explains environmental integrity as the “ability of the whole environment to function as natural as possible and to do so without compromising the ability of the ecosphere from supporting all life forms on the planet and to maintain its inherent evolutionary potential” (paragraph 6) and he explains social justice as “fair and equitable access to, and distribution of essential resources and power, fairly applied laws and regulations, and the guaranteed opportunity for all individuals and communities to contribute to the pursuit of meeting human needs, improving the human condition, fully realizing human potentials for everyone in safe and clean environments, and to receive an adequate and fair return on their investments of capital, creativity, labor, and time” (paragraph 7). A study conducted by Carew and Mitchell (2002) on engineering students in Australia revealed that 65 percent of the participating students held pre-or uni-structural conceptions of sustainability despite completing a specific unit on sustainability based on SOLO taxonomy. This finding suggests that probably there are barriers in understanding the concept or students do not care to learn. This study also compiled principles of sustainability from mainly engineering literature. In that literature, sustainability is represented as an end and further points out that sustainability is a means

too by applying these principles in decision-making processes making sustainability both an end and a means. The sustainability principles compiled by Carew and Mitchell (2002, p. 351) include,

1. Recognition and respect for the limits of nature's capacity for regeneration, and limits to society and the economy of economic systems to support and guide transactions emanating from human activity;
2. Recognition of interdependence and intradependence of ecosystem, socio-system, and economy...between human and non-human entities;
3. Intergenerational equity, in other words the right of future generation to inherit a healthy and ecologically balanced environment from present generations;
4. Intragenerational equity, for example, redistribution of wealth, power and opportunity with a view to reducing current interpersonal and international disparity;
5. Respect for social and cultural freedom, with concomitant acceptance of the responsibilities inherent in cultural and social freedom;
6. Meaningful involvement of stakeholders in the decision-making process, including the public and private sectors, international and local representatives, and non-human agents. The more extreme position is a call for equal distribution of power amongst all stake-holders in decision-making;
7. Equal representation of economic, environmental and social priorities in decision-making; and
8. Recognition of the unique contextual factors in each decision-making situation taking responsibility for the impacts resulting from one's decisions



### *The Millennials*

Millennial college or university students are a part of the last generation to be born in the twentieth century (Howe & Strauss, 2000). The exact years of birth of millennials vary depending upon demographers. According to the Center of Health Statistics, millennials are Americans born between 1977 and 1994 (NAS Insights, 2006) whereas the CDE places millennials as born between 1979 and 1994 (CDE, 2007). This generation has become so important that it has been given different names; some including Generation Y, Net Generation, and iGeneration.

A private (for profit) consumer research company, The Hartman Group, Inc. (2008) studied the millennial generation using landscape review, ethnographical background, trend tracking, social network parties, and neurolinguistic mapping. According to this research, millennials were raised in the age of Earth Day and grew-up watching cartoons like *Captain Planet* that makes recycling cool. The other relevant findings include that millennials are tired and bored with consuming, have truly global tastes, and view the world as a social construct. For this generation, sustainability is about being community-oriented, and supporting socially-conscious and small local businesses. They refer to sustainability as “going green.” They are extremely aware of local and global environments. Many of them do not understand the meaning of the term organic but are very conscious of socially-responsible companies (L. Demerit, President and COO, Hartman Group, Inc., A Tinderbox Report Power Point, E-mail communication, November 14, 2008). A study on youth and consumption was conducted by the UN. The study surveyed youth from 24 countries; 75 percent of the respondents agreed that the

biggest challenges for the future are reducing environmental pollution, improving human health, and respecting human rights (McGregor, 2002).

Millennials live in a culture called “postmodern.” Morgado (1996) defines “Postmodern as a body of critical theory about the nature of contemporary society” (p.41). Contemporary society is referred to as a post-industrial society with a focus on social responsibility and professional commitment rather than an exploitation and profit ethic (Morgado, 1996). Drucker (1993) refers to contemporary society as transformed from the previous adaptation that was modern and industrial, making it postmodern and post-industrial. According to Peter Drucker (1993),

Every few hundred years in Western history, there occurs a sharp transformation... within a few short decades, society rearranges itself—its worldview; its basic values; its social and political structure; its arts; its key institutions... Fifty years later, there is a new world and the people born then cannot even imagine the world in which their grandparents lived and into which their own parents were born. We are currently living through just such a transformation (p.1).

### ***Colleges and a Sustainability Agenda***

The Association for the Advancement of Sustainability in Higher Education (AASHE) is

an association of colleges and universities in the U.S. and Canada working to create a sustainable future. It was founded in 2006 with a mission to promote sustainability in all sectors of higher education - from governance and operations

to curriculum and outreach - through education, communication, research and professional development (AASHE, n.d., ¶ 1).

Several four-year degree and two-year colleges are members of AASHE where they share a common sustainability agenda.

### ***Ecological Awareness, Attitudes and Behavior***

A shift in society values was becoming evident in the 1990s. The shift is toward a focus on quality-of-life, less being more, re-use/durability, and a “we” philosophy (Ottman, 1992). Based on social-psychological theories, Stern et al. (1995) claim that values are shaped early in life and are less fluid whereas attitudes and behavior are shaped during the socialization process. Results of the Butler and Francis (1997) study indicated that the demographic factors of age and education have limited influence on environmental attitudes or behavior, indirectly substantiating Stern and coauthor’s claims. Many researchers believe that attitudes are formed by abstract values and attitudes that, in turn, influence behavior (Dickson, 2000). Individuals who adopt environmental attitudes have a different value-orientation to those who do not (Burningham, 1995).

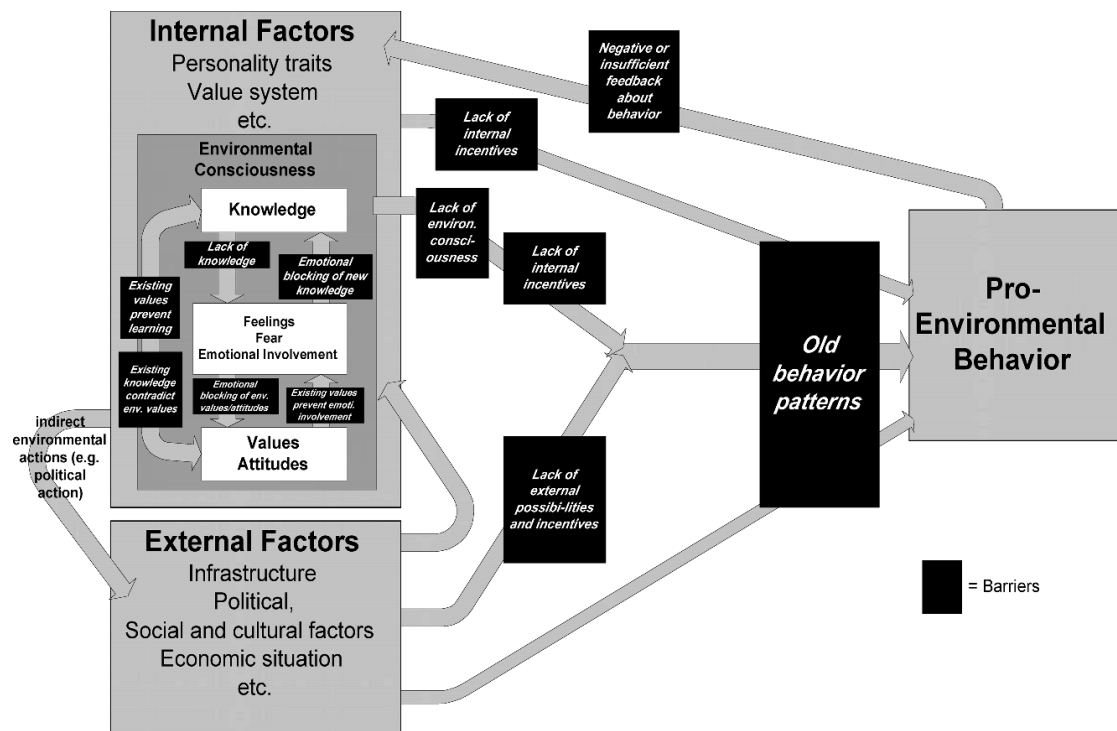
A study conducted in the Philippines reported that gender and environment attitudes significantly affect students’ environmental concern (Sia Su, 2008). Another study by Bodur and Sarigöllü (2005) investigated relationships between Turkish consumers’ attitudes and their behavior toward the environment and uncovered the underlying dimensions of environmental concern. The study identified three levels of environmental concern: 1) active concern, 2) passive concern, and 3) unconcerned.

Historically, environmental concern has been used synonymously with environmental attitudes (Dunlap & Jones, 2002 p.484). Constructs associated with attitudes include affect, beliefs, and behavior. Affect emerges from feelings from experiences, beliefs are cognitions associated with an attribute related to an event or object, and behaviors are actions in which individuals engage. Attitudes are an outcome of judgments that an individual makes based on prior knowledge, past judgments, and other new external information (Albarraacín et. al., 2005). General ecological awareness predicts sustainable behavior. With higher awareness an individual is more likely to be environmentally responsible (Kals & Maes, 2002). However, the connection between awareness and responsible behavior is complex. A case study of household waste management in UK found that the predictors of reduction, reuse, and recycling behavior differed significantly, with reduction and reuse being predicted by underlying environmental values, knowledge, and concern-based variables. Recycling behavior was, in contrast, characterized as highly normative behavior (Barr, 2007). Thus, it is important to understand how values, attitudes, peer group, and lived-experiences influence ecological awareness, knowledge, values, attitudes and worldviews, and behavior. Ecological awareness is a strong predictor of sustainable behavior in a wide range of action fields. This finding is substantiated by 20 studies by the Kals and Maes research group at the University of Trier, Germany along with other studies (Kals & Maes, 2002).

Educational programs based on a psychological model containing cognitive, affective, and behavioral components would most likely produce valuable outcomes for affecting change. Previous research has focused on cognitive perspectives while some current research looks at emotional perspectives. Researchers have found that the

emotional perspective has a stronger impact on sustainable behavior of an individual. It is important to find the specific conditions both inside and outside individuals that favor sustainable versus non-sustainable behavior (Schmuck & Schulz, 2002). A study conducted by Degenhardt (2002) found that emotional concern is an essential driving force for the implementation of sustainable lifestyle decisions. Kollmuss and Agyeman (2002) created the term “pro-environmental consciousness”, a complex structure consisting of environmental knowledge, values, attitudes and emotional involvement (p. 256). They also created a model that showcased the complexity of pro-environmental behavior (Figure 1).

**Figure 1: Kollmuss & Agyeman’s Model of Proenvironmental Behavior (from Kollmuss & Agyeman, 2002, p. 257)**



Environmental reading, household recycling, environmental group joining, and participating in nature-based outdoor recreation are four behaviors that were studied by Johnson and his coauthors (2004). They found Asian-American and US-born Latino environmental beliefs to be similar to those of whites whereas African-American beliefs were different from those of whites.

Ruff and Olson (2007) surveyed interior design students to measure attitudes toward environmental issues. The survey results showed great variability but, in general, the students were more than average pro-environmental and pro-sustainability. However, they reported a gap between what students think they know and what the students actually know. In another study, Meinhold and Malkus (2005) examined adolescents' environmental attitudes in relation to self-reported environmental behaviors and found a linear relationship between pro-environmental attitudes and environmental behaviors. Environmental knowledge further strengthens a positive relationship between the environmental attitudes and behavior for this sample.

A study using a survey method with a questionnaire conducted among the Omani public found that the level of basic environmental knowledge is poor, their attitudes toward policy change for improvement is positive, and their environmental behavior was limited (Abdul-Wahab, 2008). The questionnaire was divided in three sections: knowledge, attitudes, and behavior. The author suggested a comparison of the responses using demographic variables for future research. Another study by Azapagic et al. (2005) surveyed engineering students world-wide and suggested that knowledge and understanding of sustainable development is unsatisfactory. These authors further

reported that knowledge about environmental issues involves much more than social and political sustainability issues.

In a qualitative study, Rudell (2006) explored consumer attitudes and the decision making process with reference to no-sweat garment labels and sweatshops. Consumer attitudes were found to be complex, needing integration of ethical information about the firm, prior knowledge, and experience. Rudell (2006, p. 293) noted that “Dickson (2001) identified only 16 percent of the survey participants as “No Sweat” label users in a hypothetical task situation.” Cotton Incorporated has designed an interactive quiz entitled “Do you know green” (Do You Know Green, n.d). The quiz has everyday situations and consumption items that are challenging to get correct and informed answers. This indicates that we all as consumers have different perceptions, many consumers are misinformed about going green, and our misinformation impacts our ecological literacy.

### ***New Ecological Paradigm (NEP)***

The NEP or New Ecological Paradigm is based on an ecocentric belief system (Corral-Verdugo et al., 2008). NEP measures key facets of ecological worldview and has been used with such diverse populations as farmers, students, and ethnic minorities (Caron, 1989; Noe & Snow, 1989; Dunlap et al., 2000). Dunlap et al. (2000) reported that NEP has group as well as predictive validity. After Dunlop created and revised the NEP, it was pretested on college students. Table 1 lists major assumptions inherent in the NEP.

Table 1: Major assumption in the NEP

<b>Major assumptions in NEP</b>	
NEP1	While humans have exceptional characteristics (culture, technology, etc.), they remain one among many species that are interdependently involved in the global ecosystem.
NEP2	Human affairs are influenced not only by social and cultural factors, but also by intricate linkages of cause, effect, and feedback in the web of nature; thus, purposive human actions have many unintended consequences.
NEP3	Humans live in and are dependent upon a finite biophysical environment which imposes potent physical and biological restraints on human affairs.
NEP4	Although the inventiveness of humans and the powers derived there from may seem for a while to extend carrying capacity limits, ecological laws cannot be repealed.

(Source: Buttel & Humphrey, 2002, pp. 50-51)

NEP has been widely used in research focusing on environmental sociology.

Conceptually, NEP measures core beliefs and focuses on assessing worldviews (Tobin, 2006; Van Den Born, 2008). However, previous research using NEP is lacking a social-psychological paradigm (Stern et al, 1995). Stern et al. (1995) strongly suggest inclusion of the influence of social structures on psychological variables and how the structures relate values to beliefs and attitudes. In their study they found NEP to measure generalized beliefs. They created a schematic causal model of environmental concern. The model is linear including such dimensions as values-general beliefs, worldview-specific beliefs, specific attitudes-behavior commitment and intentions-behavior. This model was further investigated by Johnson et al. in 2004. A study conducted on water conservation behavior by Corral-Verdugo et. al., (2008) challenged the validity of the NEP scale and proposed that the *ecocentric* belief system is interdependent with an anthropocentric belief system. Thus, another scale, the New Human Interdependence



Paradigm (NHIP), may provide better assessment of environmental beliefs and endorsement of sustainable development. Corral-Verdugo et al. (2008) acknowledged that further research is needed to investigate the broader domain of sustainable behaviors and the interdependence of *ecocentric* and anthropocentric worldviews across different cultural systems. Ecological behavior is guided by the conflict of two different paradigms, *ecocentric* and anthropocentric (Corral-Verdugo et al., 2008). A study by Morrone et al. (2001) presents the concept of ecological paradigm that studies the relationship between natural and social systems.

### ***Role of Media and Sustainability***

It is important to understand how media, peer groups, and lived-experiences influence environmental values and worldviews. American Public Media recognizes sustainability as a larger global issue (“Sustainability,” n.d.). “Green living” is a top link liner for many popular search engines. URLs such as Grist, Yahoo! Green, Tree Hugger, Eco Street, Envirolink, EcoTumble, and World Changing are some general interest blogging and information sites (“Resources,” n.d.). WebPages and blogs such as EcoSalon.com cover fashion, wellness and lifestyle topics for women and have resulted in 60,000 subscriptions in the first six months. Print media such as newspapers and magazines also play a major role in shaping the cultural mindset of society. Currie’s study on textual analysis of the magazine Seventeen from 1951 to 1991 reported that the magazine also draws upon social movements such as environmentalism and feminism through advertisement as well as other content. Currie emphasized the potential of communicating the message but abstained from claiming that communication occurs. She

suggested that such claims can be made after studying the readers and not just the magazine itself (1994).

### ***Role of Lifestyle Pioneers***

Haanpää (2007, p. 479) stated, “Green attitudes and consumption styles can be regarded as life-style-based expressions of an individual consumer’s concern about the state of the environment.” Degenhardt (2002, p. 124) defines “lifestyle pioneers” as individuals whose knowledge, attitudes, and behavior considering sustainable development are consistent; lifestyle pioneers have achieved ecologically and socially amicable lifestyles. A lifestyle pioneer is ecologically literate to her/his core sense and would have a clear definition of what is sustainability and living green. In his research, Degenhardt (p.142) further concluded that emotional concern is an essential driving force for lifestyle pioneers. However, Haanpää (2007, p. 484) reported another study that has evidence of a strong effect of socio-economic and demographic background variables on life-styles. Does this mean that a lifestyle pioneer has a specific socio-economic and demographic background with post-modern thought? Nevertheless, a lifestyle pioneer is engaged in lifestyle choices and may act as a role model for others within or outside her/his sphere of influence.

### ***Textiles and Apparel***

Textiles and apparel is considered one of the major product groups in world trade of manufactured goods per the World Trade Organization Report. The future of textiles and apparel is facing problems such as limits to natural resources, global warming, sustainability issues, and other social and political trends (O’Neal, 2007). Textiles and apparel industries are considered among the most environmentally damaging; other

features such as fast changing trends and premature product replacement are anti-ecology. The textile industry itself is considered to be one of the biggest consumers of water (Anderson, August, 2008). However, this industry has been growing enormously, and so are the environmental issues associated with it.

With growing awareness, sustainability gained impetus in the textile and apparel industry in 1994 and today it is becoming even more important. There are several sustainability issues that specifically relate to sourcing, production, manufacturing, packaging, marketing, and consumption (Dickson et al., 2006). According to Dickson et al. (2006), there are two choices in dealing with sustainability issues: 1) either we can ignore them or 2) we can become the agents of change. Many individuals and companies have chosen to be the agents of change. Sustainability guru John Elkington introduced the concept of triple bottom line (TBL): financial, social, and environmental. Companies such as Interface, American Apparel, Gap, Nike, Unifi Inc., Under-the-Canopy, Kee-Ka, Under the Nile, Simply Fido, Timberland, and Patagonia have incorporated sustainable strategies in their supply chain (Anderson, 2008a). Recycling is one of the major strategies followed by at least 1,000 textile and apparel companies. Other companies that use textile products in their products like Ford Motor Company use recycled fabric for upholstery in cars and trucks. Ultra Touch Natural fiber insulation is being made from post-industry denim fabric (Anderson, 2008b). Greener packaging has been incorporated by many companies and others are considering using recycled materials, less material, and reusable packaging. In addition, some companies have chosen to abide by Oeko-Tex Certification that certifies them to be safe for people and the planet while lean manufacturing is a growing trend.

However, sustainability, just like any other major concept, has been a difficult one to define in textiles and apparel. According to Anderson (August, 2008), “sustainable apparel” includes the following bullets however, not all individuals agree that these options are equal in their sustainability (Kadolph, 2010).

- Use of certified organic natural fibers (wool, cotton, or linen);
- Use of highly renewable fibers (bamboo, soy);
- Use of low impact synthetic or recycled fibers;
- Use of non-toxic or reduced toxicity fiber processes and treatments;
- Use of low-impact or natural dyes;
- Design and color choices aimed at longevity rather than planned obsolescence;
- Fair trade, ethical labor practices, and elimination of child labor and other exploitation;
- Reduced energy use throughout the product life cycle; and
- Minimal or environmentally appropriate packaging.

There are several choices of eco-friendly fibers that are inviting attention from designers (Going Green, 2006; McNamara, 1994; Pogoda, 1993). A study conducted by Dickson (2000) provided valuable insights on female apparel consumers’ personal values, beliefs, knowledge, personal characteristics, attitudes about socially-responsible business practices in the apparel industry, and their likelihood of supporting socially-responsible businesses. The same study reported a low mean score for knowledge of apparel industry issues of 2.51 (on a scale of 1 to 7) indicating limited consumer

knowledge (pp. 27-28). Educators in the discipline of textiles and apparel have been proactive in realizing the unpreparedness (ecological illiteracy) of students so that they can prepare professionals who are ecologically-literate and are able to apply that literacy in their professional and personal lives. One such example is the Certificate Program in Socially Responsible Business offered through the University of Delaware. Marsha Dickson, Mary Littrell, Molly Eckman, Charlotte Jirousek, and Suzanne Loker are some of the prominent educators promoting ecological literacy in this field. Another example is Kadoph's *Textiles, 11<sup>th</sup> ed.* that has sustainability content in every chapter (2010). In a study conducted by Laughlin & Kean (1995), textiles or textile science was one of the seven curricular elements that were most frequently included in textiles and apparel programs. Including sustainability content in an elemental course ensures a good foundation for further coursework.

Textiles and apparel industries operate on a global basis. Today's students and future professionals have the power to change social, cultural, environmental, economic and political issues worldwide as they become employed in these industries. To become sustainable, these industries need a phenomenal change at all levels including design, production, and marketing and promotion (Fletcher, n.d, lecture handout).

Conventionally, textiles and apparel education has followed a business model with a focus on innovation, target market, and profit. It is time now to change that model and include global citizenship competencies to counter the problems around the globe (LeHew & Meyer, 2005).

Going green requires a cultural change within all industries including textiles and apparel. Polyester fibers made from waste plastic bottles; recycled silk yarns; coconut

shell yarn; organic fibers and yarns such as lyocell and bamboo; by-products of corn, banana, soy, and wheat gluten; use of ionic liquids to replace water; and use of silicone-based ink in textile printing are significant steps towards making the textile industry greener (Anderson, March, 2007). Maguire (2008) reported the highlights of “Innovative textiles printing: Green and global,” including a roundtable discussion focusing on fibers, fabrics, and colorants, yet another development toward greener textiles industry.

Ethical fashion is an emerging fashion segment that has positively influenced the apparel industry. According to Joergens (2006),

Ethical fashion can be defined as fashionable clothes that incorporate fair trade principles with sweatshop free labour conditions while not harming the environment or workers by using biodegradable and organic cotton (p. 361).

This definition is limited as there are several other ways to ensure that the environment is safeguard, but the concept of ethical fashion is itself in infancy stage. Joergens’ research reported that consumers appreciate ethical fashion but their shopping behavior is more influenced by price, choice and fashion-ability of apparel because ethical fashion tends to be lacking in all of those.

## CHAPTER 3

### Methods

#### *Qualitative Procedures*

This research is based on the qualitative tradition using an interpretive/constructive epistemological perspective to describe, understand, and interpret ecological literacy of college students. Data was collected through student focus group interviews and in-depth individual interviews with academic and industry expert. The researcher developed an interview protocol (see Appendix F & G) that was used for both focus group and individual interviews with slight modifications related to the participants in the interview. The interview protocol for the focus group student interviews contained 12 questions and the interview protocol for experts contained 14 questions. The interview protocols sought answers to the research questions. The researcher conducted focus groups interviews with textiles and apparel college students and individual phone or e-mail interviews with experts from academia and industry. Data analysis was done following grounded theory procedures and acknowledging multiple context-bound realities (Merriam, 2009).

The qualitative tradition was the most appropriate approach for the following reasons. First, it requires the researcher to explore and learn how college students define sustainability in their own words and expressions. Second, the issue of sustainability has gained importance recently and little is known about how it is viewed, understood, and acted upon by college students. Third, some constructs would be generated from the qualitative focus groups. The importance is placed on the participants and their views rather than on existing measures. In addition, there is no cause-and-effect proposition to

generate and test a hypothesis using quantitative methods that would allow for testing and generalizing to a larger population.

### *Purpose of The Study*

The purpose of this study was twofold. First, the study was conducted to explore students' understanding of the definition of the term "sustainability" as well as expectations related to sustainability that students hold for their education in textiles and apparel. Focus group interviews with college students who are majoring in the textiles and apparel field provide a better understanding as to how they define sustainability and how they take action to embody sustainable behavior in their personal and professional lives. The focus group interviews describe their ecological literacy level and understanding of sustainability. Second, in order to get a holistic perspective, individual interviews with two additional audiences (academic and industry) were included. The analyses of all three interview types identify factors that can be utilized to create a holistic scale to measure ecological literacy for textiles and apparel college students. The factors can be used for (a) future research to incorporate a holistic perspective on sustainability or ecological literacy; and (b) for sustainability or ecological literacy-related outcome assessment to evaluate effectiveness of overall curricula and/or individual courses.

It is hoped that this study will facilitate a better understanding of a student's position and contextualize sustainability-enhanced content and curriculum. Thus, this study may inform educators to build the curriculum at the appropriate learning level. The transformed curriculum will ensure more ecologically literate graduate and professional.



This will enable new professionals within the field to be sustainable in their choices and actions.

### ***Research Questions***

The research questions follow an inductive approach focusing on “what” and “how” questions. The research questions guiding this project are:

Q. What is the meaning of the word “sustainability” in the discipline of textiles and apparel? What mental picture and notion of sustainable do individuals in the discipline of textiles and apparel subscribe to?

Q. How do individuals in the discipline of textiles and apparel define sustainability? How do they feel about sustainability and its multiple dimensions (social responsibility, environmental issues, etc.)?

Q. Do these individuals take actions related to sustainability? If yes, what type of actions? If no, why?

Q. What are the expectations among these individuals for textiles and apparel education relative to sustainability?

### ***Research Route***

This qualitative research project included the steps of a pilot study, development of the interview protocol, Institutional Review Board approval, focus group interviews, individual interviews and use of the grounded theory approach to guide the inductive data analysis using the constant comparison method. Qualitative data were collected, coded and analyzed to derive themes and patterns in participant responses. Data were analyzed to compare, conceptualize and categorize content to create meaningful categories (Strauss & Corbin, 1990; 1998). In addition to acknowledging the presence of personal bias and

providing detailed description of data collection procedures, the data and analysis were reviewed by the supervisor as peer de-briefer for credibility and dependability.

### ***Focus Group Interviews***

Focus group discussions were used as the method of data collection from student participants. Focus groups provide data that are useful for a study on attitudes, perceptions, and opinions (Krueger, 1994). Focus groups create life scenarios in which human thought and action is influenced by other individuals. The interpretive perspective is underpinned by the belief that social meaning is created through interactions (Hesse-Biber & Leeavy, 2006). According to Krueger and Casey (2000), some of the ideal reasons for using focus group technique include a purpose to collect a range of ideas that people have about something, the researcher's need for information to design a bigger quantitative study, and the importance of comments and language of the participants. All three reasons form the basis of data collection for this study.

Considering the advantages, focus groups allow participants to hear each other's responses and to make additional responses to build on what other people say, creating synergistic effects and richer data (Krueger, 1994; Morgan, 1988; Stewart, Shamdasani, & Rook, 2007). In addition, focus groups provide more rapid data collection as compared to individual interviews, provide opportunity for observation of non-verbal participant responses, and offer a flexible and informal setting (Stewart, Shamdasani, & Rook, 2007). There are few limitations associated with focus groups, such as limited generalization, chances of having greater faith in findings than what is actually warranted and biasing interaction among the participants of the focus group (Stewart, Shamdasani, & Rook, 2007).

The focus groups conducted for this research had as the objective discerning the millennial generations' ecological literacy level and understanding of sustainability in relation to their personal and professional spheres. The focus groups were used as the method of data collection because the topic of the discussion is appropriate for everyday conversations in participants' lives (Merriam, 2009).

Because the study is focused on ecological literacy of college students majoring in textiles and apparel, any individual who is majoring in textiles and apparel will be able to provide a perspective. The number of focus groups was planned; however, the actual number is based on theoretical saturation (Glaser & Strauss, 1967). Glaser & Strauss (1967) define saturation as a scenario where no additional data is found that can add to the properties of categories that are generated in the axial coding process, i.e. when no new information is emerging through the data collection and coding processes. Steps described in Krueger and Casey's (2000) *Focus groups: A Practical Guide to Applied Research*, were followed to conduct the focus groups; the questions that were sequenced carefully moving from more general questions to specific ones with participant responses shaping the probing questions and the direction of topics in some instances

The focus group interviews were scheduled for 75 minutes each to allow for adequate discussion time for each question (see Protocol in Appendix F). The wording of questions was drawn from the participants' everyday language to avoid technical terms or jargon. The questions were short, open-ended, and clear with well-thought-out instructions (see Appendix F). The moderator rehearsed several ways to ask each question to reduce confusion or misunderstanding in any group (See the moderator guide in Appendix D).

IRB (Institutional Review Board) approval was obtained from St. Catherine University and Iowa State University prior to data collection (Appendix A). During data analysis and interpretation, the participants were given pseudonyms drawn from English, Indian, and Korean first names at random to protect their identities and to disassociate names from the responses during coding and recording of qualitative data (Creswell, 2009). The data will be kept for two years before it is discarded. Names on consent forms are kept separately from the focus group data.

The participants for this study were selected using a situational convenience sample of college students majoring in fashion and apparel enrolled in *FASH 2050, Textiles* in the Department of Family, Consumer, & Nutritional Sciences at St. Catherine University (SCU) in St. Paul, MN; *TC 165, Dress and Diversity in Society* and *TC 372, Sourcing and Global Issues* in the Department of Apparel, Educational Studies, and Hospitality Management at Iowa State University (ISU), Ames, IA during fall 2009. Enrollment in fashion and apparel program at SCU is about 80 and enrollment in textile and clothing [apparel] program at ISU is approximately 500 students. The participants represented all levels of academic standing within their program of study (from freshmen to seniors). Participants were solicited through textiles and apparel faculty at each institution. The individuals teaching these classes agreed to incorporate extra-credit incentives to encourage students in each class to participate in this research.

A pilot data collection was used to test the procedures, the questions in the protocol, and the recording equipment. Based on the recommendations provided by Krueger (1994), the focus group questions were piloted in steps. The first step was expert review by faculty members who have experience with focus groups. The second step was

pre-testing with a small group from the target sample participants to ensure that the language of the questions is clear and drawn from the participants' everyday language avoiding any technical terms or jargon. To ensure appropriate language and before conducting any focus groups, the questions were reviewed by six college students in the discipline of textiles and apparel, four from Iowa State University and two from St. Catherine University. The names of the student reviewers were provided to the instructors for participation credit. The student reviewers were awarded a \$10 university campus bookstore gift certificate, but their comments are not included in the results. The third step was the actual first focus group interview.

I reserved a conference room at each site that was clean, inviting, and professional with a comfortable temperature and a round or rectangular table seating arrangement where participants sat facing each other at the table in a circle. I audio taped the focus groups using a digital tape recorder with permission of participants. The software program 0.00.22.2 Express Scribe was used to transcribe the recording. Express Scribe was selected because it offered the ability to manipulate the speed of recording, had note-taking facility within the program screen, and was available at no cost from the internet.

Participants were solicited through a class announcement (see Appendix B) where they were informed about the objective of the research, eligibility for participation, projected time commitment, proposed focus group interview schedule, compensation for participation, and the voluntary nature of their participation. Students were requested to contact the researcher through e-mail if they were interested in participating. These students were sent an e-mail reminder two days before the scheduled focus groups. In the reminder email participants were informed that snacks and beverages would be provided

before the start of the focus group, that they would receive predetermined extra credit for their participation, that each participant would receive a \$10 gift certificate for the university campus bookstore at the close of focus group interview, and that latecomers would not be allowed to participate because of disruption to the process. I was the moderator for the focus group discussion. Consent forms and focus group background information sheets (see Appendix E) were distributed at the beginning of focus group sessions. Participants complete both documents before beginning the focus group discussion. At the end of the focus group interview, I awarded the gift certificate of participation to each member. Names of the participants were provided to instructors.

Seven focus groups were held, three at St. Catherine University and four at Iowa State University; each focus group had 4-9 members. Each focus group discussion lasted for 70-75 minutes. Specific information about each focus group in terms of number of participants and the age range represented in a group is presented in Table 2.

Table 2. Focus group participant data.

<b>Focus Group</b>	<b>Number of participants</b>	<b>Age range</b>	<b>Institution</b>
<b>1</b>	<b>6</b>	<b>18-44</b>	<b>SCU</b>
<b>2</b>	<b>8</b>	<b>18-28</b>	<b>SCU</b>
<b>3</b>	<b>7</b>	<b>18-27(one unreported)</b>	<b>ISU</b>
<b>4</b>	<b>5</b>	<b>18-22</b>	<b>ISU</b>
<b>5</b>	<b>7</b>	<b>21-23</b>	<b>SCU</b>
<b>6</b>	<b>9</b>	<b>18-22</b>	<b>ISU</b>
<b>7</b>	<b>4</b>	<b>18-19</b>	<b>ISU</b>

### ***My Role and Bias***

Because of the nature of this research, it is important to understand my background and my efforts to reduce personal bias during data collection and analysis.

My lived experiences in my childhood, education, and current position have grounded me in social justice and sustainability. As a child, I learned that we should respect our resources and avoid over-consuming. My college education at a premium women's college in India fostered feminist perspectives. I also took some courses on social responsibility from the University of Delaware. For the last five years I have worked at a Catholic university whose mission is embedded in the Roman Catholic tradition of social justice. I have also started incorporating environmental and social responsibility discussions in my teaching not only because these perspectives are close to my heart but also to stay current with social, cultural and industry trends. I have read extensively about sustainability and related concepts in the literature making use of texts that specifically relate to textiles and apparel as well as other print and web-based information. I am also in a dialogue about this concept with a colleague who is equally committed to engaging in educating students and incorporating sustainability in our courses.

I collected data from St. Catherine University and Iowa State University. Although I am an instructor at St. Catherine University which gives me a power advantage, I made every effort to reduce the status difference. Students at St. Catherine University are nurtured to have empowered voice and opinion and the students who will participate in this research had not had me as an instructor due to the sequential nature of courses. Hopefully, this has reduced the status difference. At Iowa State University, I am in role of a student just like the participants although at a graduate standing, so the relationship with participants may be equitable.

### *Individual Interviews*

Because this research required a broader perspective to create a holistic set of factors and to build curriculum guidelines and suggestions for the professional preparation of textiles and apparel students, it was imperative to include participation by academic experts and industry experts within the field of sustainability in textiles and apparel. Academic experts were identified based on their scholarship and publications on sustainability and were contacted through e-mail to solicit participation. After receiving an affirmative response and identification of individual preferences, a time for phone interview or e-mail interview was scheduled. A total of six academic experts participated: three preferred a phone interview and three preferred an e-mail interview. The academic experts represented the fields of textile engineering, textiles, fashion design, consumer behavior, cultural perspectives, retailing, and merchandising. Industry experts were contacted through purposive convenience and snowball sampling. A total of six industry experts participated. Out of the six, one expert could only spare few minutes and answered preselected question and one expert represented both academic and industry spheres. In all 12 individual interviews were conducted. Table 3 summarizes the information about the experts who participated in this part of the study.

The complete pilot study as described earlier was not conducted because, except for two questions, the interview protocol for experts was the same as for the student focus groups. The success of the first two interviews was considered as evidence to clarity of the questions and absence of jargon terms. Data analysis was done immediately after interviews were completed (Stauss & Corbin, 1998).



Table 3. Expert interviewees.

<b>Academic Experts</b>		
<b>Identifier</b>	<b>Department/Program/Title</b>	<b>Association</b>
Sanya	Fashion and Apparel Studies	University A
Deepa	Textiles and Apparel	University B
Hani	Textiles and Apparel	University C
Ram	Retailing	University D
Manu	Apparel Design and Merchandising	University E
Arun	Engineering and Textiles	University F
<b>Industry Experts</b>		
Adi	Executive	Knits
Hiku	President and Chief Executive Officer	Non-profit
Mila	Co-founder and executive editor	Sustainability consultant
Bani	President	Apparel
Neha	Executive	Fibers and recycling
<b>Industry and Academic Expert</b>		
Sita	Sustainability Education	University G and consultancy

### ***Data Analysis***

A grounded theory approach was followed to guide the inductive data analysis using a constant comparison method. Grounded theory is an approach to qualitative data in which theory evolves as the research progresses through continuous interaction between data collection and both description and thematic text analyses (Strauss & Corbin, 1998). As defined by Patten, “constant comparison process refers to comparing each new element of data with previous elements that have been coded in order to establish and refine categories” (2007, p. 159). Therefore, constant comparison compares different peoples’ views and actions, the same individuals with themselves at different times, data to category, and category to category (Charmaz, 2000). I started analyzing

data early during the data collection process and continued to compare with new data and understanding. Coding helped define and categorize data into emerging themes. The categories were not predetermined (Charmaz, 2000).

Qualitative data was collected and analyzed to derive themes and patterns in participant responses and address research questions. Concept and theme development is a process of looking at data in multiple ways to compare, conceptualize and categorize content to create meaningful categories (Strauss & Corbin, 1990; 1998). Patten (2007) suggests following open coding with axial coding and core category development to identify relationships among categories that are generated through the process.

Open coding is the process of assigning categories to words, phrases, or sentences from the transcribed interview document. This is the first analytical step in which the text is defragmented to excavate thoughts, ideas, and meanings that are then compared and contrasted (Strauss & Corbin, 1998). After transcribing the interview verbatim to a Microsoft Word file, I manually examined each line of focus group data and defined thoughts and ideas within it to capture the participants' perspectives. According to Charmaz (2000), line by line coding helps to refine the meanings we construct from interview collected data and find gaps in content and understanding that may be filled during subsequent focus group data collection. In addition, I made notes on observations, comments, and queries in the margins. These notes provided additional perspectives as I analyzed the responses to the research questions. This notation generated codes and then categories that provided useful insights about the collected data (Merriam, 2009).

I continued with focus group interviews until I could not add more categories to the coding. I also ensured that the progress in conducting interviews at both institutions

was parallel. After the seventh focus group interview I stopped because I had reached theoretical saturation as mentioned earlier in this chapter ((Glaser & Strauss, 1967). The categories were then grouped together as they shared some common aspect to make themes as discussed under axial coding.

Axial coding entailed creating larger categories and finding connection among categories. In axial coding, I reassembled the data that was dissected during open coding (Charmaz, 2000; Strauss & Corbin, 1990). Both categories and subcategories were created based on properties and dimensions of the sustainability-related agenda and questions related to when, where, why, who, and how. These subcategories explained the concepts related to sustainability in a detailed and candid manner. I created tables as mini-frameworks to visualize relationships among the concepts (Strauss & Corbin, 1990). According to Strauss & Corbin (1998), to ensure that emergent theory is precise and profoundly developed, there should be no possible addition to the categories, categories should be fully developed in terms of properties and dimensions, and connectedness of categories is well established and validated. This ensures theoretical saturation. The ideal goal was achieve theoretical saturation, however further addition to categories cannot be fully ruled out.

Validity in qualitative research is referred to as trustworthiness, authenticity, and credibility. There are multiple strategies for checking the accuracy of the findings. Based on strategies described by Creswell (2009, p. 191) I have incorporated the following strategies:

- I have stated the bias I bring to the study with detailed description of my background and acknowledge that it could influence my interpretation before data collection and analysis as recommended.
- I have presented negative or discrepant information that ran counter to the themes in the results section. Presentation of perspectives contrary to emerged themes adds to the credibility of the findings. This makes the data and evidence more realistic and therefore trustworthy.
- I used peer debriefing to enhance the accuracy of the account. My advisor and committee members and a colleague served as peer de-briefers and provided constructive criticism on data collection, analysis, and interpretation in this qualitative study. This ensured inclusion of perspectives other than my own.
- I checked transcripts for any errors by comparing it with audio recordings. I also stayed consistent with codes by constant comparison and by writing memos about codes and their definitions.

The process for data analysis for individual interviews followed the same procedures as used for the focus group interviews. In my writing, I have used quotes along with my interpretation of the quote to illustrate the different themes. Quotes marked with an asterisk (\*) indicate statements that may contain incorrect information, incorrect assumptions, or biased perspectives. Names are used with quotes, but these names are fictitious. The names selected are random and do not identify individual participants by their given name (Creswell, 2009).

## **CHAPTER 4**

### **Results**

Results are organized by each interview protocol question, but are reported and discussed separately by the interviewee type (student, academic expert, and industry expert). Summary tables showing agreement or lack of agreement of results among interviewee type are presented immediately after the question is presented and before discussion of the responses. Once responses from all three interviewee groups have been discussed; emergent themes are described before proceeding to the analysis of the next question.

In this chapter on results, emergent themes are compared within and across the groups to identify the most prevalent themes. Themes that emerged in the discussion and analysis are categorized under the three dimensions identified in the introduction as the major components of ecological literacy: awareness and knowledge, attitudes, and action. These themes are combined into factors that in the future can be used to create a scale to measure ecological literacy of textiles and apparel college students. The final question from the interview protocol for students and final two questions from the interview protocol for students and the last three questions from the expert's interview protocol are analyzed to synthesize themes on shared expectations for curriculum content and teaching pedagogy for educating about sustainability.

#### ***Focus Group Interviews***

Focus groups were chosen as a method of data collection because the topic is appropriate for everyday conversations in a participant's life (Merriam, 2009). The focus groups conducted during this research created an appreciative learning environment and a

synergistic forum for participants. In two of the focus groups, participants acknowledged that the focus group discussion was a learning experience. They considered that their knowledge and understanding of sustainability grew from their participation. They suggested that the teaching paradigm for sustainability could include a focused group discussion format. Participant Amy stated,

We've learned so much just by sitting here and talking about it, you know, just like...right now, you know just telling each other..., "I've heard this, I've heard this,"... I had no idea about Lucky Jeans and weird stuff like that. Oh, you use Seventh Generation, too? That's cool! What other products do they make? It's that free flow of communication and information that solidifies all of it.

Richer data emerged as participants endorsed each other and provided additional responses to build on what others said, which supports comments from other researchers who have used focus groups (Krueger, 1994; Morgan, 1988; Stewart, Shamdasani, & Rook, 2007). Focus group interactions create social meaning (Hesse-Biber & Leeavy, 2006). The focus groups conducted for this research had the objective of discerning the millennial generations' ecological literacy level and understanding of sustainability in relation to their personal and professional spheres. Using qualitative methods, the researcher followed a sequential exploratory design to collect and analyze data. During the analysis the researcher identified elements of an emergent holistic framework to reach meaning and in-depth understanding of and constructs related to sustainability that the target population holds that may define their ecological literacy.

Data for focus groups were collected by using a situational convenience sample of seven focus groups from two institutions where the researcher had convenient access.

Participants were from two Midwestern universities: St. Catherine University (SCU) in St. Paul, MN and Iowa State University (ISU) in Ames, IA. The researcher established theoretical saturation by the seventh focus group as no new data emerged. Three focus groups were held at SCU and four held at ISU. These seven focus groups involved a total of 45 participants who were between the ages of 18 and 44. The academic level of the sample included 36% seniors ( $n=16$ ), 27% juniors ( $n=12$ ), 17% sophomores ( $n=8$ ), and 20% freshmen ( $n=9$ ). The participants were enrolled in at least one textiles and apparel related course in fall semester of 2009. Participants represented majors Fashion Merchandising ( $n=27$ ), Apparel Manufacturing, Design, and Production (AMDP) ( $n=5$ ), Apparel Design ( $n=4$ ), , Business ( $n=2$ ), Business and Fashion Merchandising ( $n=2$ ), Accounting ( $n=1$ ), AMDP and Fashion Merchandising ( $n=1$ ), Family and Consumer Sciences Education ( $n=1$ ), Management Information systems ( $n=1$ ), and Pre-journalism ( $n=1$ ),. The majority of participants were Caucasian ( $n=37$ ) representing 82% of the total sample. Other ethnicities formed 18% of the sample ( $n=8$ ).

As evidence for the categories identified, and to add depth and the participants' voices, quotes are used in writing the results. Quotes marked with an asterisk (\*) indicate statements that may contain incorrect information, incorrect assumptions, or biased perspectives. As mentioned earlier, results from each interview are organized by each interview protocol question, but are reported and discussed separately by the type of interview (student focus group interviews, academic experts' interviews, and industry experts' interviews). Themes that are parallel among the interviewee types have been color coded to enhance readability (See Table 4).

Table 4. Color coding using grey scale for parallel themes from data analysis

Grey Scale	Representation of parallel themes
	All three groups
	Focus groups and Academic experts
	Academic experts and Industry experts
	Focus groups and Industry experts

### Q1. A Personal Definition of Sustainability

*Question:* How would you personally define the term “sustainability”?

Table 5 summarizes the results for Question 1 and demonstrates the differences and similarities among the three groups. Themes of the same color in different columns indicate agreement across two or more groups.

Table 5. Themes on definitions of sustainability.

Student Focus Group	Academic Experts	Industry Experts
Environment	Environmental responsibility	Environment
Long lasting	Enduring process	Long lasting
Organic	Social responsibility	Economic
Natural	People	Human ecology
Eco-friendly	Conscious consumption	
Recycle, reuse, reproduce		
Zero waste		
Change lifestyle		
Buying local		
Education		

### *Student Focus Group Interviews*

The concept of sustainability is not widely understood and may mean different things to different individuals. In this research, different individuals used a variety of terms that represent sustainability to them as they tried to define it. However, none of the participants could completely define sustainability or provide a comprehensive definition of the word.



“Going green” was an over-arching theme as it tied in with minimizing the effects on the environment by reducing packaging and waste, minimizing use of chemicals, using natural materials, and minimizing use of fuel by buying local. Going green is a term identified as the millennial’s synonym for sustainability by the Hartman Group (L. Demerrit, e-mail communication, November 14, 2008). However, the term “going green” was used by only three focus groups. The following overlapping content themes were identified: environment, long-lasting, organic, natural, eco-friendly, recycle-reuse-reproduce, zero waste change lifestyle, buying local, and education. Participants overlapped many of these themes and made indirect connections among them. For instance by using organic, they would be helping the environment. Each theme will be discussed here.

*Environment.* Environment was a term that the participants closely associated with sustainability. They viewed sustainability as favorable for the environment. Two different approaches expressed this association:

Participants felt that sustainability is something that does not damage or take away from the environment, but rather helps the environment. Organic is also associated with something that keeps harm away from the environment. Participant Mindy said, “Organic does not hurt the environment.\*” while participant Berta suggested, “harmless farming like pest management on farms [needs] to be done in a way that does not destroy the ecological life.”

Sustainability is viewed as giving back, putting back into earth and keeping the earth in its purest form.

*Long-lasting.* The theme of long-lasting emerged in five of the seven focus groups and was mentioned at least twice in two of the focus groups. Long-lasting was grouped with terms like durable, imperishable, and reusable. Participant Rama stated, “I think about it as something, in apparel, something that lasts a while or lives up to its potential use.” Participant Alison presented a comprehensive understanding of sustainability. She stated, “I guess there are three parts to sustainability... Well, reusing, lasting a long time or just recycling, making it into something else or something better.\*” In the literature the term long-lasting does not appear as a component of sustainability as it relates to ecology.

*Organic.* Organic, a popular term, was mentioned in six of the seven focus groups. On analysis it became evident that it meant several things to the participants: without chemicals, using fewer pesticides, less synthetic components, and minimizing effects on the environment. However, participants from two focus groups felt that organic products are expensive. Participant Rama stated, “Organic and green products are good purchases but are luxury products and everyone cannot afford them.” This suggests that organic is considered good for the environment by everyone and is yet not mainstream. Buying and using organic products is also considered a positive and sustainable lifestyle change.

*Natural.* Participants associated the term “natural” with going green. Natural also meant keeping the earth in its purest form and use of natural resources such as materials and fibers. This is in agreement with a study of MBA students who are trying to incorporate green in their personal life by switching brands and using products that have natural ingredients (Knight, 2008). Participant Yvonne stated, “Yeah! Something just using more, yeah, more natural stuff and less synthetic, set with less chemicals.\*”

*Eco-friendly.* The term eco-friendly emerged in four focus groups; some participants were very passionate about the concept of “eco-friendly.” Emotional concern is an important driving force for implementation of sustainable lifestyle decisions (Degenhardt, 2002). This theme ties in with “helping the environment” and “recycle, reuse, and reproduce.” It is related to recycle, re-make, and biodegradability. The term biodegradable was used only twice during this discussion: once connected to eco-friendly and another time in reference to general material selection and material selection for shopping bags. Use of reusable shopping bags was suggested as a lifestyle choice for sustainability.

*Recycle, reuse, and reproduce.* Participant Alison candidly stated, “Sustainability has three parts: Reuse, recycle, and make into something else or something better.\*” The term reuse appeared in four focus groups. In another focus group, the term “remake” was used. On further investigation, remake was found to be an extension of reusing. Making into something new and different appeared in another focus group as well.

*Zero waste.* Some participants discussed “do not waste” or “eliminate waste.” This theme emerged in three of seven focus groups. Quotes from participants Dela and Errin that support this theme are,

Basically using anything to its abilities. Don’t waste anything. Try to get as much different avenues out of it, like using the whole product in some way, rather than just taking it for one aspect of it and

Just like not be wasteful. Use resources only when you need them.

It is evident that participants considered “waste” as undesirable. During the discussion it was not clear if participants practiced not being wasteful in their personal lives, but they perceived being less wasteful as a positive value.

*Change lifestyle.* Sustainability is also viewed as a synonym to making small changes in one’s lifestyle. The changes identified by the participants were classified into five subthemes: energy conservation, water conservation, using alternative sources of energy, buying and using organic products, and cutting back on consumption. Energy conservation includes using physical energy rather than using gadgets and other manufactured machines. Examples include carpooling or walking instead of driving and climbing stairs instead of using the elevator. Other endeavors to conserve energy include using energy-efficient light bulbs and unplugging gadgets when they are not in use. Water conservation includes washing only full loads of laundry and taking shorter showers to decrease the water consumption. Use of alternative sources of energy such as using solar energy, and human physical energy instead of using other non-renewable energy-operated machines was mentioned. The final category focused on consumption with examples of buying and eating organic foods and using other organic products. The change in lifestyle concept extends beyond personal changes as participants in one of the focus group pointed out those factories should consider energy and water consumption in every stage of production, use energy efficient equipment, and watch their water footprint in dyeing.

*Buying local.* Buying local was suggested by only one focus group. This focus group evidenced a superior knowledge about different aspects of buying local, including going to farmers’ markets and shopping local designers. They mentioned that buying

local means that consumers are supporting local people and the local economy. By making this choice, consumers are reducing their footprint as local products will have less packaging and travel. The same group further elaborated that buying US-made products ensures that the US economy can sustain itself and that jobs are kept within the country. The smaller environmental footprint of buying local is not the main reason that they consider buying local as a sustainability endeavor. It is interesting that a resource from literature review stated that 80 percent of the UK's population demonstrates their understanding of sustainability by making choices such as buying local food ("Green consumerism," 2007). However, in this study, only one of the focus groups considered buying local as an action that they can relate to sustainability.

*Education.* Two focus groups focused on education and associated sustainability with the awareness and complete knowledge about the impacts of daily actions in both short and long term. Participant Cai stated,

Knowing the full entire circle of what being sustainable is about. Knowing the impacts, like the specific impacts on things that are our necessities, like we don't really think. Although we consider it to be sustainable to re-do a cool sweater, we're not really thinking in terms of the broader scale of how it really works, so we need to know the full effect and not continue down the path of being not sustainable.

### ***Academic Experts' Interviews***

Academic experts provided specific definitions of sustainability. The definitions presented by the academic experts are listed here:

Expert Arun:

Something made from natural resources that can be processed without damage to the environment and that can be reused or recycled without too much difficulty.

Expert Deepa:

I like to define sustainability in its broadest sense, to address both social and environmental responsibility. The Brundtland report does just that, though it is often applied to environmental impacts exclusively. The Brundtland report defines sustainability with respect to development, but I like to apply it to how individuals, communities, nations, and businesses operate. “Sustainable development [individuals/communities/businesses/nations] is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Further, sustainability involves practices that sustain the environment, positive health and safety at home and at work, fair labor practices that help reduce poverty, and build communities of people that can be sustained. (Based on Agenda 21 from 1992 Rio Earth Summit)

Expert Hani:

Sustainability is essentially, the operating a system in such a way that it is going to survive indefinitely without degrading either itself or the environment or the circumstances of those in the system. It could be anything. It could be a system of manufacturing or farming or running any kind of economic operation- A broad spectrum of human activity.

Expert Manu:

Conscious decision-making by people in the processes used to design, manufacture, promote and sell products. Book definition, development and use a

thing or a process when there is no harm done to planet, people, and process enhance well-being.

Expert Ram:

Sustainability is not only the accepted definition of supporting current needs of society without jeopardizing the needs of future generations. It includes not only human needs but the wellbeing of the natural world and includes responsible use of the world's resources.

Expert Sanya:

Long term of what we are trying to accomplish with social responsibility and environmental responsibility. What we try to accomplish is a world that is, [it] works well for people, that is not being degraded environmentally, people's life is respected and people and earth are kind of nurtured for all of our long term benefit. It is the outcome of what we do either as a consumer and purchase responsibly and as a business we implement responsible practices and policies in social piece and environmental piece. It is the outcome of carrying those out in a good way.

Academic experts provided comprehensive definitions of sustainability and were able to articulate specific details related to their definitions. Themes that emerged from this discussion include: environmental responsibility, social responsibility, enduring process, people, and conscious consumption. Further explanations provided by the experts are incorporated in the following bullets:

- *Environmental responsibility* encompasses a broad spectrum of human activity including use of natural world resources and processes without damaging the

environment. Products can be reused or recycled easily and the environment is sustained.

- *Enduring process* was characterized as an environmentally and socially responsible, long-lasting, and self-sustaining processes used in any human activity.
- *Social responsibility* is a conscious effort to maintain and sustain human health and well-being while being environmentally responsible.
- *People* are the decision-making entities who should make responsible choices and seek and create enduring processes (see the above discussion).
- *Conscious consumption* is a component of people's decisions as they consume resources in a conscientious manner.

### ***Industry Experts' Interviews***

The concept of sustainability was broad, but wide with specific details provided by the industry experts. Some experts presented constructs that describe sustainability while others provided comprehensive definitions. For instance, expert Sita, provided the Business for Social Responsibility (BSR) definition, "Achieving commercial success in ways that honor ethical values and respect people, communities, and the natural environment."

Themes generated resonated with triple bottom line (social, economic, and environment) as coined by Elkington (Lawrence, 2005) or the BSR definition and the human ecology perspective. Human ecology can be viewed as a conceptual framework that describes reciprocal relationships between people and their environment and is characterized by continuous interchange between ecological, economical, cultural and



social components of human ecosystem (Lawrence, 2005). Themes that emerged from this interview question are: environment, long-lasting, economic, and human ecology.

*Environment.* Respecting the environment, minimizing damage and providing for the environment today and in the future were some ideas shared by five industry experts. Expert Hiku stated,

Environmental sustainability standpoint is to minimize or eliminate the use of non-renewable resources and shepherd the use of available resources for future generations to use to make sure that at the same time to have minimal harm or no harm to the environment.

*Long-lasting.* Three industry experts used terms (indefinite, longevity, and enduring) to define the long-lasting attribute of sustainability. Expert Neha's definition included, "something that can endure for a long period of time, continue to support human life," and expert Adi included an example of wind power to illustrate what can be sustainable, "Sustainability means to continue indefinitely – wind power."

*Economic.* The theme "economic" emerged only in this group and it was emphasized by two experts. It is important for businesses to have profit to sustain them as a business entity. The BSR definition provided by expert Sita focuses on commercial success as core to pillars of sustainability. Expert Neha emphasized it. She stated, "In terms of the business that I am in, I am very focused on economical viable solutions because I think economics is very important to sustainability."

*Human Ecology.* The human ecology perspective was provided by two industry experts. They emphasized *balance* or *harmony* among social and environmental factors. Expert Bani described sustainability as the "ability to create *balance* in human

interaction, ethics, labor, employee ownership, democratic decision-making process, low-impact production, no pesticides, natural, follow strict standards, no heavy metals, no harmful dyes.” Expert Mila provided a comprehensive definition, “It describes an ideal in which companies, individuals, and societies can operate in *harmony* with the planet and the needs of all people, and do so indefinitely without depleting natural or social capital.” Other experts have mentioned the dimensions of the human ecology perspective but did not suggest a connection or interchange that was not included earlier in the discussion of this question.

### ***Summary of Question 1***

Academic experts provided specific definitions while student focus groups had a general discussion from which themes were identified. Some industry experts presented constructs that describe sustainability while others provided comprehensive definitions.

## **Q2. Ecological Challenges Faced by the Society**

Question: What are ecological challenges we face these days? What is your opinion about these challenges?

Table 6 summarizes the results for Question 2 and demonstrates the differences and similarities among the three groups.

Table 6. Themes on ecological challenges.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
Resource depletion	Resource depletion	Resource depletion
Lifestyle habits	Lifestyle habits	Consumption
Laziness in society	Global warming	Global warming
Corporate abuse	Pollution	Pollution
	Waste generation and recycling	Economic

### ***Student Focus Group Interviews***

According to Merchant (1992), all of us know that climate and ecological changes are hitting a crisis situation. Ecological literacy is an assessment of a person's knowledge, attitudes, and behaviors related to understanding and appreciating interrelatedness among individuals, society and nature. General ecological awareness predicts sustainable behavior. With higher awareness, an individual is more likely to be environmentally responsible (Kals & Maes, 2002). The results of the focus group interviews indicated that participants did not clearly understand the term ecological challenges and described general societal problems as ecological problems. For instance, laziness in society and ignorance about personal actions are viewed as contributing to ecological challenges. However, other themes related to personal behavior and health emerged as a stronger connection to how participants viewed general ecological challenges. This indicates that the participants could be identified as *periphery* (convenience is the guiding value) or *mid-level* (personal benefit is the guiding value) as classified by the Hartman Consumer Research Group (2007).

Themes that emerged as ecological challenges by the participants include: resource depletion, lifestyle habits, laziness in society, and corporate abuse. Surprisingly, some ecological challenges commonly identified in the literature did not emerge as major themes in this study. Climate change, ozone layer depletion and endangered species were concepts that were only mentioned once.

*Resource depletion.* A shortage of non-renewable resources that supply energy and perform other vital functions is a concern of the focus group participants. The energy resources that were mentioned include electricity, gas, and coal. Another natural

resource, water, is also considered as a commodity that is short in supply. Participant Dela stated, “Well, we use so much electricity that we’re at a risk of eventually not being able to produce enough for everybody in the world to use and everybody in our country.” Another participant Opal said, “People don’t think. Like, the renewable resources aren’t going to be renewable forever.”

*Lifestyle habits.* Lifestyle and habits was the most mentioned theme under ecological challenge. It was mentioned throughout the discussion of five focus groups. Lifestyle includes convenience and luxury as values, stubbornness, short term vision, overconsumption and fast fashion, thoughtless consumption, the disconnect between personal consumption behavior and its impact on the world and global problems, availability and use of disposable items, and easy and convenient chemical cleaners and products.

*Laziness in society.* Laziness in the American society was included in the discussion of several questions during the focus groups. Participant Gillian stated, “Sometimes people can be lazy and, like, they don’t care about the environment and about keeping it clean, or using the recycling containers.”

*Corporate abuse.* Participant Molly mentioned that financial gains in a market-based economy have caused corporations to become less sustainable and more profitable. She stated,

The entire world actually moved away from being sustainable because of money. You think about how, like, mop and stuff like that. Like, you have one mop and a pail with water and now you have, like, a business man who thought of “Hey! Let’s make a Swifter [new product]!” Now this person, for convenience, has to

come back and always buy a little piece of wet cloth with my [company] product on it. You know they always have to keep coming back and back more [to buy more]\*.

Corporations have chosen to outsource production from developing countries and cause harm to people in those countries while accomplishing corporate financial gains. Expert Cai stated,

I watched a movie for one of my social justice classes. I don't remember it was called like "Water" or "H<sub>2</sub>O" or some movie like that, and they talked about how big corporations are coming into Third World countries. They are taking people's land and homes to build these huge factories and things!...Nestles is building huge plant to build plastic for their plastic water bottles which is harmful to the earth and it's, like, a double whammy. They're, you know, making people move out of their homes and taking over and producing things that are again harmful.\*

### ***Academic Experts' Interviews***

Ecological challenges that emerged through the interview process with the academic experts were more detailed. Resource depletion, lifestyle habits, global warming, pollution, waste generation and recycling emerged as themes that were mentioned by two or more experts. Three academic experts felt that the ability to deal with these challenges is embedded in political and individual determination to bring changes in personal and business actions for sustainable outcomes. Expert Deepa stated,

The biggest challenge is to reverse some of the bad habits humans have acquired that have adversely effected our environment, including energy use, waste production and landfill disposal, and overconsumption.

*Resource depletion.* Natural resources are limited and the rate at which they are used exceeds their ability to be replenished. One of the experts explained that engaging in development of an urban lifestyle by using farmland and other natural habitats has created challenges to an ecological balance. Use of non-renewable or non-recyclable resources has created a shortage of available resources. Expert Hani mentioned disproportionate use of energy as a resource and ecological challenge as well. Consumption has grown dramatically, consumption expenditure per person has tripled from 1996 to 2006 (Assadourian, 2010). Only some of the increase in consumption can be attributed to population growth, the rest is because of changes in human consumption patterns. Increased consumption has caused an increased use of fossil fuels, extraction of metals from the earth, cutting of trees, and more intense and extensive farming to produce more food leading to an exploitation of resources (Assadourian, 2010). Expert Ram stated, “Our challenges currently include the unmistakable fact that we are using up the world’s resources faster than they can be replenished.”

*Life-style and habits.* Some human habits are undesirable from a sustainability perspective and have taken a toll on the environment. Examples of current lifestyles creating problems with sustainability include not having mass transit in many regions (meaning that individuals own and drive more personal vehicles), use of pesticides that provide an easy solution to lawn maintenance, excessive energy usage, excessive waste production and landfill disposal, and overconsumption in general. Continuation of an expanding pattern of consumption means that current lifestyles and habits are overusing natural resources and exhausting them. The assumption is that if this behavior is not changed, it will create a global resource crisis for future generations.

*Global warming.* Three experts recognized global warming as one of the major ecological challenges that have occurred because of carbon dioxide emissions from industry operations and human activities. The National Weather Service (National Oceanic and Atmospheric Administration) defines global warming as “an overall increase in world temperatures which may be caused by additional heat being trapped by greenhouse gases.” Greenhouse gases are defined as “gases that absorb terrestrial radiation and contribute to the greenhouse effect; the main greenhouse gasses are water vapor, methane, carbon dioxide, and ozone” (National Weather Service, n.d.).

*Pollution.* Pollution was mentioned by four experts as current ecological challenges. Pollution was described as including solid waste, use of toxic chemicals, fertilizers, and pesticides that mix with water resources as run-off from fields and lawns and reduce water quality. Such pollution damages the environment. One expert stated that the negative environmental impact of textiles is manifested more in poor water quality than in its carbon footprint. The textile industry is considered to be one of the biggest industrial consumers of water (Anderson, August, 2008).

*Waste generation and recycling.* Two experts mentioned waste generation as an ecological challenge. One of the experts further expanded how waste is crowding landfills and that recycling facilities are not adequate to process the waste that can be recycled. Expert Arun said, “Lack of recycling facilities other than paper, cardboard aluminum, and PET bottles [are ecological challenges].”

### *Industry Experts' Interviews*

Themes that emerged from this interview question included resource depletion, global warming, pollution, consumption, and economic issues. Expert Mila's description of ecological challenges covers most of the themes identified for this question. She stated,

Our ecological challenges are many, broad, and serious, including climate change, natural resource depletion, pollution of the air and water, excessive production of toxic waste, and the loss of species that are critical to healthy ecosystems.

*Resource depletion.* Two industry experts talked about over-utilization and depletion of resources as ecological challenges. One expert specifically mentioned resource depletion with reference to non-renewable resources and the other referred to natural resources. Expert Adi stated, "We face the earth's resources being used to depletion at an inordinate rate." Another expert Bani commented, "Resources are scarce."

*Consumption.* Two industry experts describe human consumption as an ecological problem. We are living in a consumer society and in the process of consumption a tremendous amount of waste is generated. American Public Media has developed a special radio series on origin of the consumer-culture and society with special reference to sustainability. This series is aired on a variety of media that include: Marketplace®, Weekend America®, Speaking of Faith®, The Story™, and American Radio Works® (Consumed, n.d). Expert Neha portrayed the connection between human consumption and waste. She stated,

I am in waste-recycling business, reducing waste is another challenge we face-in terms of consumption, in terms of [the] society we live in, me is focused on



consumption, buying new, buying frequently, and buying cheap products and maybe throw-away products. Managing our own consumption is an ecological challenge. Probably reducing waste in our products, processes, and packaging and focusing in that is a big challenge.

*Global warming.* Three industry experts mentioned global warming or climate change as an ecological challenge that we are dealing with. Expert Hiku stated, “first [ecological challenge] is green house gases and global warming which is huge for everybody.”

*Pollution.* Four experts described pollution as an ecological challenge. Degradation of the entire biosphere through pollution of air, water, and land is an enormous issue. Expert Hiku highlighted that “second [ecological challenge after global warming] is chemical pollution and pollution of ocean. Basically everything we spray on the ground and everything we put in water and water system ends up in ocean at some point.” Pollution is occurring because of excessive toxics and substance waste that pollutes the natural world.

*Economic issues.* Economic issues were viewed as a component of ecological challenges by two experts. Experts had very different focal points from an economic perspective. One expert specified inequities of income and the other specified the challenge of providing sustainable options at an affordable price to masses. Expert Bani described, “... inequities of income, and education.” According to expert Neha, “Economic challenge is a huge challenge. In order to make product environmental, developing textiles and apparel, making them in a way that is affordable to mass market,

is a big challenge.” Neha further added that discouraging consumption is difficult for mass-marketers using the current business model.

### ***Summary of Question 2***

Resource depletion was the only theme that was identified by all three groups. The only other theme that the student focus groups shared with academic experts was life-style and habits. In addition to resource depletion, themes that the academic and industry experts shared were global warming and pollution.

### **Q3. Issues Related to Sustainability**

Question: What issues does sustainability include? (Probing prompts: Can you think of sustainability beyond environmental issues? How about social responsibility? How about sustainable business practices? )

Table 7 summarizes the results for Question 3 and demonstrates the differences and similarities among the three groups.

Table 7. Themes on issues related to sustainability.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
<ul style="list-style-type: none"> <li>Fair business practices: Profit orientation, fair trade, and sweatshops, and fair wages;</li> </ul>	Social responsibility	Social responsibility
<ul style="list-style-type: none"> <li>Personal practices and lifestyle;</li> </ul>	Environmental responsibility	Environmental responsibility
<ul style="list-style-type: none"> <li>Images about going local;</li> <li>Education</li> <li>Cost</li> </ul>	Consumption	Economic

### ***Student Focus Group Interviews***

The purpose of this question was to understand the breadth with which the participants understand the issues related to sustainability. The question used additional probes to

direct participant thoughts toward aspects other than environmental sustainability.

Themes that emerged are

- Fair business practices: Profit orientation, fair trade and sweatshops, and fair wages;
- Personal practices and lifestyle;
- Images about going local;
- Education; and
- Cost

*Fair business practices.* Fair business practices would include conducting business ethically, trading fairly, providing fair wages and abstaining from green brain-washing, avoiding child labor and sweatshops, keeping workers welfare in mind, and educating the consumer. Fair or unfair business practices were mentioned by all focus groups.

Participants exhibited a clear understanding of sustainable and unsustainable business practices. Many ideas were presented during the discussion. One of the key ideas focused on a business model that is considered unethical because it keeps profit as the main business goal. Participant Fatima stated,

I know, Minneapolis had a great street car system, and I don't even know. In the 50s the car companies bought the cable cars and got rid of them because they wanted people to buy cars. I am sure they weren't thinking about the sustainability of cars and the carbon footprints. I'm not sure any businesses, especially larger business, think about that at all. I think it is all about profit.\*

Within the apparel industry, sweatshops remain an issue. The US Department of Labor defines a sweatshop as any factory that violates two or more labor laws, such as

those pertaining to wages and benefits, working hours, and child labor. Anti-sweatshop advocates go further to say that beyond following the letter of the law (which can be very weak in many countries that allow sweatshops), a factory must pay a living wage in safe working conditions, enforce reasonable work hours, provide for sick leave and maternity leave, and allow workers to organize to avoid being labeled a sweatshop (Sweatshops, n.d.). Subthemes that emerged from participants include fair wages, good working environments or no sweatshops, reduce sweatshops, avoid outsourcing to keep jobs within the country, and reduce packaging. By outsourcing production, the US provides economic opportunities to other countries but may not be able to meet environmental and social responsibility expectations. Participant Ima stated,

We, as Americans, are putting our companies in another country and creating income for that nation. But ecologically, we have fallen. We, like, didn't even try.

I mean those ancient rivers that are, like, being destroyed. But, there's things being called Red Dye. And, they're toxic to people and they're toxic to all marine life.

Participants believed that ethical business practices are not yet main-stream.\*

Educational institutions are trying to create a culture of ethics in the minds of future professionals, but the work world may not be developing at the same pace as it relates to ethics and responsibility. Participant Julie commented that she was taught to have ethical business practices but that the real world and job scenario may not be as ethical. She further stated, "I am taught well, but I may get into conflict and get cultural shock."

Another concern came from the practice of outsourcing. Participants mentioned that not only Americans lose jobs and are not able to make a living but that the outsourcing also creates a need for excessive packaging and eventually excess

environmentally-harmful plastic waste. Participant Katy stated, “Larger companies just think about not really short term but just the gain from it. They don’t really think about all the shipping they do and how much that harms the environment.\*”

*Personal practices and lifestyle.* Participants made a bigger connection with societal practices being unsustainable. Americans being selfish and lazy emerged as a subtheme in three focus groups. Laziness has become a lifestyle leading to the convenience driven society that was also reflected in answering the question on ecological challenges. Participants stated that people need rewards to make changes in their behavior and they are not able to think far ahead to make connections with present actions to future outcomes. American society is considered materialistic and people need immediate rewards. Participant Lila stated, “If they’re going to recycle and they’re doing something good for the environment, then where’s their little prize for doing that?”

Participant Molly stated,

I feel like a lot of this comes down to people just making a little bit more effort. Like, I hate when I see, like, recyclable things in the garbage, especially at, like, my own home if my friends are over and I have my recycling bins and my garbage and they’ll just throw it in the garbage. It’s so easy just to put it. I mean maybe you have to carry it with you for a couple hours if you’re out doing something until you see a recycling bin. Or, like, you know, just unplugging things before you go to bed. That kind of thing. It’s so easy if you just get in the habit of doing it that some people are just kind of stuck in their own ways. Like, it’s just a little bit of a laziness that goes on in society that we just need to get over.

Another subtheme that emerged is overconsumption and the wasteful lifestyle. Americans have learned to buy inexpensive products and engage in buying more and buying cheap. Many individuals realize this but they have deep-rooted habits and do not think about their actions and its impacts. Participants view a wasteful lifestyle as specific to America. Participant Opal said, “People in European countries don’t waste like we do in America.” Participant Molly stated,

As Americans, I feel, like, we know that we’re consuming it, like, too much, but at the same time, we’re not doing really anything to stop it. Like, I don’t know.

I’ll, like, be at the mall. I’ll be, like, oh, I like this! I’ll buy it. But at the same time, do I really need it? And, it just doesn’t cross my mind at the time.\*

*Images about going local.* Buying local is seen as a trend and is considered good as it helps support the local economy and community. Local production is seen as better for the environment because it uses less packaging. Whether this trend continues depends on the cultural value system that will emerge over time. Buying local is just one dimension of sustainable shopping.

*Education.* Lack of realization and awareness about sustainability was mentioned in two focus groups. An important issue was education for sustainability as related to not being wasteful and developing recycling habits from childhood. Participants felt that this issue should be a top priority. Companies also need to create awareness about social responsibility. Use of social network media to inform and educate masses was suggested by one focus group. Participant Polina stated,

I would think through social networking. We have Face book and Twitter. People are huge into blogs right now. Like, it's a way to easily get it out to a lot of people in a short amount of time.

*Cost.* A recurring theme was that sustainable products and practices are expensive compared to main-stream products. Organic, local sourcing and recycling are also considered expensive alternatives compared to mainstream options of non-organic, inexpensive outsourcing, and convenient disposal without worrying about recycling. Participants felt that cost differences are not solely because of differences in materials and production practices. Participants pointed out that these products are expensive as marketers are using sustainability to their advantage and engaging in unethical practices by green brain-washing the consumer. Participant Darcy said, "I think it's kind of like a selling piece. It is better for the environment and so you know they sell it for more money when really that's just, like, a marketing initiative.\*"

To alleviate this issue, participants in two focus groups felt that the cost of sustainable choices should be reduced. On further probing and discussion, one participant suggested that the government can probably provide some incentive to shop at certain stores that actually engage in sustainable endeavors. In the same focus group, another participant stated that the consumer has the power and if consumers will choose sustainable products, companies are bound to respond.

### ***Academic Experts' Interviews***

Social responsibility, environmental responsibility, and consumption emerged as three important issues pertaining to sustainability. Because of their mention by most academic experts these three issues are considered the evolving themes. In addition, two academic

experts mentioned three-pronged approaches. One mentioned “people, process, and environment;” and the other mentioned “economic, equity, and environmental responsibility.” Because economic responsibility was mentioned by only one expert, it did not qualify as a theme within the scope of these results.

*Social responsibility.* Social responsibility was second to environmental responsibility and was identified by five academic experts. Subthemes that emerged include a wide spectrum: fair labor, human rights, social equity, health and safety, and the well-being of workers, communities, and consumers.

*Environmental responsibility.* Environmental responsibility through the lifecycle of any product or process was a major theme identified by all the academic experts. Comments incorporated a wide gamut of areas that include use of chemicals in growing and processing of textile materials, recovery and reuse of materials and chemicals, ease of product recyclability, carbon footprint including transportation and throughout a product’s lifecycle from raw materials to processing and final product distribution, length of the supply chain, use of energy in production, and the individual and cumulative impact of each process and material used. Expert Arun asked, “How long is the supply chain? Is it a few hundred miles or several thousand miles?”

*Consumption.* Consumption was mentioned by three academic experts. Excessive consumption of raw materials and energy leads us to consume more than that can be replenished. Expert Sanya acknowledged that “we should promote responsible and reasonable purchasing rather than exploited purchasing.” The current business model is designed to encourage endless consumption that generates excessive consumption of renewable and non-renewable raw materials and resources. Educators feel that



conventional textiles and apparel education has followed a business model with a focus on innovation, target market, and profit. It is time now to change that model by including global citizenship competencies to counter world-wide problems (LeHew & Meyer, 2005).

### ***Industry Experts' Interviews***

This question on issues related to sustainability highlighted the triple bottom line. Expert Adi listed the issues and that list identified the themes that incorporated the vision of each interviewee. According to Adi, “sustainability includes economic, human society, and ecological.”

*Social responsibility.* All industry experts considered social responsibility as an important issue related to sustainability. It included consumer, community, labor, human health, well-being, and social equity. Expert Hiku stated,

Most people view social responsibility with the labor piece but I agree but that is only one component of it. According to me, the social responsible business is a one-employee-family community, including customers and their supplies, which so ever they do business with. How they handle, treat well, labor, health and fair wages and benefits, safe working conditions and they are responsible members of the community where they are.

Green-washing is a term that describes a marketing ploy used by some companies to claim more sustainable practices than are actually used. Green-washing was mentioned during one of the interviews and was acknowledged as a demonstration of socially irresponsible action. The researcher did not discuss green-washing with other interviewees. However, considering the occurrence of green-washing in the industry and

a second expert's reference to it as a challenge to sustainability under a different question, the researcher included this discussion here. According to Keeler, in a cover story by Global Finance, Corporate Social Responsibility (CSR) efforts of many companies include green-washing. Companies have found creative ways to present themselves as socially responsible entities rather than actually being engaged in or committed to socially responsible actions. However, some change is happening where a few companies have started weaving CSR into their core business strategy (Keeler, 2010).

*Environmental responsibility.* Five industry experts included environmental responsibility in their response to this question. Environmental responsibility is embedded in considerations of environmental impacts of raw materials, processes in the supply chain, energy consumption, use of non-renewable resources, production of waste and pollution, and end of life disposal and regeneration throughout the supply chain. Expert Hiku especially talked about polyethylene terephthalate (PET) as a non-renewable raw material that is depleting fast and that this issue needs to be considered to be resolved before we reach a crisis. He said,

PET has unique properties, sure, but once oil starts getting to \$200-300 a barrel, we will ration the gas and at some point PET will not be available at all. So, fabric suppliers should be thinking that PET in next 15 years may not exist at all. What are you going to do about it?

*Economic.* Three experts included economics as issues in sustainability. Economic factors had also emerged as an ecological challenge in the previous question. Expert Neha emphasized the economic prong strongly and stated, "Economics is very

important. It is very hard to have an ecological product if it is not economical.” Expert Mila focused on fairness and equity across the economic strata in response to question number 3 on issues related to sustainability. Fair wages are therefore not only a social responsibility issue but are also an economic issue as it facilitates equity in the distribution of wealth.

### ***Summary of Question 3***

Social responsibility was the only theme that emerged in all three groups. However, in the student focus group it was identified as a fair business practice. Academic and industry experts also shared an environmental responsibility theme. The student focus group’s theme identified as cost was similar to the economic theme that emerged from industry experts interviews.

## **Q4. Sustainable Products**

Question: What product comes to your mind when you think of sustainability? Please describe it. What makes it sustainable?

Table 8 summarizes the results for Question 4 and demonstrates the difference among the three groups.

Table 8. Themes on sustainable products.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
Bottles	Decision for product and processes	Natural
Shopping bags	Low-impact	Fair-trade
Apparel	Recyclable	
Cleaning products	Polyester	
Cars	Organic	
Fuels		
Miscellaneous		

### *Student Focus Group Interviews*

This question assessed the products that participants associate with sustainability.

Participant responses reflected thinking at both ends of the spectrum. The products mentioned in the discussions were either good examples of sustainable products or were considered highly unsustainable from an environmental perspective. It was interesting that participants did not refer to a socially responsible perspective. Products mentioned included bottles, shopping bags, apparel, cleaning products, cars, fuel, and other miscellaneous products.

*Bottles.* Bottles were mentioned by four focus groups. Water bottles were viewed as non-biodegradable plastic by one group while another group found plastic bottles to be satisfactory because they are reused several times and eventually recycled. All participants were aware of plastic bottle recycling but it was not clear that they are aware of how the bottles are recycled and reused. Yet another group thought plastic bottles used in salons and other personal beauty businesses were refilled to create less waste. One participant assumed that Nalgene® water bottles are sustainable because they do not contain harmful chemicals and can be reused multiple times. In addition to bottles associated with drinking water, milk jugs made of glass were also suggested as examples of sustainable materials by two groups when compared to plastic milk containers.

*Shopping bags.* Reusable shopping bags were mentioned by four focus groups. Responses focused on the variety of materials used for shopping bags: nylon, cloth, organic, burlap, and personal purse or handbag. Participant Mya stated, “Yeah, I think of environmental bags that they have at grocery stores. Now, even clothing stores [have the

bags] that you can buy and just reuse all the time.” Participant Rena said, “Now at Forever 21 they’re, like, selling those totes that you reuse.”

*Apparel.* Apparel fabrics and products were mentioned by six focus groups. Products that were considered sustainable included fiber type, recycling products, and styling and included such terms as: bamboo, synthetic fabric, refashioned, organic, vintage, versatile, classics and quality, and cotton t-shirts. Sustainability was more associated with brand names than an individual product. Brands that were mentioned in connection with sustainable apparel products are Patagonia and Simple Shoes. Examples of fiber types include organic cotton and natural cotton (sustainable), polyester fiber (unsustainable), and bamboo (sustainable material or plant but unsustainable because of its processing into fiber). Examples of recycling include Simple Shoes (a company) that produces shoes made from recycled materials, use of soda and water bottles to make Patagonia’s polar fleece, and use of old apparel to create vintage fashion and refashioned dresses. Styling includes using classic and solid colors such as black and white, classic styling, producing quality apparel, and common simple universal styles such as simple and unadorned cotton t-shirts. One another aspect related to styling focused on the messages on graphic t-shirts that give subliminal messages to facilitate thinking and repetitive stimulation to help the brain to embrace messages. Participant Rena stated, “The more times you’re going to see something, the more times you’re going to think about it.”

Cotton had strong support among the focus groups, yet one focus group described cotton as a controversial fiber. The participants in that focus group discussed the sustainable and unsustainable characteristics of cotton. According to the group, cotton

decomposes easily but growing it in large amounts needs chemicals. Growing organic is not feasible for every farmer because of the need for more land and resources. Some participants were aware of newer alternative method of producing cotton such as genetically engineered cotton. Participant Sana stated, “Due to high demand, researchers are trying to get the genetically engineered cotton as opposed to organic cotton.\*”

*Cleaning products.* Some selected cleaning products came naturally as sustainable to the minds of participants. They could easily recall names of cleaning products that they use on daily basis. Products and names included Seventh Generation, Greenworks, Methods, Clorox’s green line, cold water detergents, and recycled paper towels. Participants reiterated that these products are made from more natural and organic sources and do not have chemicals that can harm the environment. Individuals learn about these products either through advertising or walking into the store and accidentally learning about them. Participant Tanya stated, “I use Seventh Generation stuff and I kind of just stumbled upon it.” Based on the ease of the focus group discussions on this topic, it was clear that participants were more aware of cleaning products than other products. Investigating why this is so could be the focus of a future project.

*Cars.* Five focus groups gave examples of different cars as sustainable products: hybrid cars, electric cars, solar cars, small smart cars, and old durable cars. The variety of car types that were mentioned by the focus groups seems to be communicating different perspectives that are prioritized for sustainability. For instance hybrid, solar, and electric cars are using alternative energy, small smart car would represent downsizing and using fewer raw materials and less gas, and old durable cars would indicate a long-lasting product.

*Fuel.* Three focus groups mentioned sustainable fuels such as ethanol and other specialized gas products such as “Invigorate®.” Participants had some ideas as to what makes these products sustainable; however, they were not confident of their statements. One example from participant Molly was, “British Petroleum Gas Company tries to make our product, like, healthy engine, but also be, like, clean for the environment. And, like, very natural. Not giving off a lot of emissions.\*”

*Miscellaneous.* Some other products that were listed as sustainable were recycling bins, natural materials packaging, Energy Star electronics, and energy-efficient light bulbs. Pepsi-brand products were mentioned as sustainable with one of the participants reasoning that Pepsi recycles everything.

### ***Academic Experts’ Interviews***

Academic experts were challenged in identifying specific products that can be called sustainable. They focused more on the process and supply chain. Themes that emerged here include decisions for products and processes, low-impact products, recyclable products, polyester materials, and organic products. Textiles and apparel create a complex structure, including both sustainable and unsustainable features. Supply chains in the textiles and apparel industry use multiple resources and processes at each level, making the challenges associated with them also multilevel. Expert Ram’s statement, “Sustainable textiles and apparel are not easy to define, it can be that fibers are grown sustainably but not processed sustainably, or they can be grown in [an] unsustainable manner, but are able to be recycled” focused on the dilemma of making environmentally responsible choices. Expert Hani reiterated with a different perspective, “either you can

choose between labor problems or you can choose between energy and chemical problems,” adding social responsibility to the dilemma. Expert Hani further added that this scenario is true for any manufacturing industry, “in almost any manufacturing industry, there is regulation of the industry, whole balance between of stake holders, labor unions...you have to meet the needs of all.”

*Decisions for products and processes.* Decisions related to the selection of design, materials, and processes that determine a product’s sustainability. Expert Manu stated that when asked about sustainable products, instead of a product, “people” comes to mind first while expert Sanya felt that “process” comes to mind first. These comments connect with the complex nature of textiles and apparel and the challenges of creating products and processes fully sustainable. The level of sustainability of a product can be determined by the people who make the decisions about specific processes and materials. Expert Sanya stated, “No product is sustainable. It is unnecessary stuff that takes lot of input and money to make.” Sanya further added that the consumer buying decision and behavior in favor of buying less will make the consumption sustainable as it is difficult to make a product that is 100 percent sustainable. Expert Sanya also exemplified the NIKE Considered line as a good example of sustainable decision process, “They consider every stage, to put all together and they think what can we do more and better for sustainability.”

*Low-impact products.* According to expert Arun, products that are locally grown and distributed have a shorter supply chain and a reduced impact. If these products are organic, there is a further reduction of their impact on the environment. Expert Deepa suggested Life Cycle Analysis (LCA) to be a valuable tool to make decision about



selecting low-impact products and processes. LCA can be used to compare different alternatives to make such decisions. The balances between sustainable and unsustainable features can be researched to reduce the impact of a product or process. Expert Deepa affirmed,

Any apparel item that is evaluated by a life cycle assessment can be considered to be striving for sustainability. We want continuous improvement toward sustainability. . . every product by definition leaves an impact. Materials and processing, production process including waste, energy costs for production and transportation (local versus off-shore), packaging, consumer care, and end-of-use plan (e.g., recycling, reuse, redesign, compost) all contribute to a product's impact on people and the environment.

*Recyclable products.* Two experts stated that any product that can be recycled is considered a sustainable product. They provided several examples of such products: recycled denim for insulation, other waste fiber insulation, recycled polyester, paper towels, cans, plastics and even recyclable cleaning products. Expert Arun commented,

Natural Touch™ insulation uses recycled denim (blue jeans) as a house insulation. Quiet Shield™ by Federal Mogul uses waste fibers and other materials as sound insulation in automotive applications. Both of these products divert products from landfills and find alternative uses for them.

Expert Ram stated,

I also think of everyday products for living including things like paper towels and toilet paper, cleaning products, cars, aluminum cans, and plastic and glass bottles [because they can be recycled].

*Polyester materials.*

Polyester was identified as a sustainable product by two experts. Expert Manu choose polyester because it can be recycled. According to expert Manu,

Polyester is one fiber that can be melted back and reprocessed or up-cycled so that you can take polyester like what Patagonia is doing; either they use it in one product or make a whole product from it.

Kadolph (2010) reaffirms expert Manu's statement,

Recycled polyester creates significantly less environmental pollution than for virgin fibers made from new raw materials. Air pollution, for example, may be reduced by as much as 85 % ( p.172).

*Organic.* The term organic was used by two experts. Expert Arun used it in reference to three different product – cotton, produce, and meat. However, Arun further added that organic cotton is somewhat sustainable and its sustainability depends on supply chain factors. Arun stated, “Where the fibers were obtained, where they were processed, and the length of the distance between those and the consumer may make them less sustainable.” According to Kadolph (2010), “Organic cotton is produced following state fiber certification standards on land where organic farming practices have been used for at least three years.” (p.67). Expert Sanya considers organic cotton to be non-sustainable as it requires large amount of water and is hard to grow. Given the definition of organic cotton, it is apparent that Expert Sanya considered the challenges farmers face in meeting organic endorsement requirements.

### ***Industry Experts' Interviews***

Two themes “natural materials” and “fair trade products” emerged from industry expert interviews.

*Natural materials.* Three experts mentioned natural products such as organic apparel, cotton, flax and bamboo fibers. Bamboo was used as an example of unsustainable fiber. Expert Adi discussed bamboo and its sustainability,

Sustainability has become synonymous with “Environmentally Good” which is not necessarily true. The burning of coal and oil is, for the foreseeable future, sustainable but certainly not environmentally friendly. The process of getting raw bamboo to a usable textile fiber is extremely toxic to the environment. Sure, it grows uncultivated (therefore sustainable) without pesticides and chemical fertilizers (therefore organic) but, the fiber-producing process is similar to making rayon from pulp.

*Fair Trade products.* Two experts mentioned fair trade products as sustainable products. Expert Bani stated,

Fair trade, low impact, organic clothing, energy efficient homes and equipment, consolidated distribution methods. Most of the things have [the] ability to be sustainable. We need to design entire system for that.

### ***Summary of Question 4***

Emergent themes from both academic and industry experts were conceptual where the themes that emerged from student focus group interviews related to specific products that were tangible and media-driven. The products listed by industry experts are conceptual

examples of social and environmental dimensions of sustainability. The conceptual products identified by academic experts indicate next generation of products.

### **Q5 and 6. Fibers and Fabrics**

Question: Based on sustainability, are there any fibers/fabrics that you will not buy? Please explain your reasoning.

Question: Based on sustainability, are there any apparel materials that you will not buy? Please explain your reasoning.

Table 9 summarizes the results for Question 5 and 6 and demonstrates the differences and similarities among the three groups.

Table 9. Themes on fibers and fabrics.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
Rayon	Recycled	Synthetic
Natural	Renewable	Natural
Fur	Animal-based	
Organic	Chemical Use	

### ***Student Focus Group Interviews***

The majority of participants select specific fibers to meet their comfort or care requirements. Participant Willa affirmed, “In winter I buy cashmere fiber more as it is warm and comfortable.” They also consider the cost when making their selection. Participants also acknowledged their guilt and anxiety. While they have some awareness about different issues, they are more strongly guided by their available finances when making their buying decision. Participant Molly commented,

I think it’s really hard for people our age because we don’t have a lot of money but we’re the ones who are, like, absorbing all this information. Just makes it harder. You know, you feel guilty all the time, like...Stressing you out, right?

Some participants could identify the designers that are known for their organic and sustainable designs but are considered expensive as compared to student's buying ability. Participant Mya stated, "Stella McCartney does organic and sustainable clothing, like vegan but is out of my range [cost.]\*"

Participants were not aware of the specifics of fiber or fabric sustainability. One participant Mya mentioned that she identified more with a company or the brand name and not because of any sustainability agenda; however, she did consider a company's ethics. Clearly, sustainability is seen as a separate entity and not a part of ethics.

Participant Yvonne stated,

I don't know if it all has to do with sustainability but a lot of it is just the ethics.

When Nike got busted for, you know, their unfair labor and their child labor and how they were just treating their employees.

Another focus group indecisively stated that buying items made in the US is more sustainable than buying items made in China. Participant Dela said, "Buying from places that make cloth in US. Isn't that more sustainable than buying from China?\*"

Two focus groups mentioned that they did not have the educational preparation to make sustainability-related decisions about fibers and fabrics. Participant Henna said,

I don't know enough to know about that. Like you said, if I were more educated in it and really understood the process of what they went through to create and how long it would take to decompose, I'm sure I would not buy it.

It was apparent that either there was no awareness or the knowledge about fibers and fabrics was fragmented. Some participants knew about a number of sustainability issues with some fibers and fabrics, while others were unaware of these issues. Some

fibers and fabrics that were labeled unsustainable include: rayon, cotton, polyester, fur, skins, faux fur, and patent leather. Rayon, natural, fur, and organic qualified as themes.

*Rayon.* Rayon was mentioned in two focus groups. It is considered a fiber that is used in cheap and fast fashion. In one of the focus groups participants had a short conversation regarding their uncertainties about the negative environmental impact of rayon. However, it was apparent from the discussion that the participants have learned some details about fibers and their attributes in their course work. Participants Cai and Julie stated,

“Isn’t it rayon that’s bad for environment?\*”and

“After being in textiles [Textiles class], I am shying away from rayon.”

*Natural.* The focus group in the earlier theme seemed to have also learned about cotton in their course as well, but not all their information is accurate. They mentioned the adverse effects of the mercerization process. Participant Molly stated,

Isn’t mercerized cotton really bad, too? Cause when people read, “oh, cotton” but if they don’t know what mercerized is, it’s, like, so many chemicals to make the cotton really, really, really soft, so kind of defeats the purpose of a natural.\*

Students were aware that most cotton is not eco-friendly because it uses large quantities of water for irrigation and agricultural chemicals. Because of the response to an earlier question, water shortage was identified as an ecological problem, making it reasonable to suggest that excessive use of water for cotton crops would be considered unsustainable by the participants. Two focus groups mentioned that they would select natural fibers: one participant said that the selection would be for natural fiber’s easy

disposability and biodegradability while in the other focus group did not provide any reason.

*Fur.* Fur was mentioned in five focus groups because participants felt strongly about not killing animals for fur. They did not want to support companies that sell fur or communicate through their dress that it is acceptable to kill animals for personal purposes. Participant Molly stated, “I wouldn’t want to promote doing bad things to animals. Like, I wouldn’t want to wear it around and be, like, this is okay.”

Skins, such a snakeskin or crocodile, were unacceptable; however, no reasoning was established during the focus group discussion. Fake fur and patent leather were considered undesirable because participants felt that they were synthetic and not good for the environment.

*Organic.* Two focus groups mention that they may buy products that are organic. One of those focus groups stated that they are not sure of the difference between organic and regular products but are ready to spend extra money to purchase organic.

### ***Academic Experts’ Interviews***

Academic experts identified fibers and fabrics based on their biodegradability, use of chemicals during production and processing, and ability to be recycled. It was evident that experts were very knowledgeable about these aspects. Themes that emerge from this interview question are recycled, renewable, animal-based materials, and chemical use.

*Recycled.* Two experts stated that they will buy recycled polyester and noted that recycled polyester is difficult to find and is expensive. However, recycling gives polyester fibers a second life that is considered acceptable even if polyester itself is viewed as harmful and non-renewable. It was interesting to note that one expert in a

previous question considered polyester to be a sustainable product as it can be recycled.

Expert Deepa felt that rather than selecting what fibers and fabrics to buy, one should buy less and practice sustainable life-style in reference to that garment. Expert Deepa stated, “The best thing I can do is to buy fewer garments, wear them often, wash them only when soiled, air dry them, and look for second and third lives for the garments through redesign, recycling, and reuse.”

*Renewable.* Two experts discussed the dilemma of using non-renewable fibers such as polyester and nylon that are considered undesirable but that garments made from these fibers are somewhat desirable for their long life and low-impact care. Natural organic fibers and, in general, organic cotton was preferred because it is biodegradable and renewable. Expert Deepa stated,

Every decision has a trade off. If I wear polyester or nylon, non-renewable resources are used, but the garment would last very long and could be dried quickly so less energy used for care. If I choose organic cotton, chemical pesticides and fertilizers would not be used, but much water is still used to grow it and cotton takes a long time to dry after washing.

*Animal based materials.*

Leather and fur were two materials mentioned that experts will buy or not buy for several reasons. According to one expert, leather is not considered unsustainable as it is most likely a by-product of meat industry, but fur is considered damaging to the natural life of animals. Expert Hani said, “I do not believe that there are any sustainability issues with leather. If animal is killed, at least we can use all of it.” Expert Sanya commented “the leather is a product of food industry, but the tanning process is so nasty.”



*Chemical use.* There are several materials that were preferred to for their non-chemical production or not preferred for their use of chemicals in processing. Organic cotton was described as one of the less chemically-intensive, natural, biodegradable fibers but the negative factors mentioned for organic cotton are excessive water usage and high-impact care by consumers. This conflict for organic cotton was expressed by two experts and was identified in the previous question as well. In addition to this conflict, supply chain factors may bring in more conflict and may affect its sustainability. Rayon is considered questionable by one expert because of the use of chemicals in its processing. Expert Manu articulated that cotton is disagreeable because a lot of pesticides and chemicals are used in growing the fiber and harming land, water, and communities. Expert Manu stated, “Airplanes spill the pesticides and it is not necessarily landing on the crop. It goes on water stream. People are drinking the water. It is carcinogenic.” Expert Ram stated that,

I try to stay away from fabrics made largely of petroleum-based fibers as petroleum is not only processed in eco-damaging way, but it will not be able to be replenished in the near or far future.

The tanning process for leather is also considered eco-damaging due to the nature of the chemicals used.

### ***Industry Experts’ Interviews***

The fibers and fabrics-related question was answered by providing specific examples that can be categorized under the themes of synthetic and natural.

*Synthetic.* Experts used different descriptors such as petroleum-based, polyester-based, virgin-polyester, or synthetic to describe the synthetic fiber group. Synthetic was

universally viewed as an undesirable fiber category except for one expert who specified that because synthetic can be recycled and affirmed that, therefore, it is a desirable material. Another expert stated that she would use recycled fibers and will avoid materials made of new virgin fibers. Expert Bani stated, “Petroleum-based fashion, synthetic fibers, bamboo because of processing - avoid these in general. The polyester based products, when discarded in trash sit in [the] landfill forever.”

*Natural.* Experts gave examples of fibers and materials for both sustainable and unsustainable criteria. Expert Hiku stated that bamboo is the only material that he will not select and expert Bani reiterated the same for bamboo and also provide a reason -the unsustainable processing of bamboo. The other favorable natural materials are cotton, organic cotton, Tencel® lyocell, and modal. Expert Bani supported Tencel®, “I support and believe in Tencel® as that is a 1000 times better fiber for sustainability.”

### ***Summary of Questions 5 and 6***

Focus group student participants were not well conversant about fibers or fabrics in general. Academic expert interviews provided four themes and industry expert interviews provided two themes. However, these themes did not share common words, but, there was a conceptual overlap. Themes natural and renewable have common characteristics. Student focus groups and industry expert interviews shared one theme – natural.

### **Q7. Labels**

Question: What information on apparel labels is important to you and how do you use it?

Table 10 summarizes the results for Question 7 and demonstrates the differences and similarities among the three groups.

Table 10. Themes on labels.

Student Focus Group	Academic Experts	Industry Experts
Country of manufacture	Country of origin	
Brand	Fiber content	Fiber content
Care instructions	Sustainability-related information	Sustainability-related information

### *Student Focus Group Interviews*

Participants were asked if they looked at labels, to identify the information on labels that was important to them, and the use they make of label information. The discussion demonstrated that there were three main pieces of information that mattered to the participants: country of manufacture, brand, and care instructions.

*Country of manufacture.* Made-in-the-US emerged as one of most important and valuable pieces of information for participants. Participants in one of the focus groups felt strongly about the pride of being citizens of a strong country and expected that the US should produce locally. Participant responses indicate that Made-in-the-US is associated with something that is fairly made and that provides jobs within smaller national companies. Examples of products that are made in the US emerged: American Apparel and J Brand jeans are made in Los Angeles, CA. Participants are more aware of issues involved in other countries such as working conditions, child labor, fair wages, and working hours. Participants were confident that buying things made in the US ensures that they are not supporting companies that may have such issues in their product supply chain. Participant Darcy stated,

It's unfair trade over there [countries other than US], like the way that they're working and the amount that the people are getting paid and the ages they're starting to work out, the hours they're putting in.

One of the focus groups had an opportunity to watch a video entitled, *China Blue* in one of their courses. The video had a powerful impact on their perception of items made in China. They credited their enlightenment about manufacturing and business practices in China to this video. Participant Fallon stated, “It was an eye-opener!”

Participants in this focus group also realized that most of the items in their wardrobe are made in China and it would be challenging to disclaim China-made products as an emotional response to the contents of the video. Participant Gia in the same focus group acknowledged, “I almost went home and got rid of all my stuff from China; I wouldn’t have any clothes left so that would be a bad idea.”

A participant in another focus group considered items made in Sri Lanka as desirable as items made in the US. It is apparent that participants had different images and emotional reactions to the products made in different countries. Like participant Martha said, “I have one from Sri Lanka, which is kind of cool.”

Participants also felt that there is a dilemma associated with providing employment locally versus providing it in developing countries that support their economies by means of the global apparel industry. Participant Neva stated, “It helps as offers a lot of jobs to developing countries.”

*Brand.* The importance of brand was stated in four focus groups. Participants believed that brands are a vehicle for a company’s reputation and capture consumer attention first and foremost. Participants Debra, Pamina, and Tanika stated,

“I always notice the brand name; it’s usually the biggest thing on the label;”

“it symbolizes [what company stands for];” and

“before taking the textiles course, I never looked at labels other than brands.”

Participant Tanika reflected that for her brand is most important and she was very pleased that her preferred brand products are made in the US which encourages her to buy more of that brand. She stated, “I found out one of my favorite brands was made in America, and then it was kind of, like, “Oh yea!” Now I can buy more of it! You know what I mean? It’s better.”

*Care instructions.* Washing instructions, care instructions, and fiber type to determine care and upkeep were all subthemes that emerged as important pieces of information that participant use to make their purchase decisions. Care instructions help participant estimate the cost of wear and care and provide value over a product’s entire useful life. Five focus groups considered the cleaning method as an important piece of information. Participants stated,

“[I read labels] for cleaning, for how can you clean it;”

“I check how to wash it, I hate dry-clean only stuff;”

“[I look at the garment label to evaluate] cost of maintenance;”

“looking at fiber content will tell how to wash;”and

“[read labels] for care instruction”

Two participants in separate focus groups mentioned that labels may not grab their attention especially if they are not trained to look at labels. They stated,

“I am not a label person; I just buy what my eyes are drawn to;” and “before taking the textiles course, I never looked at labels other than brands.”

### *Academic Experts' Interviews*

Reading labels is a common practice for all academic experts. One expert stated that “I am a label reader. As educators, we all are.” Expert read labels to learn about country of origin, fiber content, and sustainability-related information.

*Country of origin.* Five academic experts read apparel labels to learn about country of origin and may make purchase decisions based on that information. Country-of-the-origin labels inform if the products are made in the US or are outsourced from another country. Made in US was considered a favorable factor for two reasons: local production and the assumption that it would have travelled less in the supply chain making it more sustainable. Expert Deepa mentioned, “Country of origin is interesting to me, but I don’t use it to make a decision on whether to buy or not, though if USA is country of origin I take a second or third look.” Academic experts may make a purchase decision based on their knowledge about the state of social responsibility and compliance in other countries. Expert Hani stated, “I will look for things that are made in China as I do not want to support economic systems that clearly have no regard for health and safety of their own people.”

*Fiber content.* Fiber content is considered important information on the apparel label by four experts. Two experts read this information to make informed decision about the functional properties of the fabric used in the garment. One expert looks for use of organic fibers in the manufacture. Another expert mentioned that fiber content is important. Expert Deepa stated, “Fiber content has always been important to me. I purchase by fiber content depending upon my expected use and required function [of the item].”

*Sustainability-related information.* Four experts expressed their interest in looking for sustainability-related information on the label. Experts look for different kinds of information: is it made from an organic fiber? Is the company doing more green? Is it local? Expert Hani stated, “I am interested in and encouraged by when/ if I have [a] choice to buy from people who are doing more green.” Expert Manu acknowledged, “I am in [the] Bay area and try to buy local, local designers, local manufacturers and Levis as they are local even if they are not produced locally.” Expert Manu seems to not only support local designers but also bigger companies to sustain local economies.

Expert Sanya mentioned that it would be beneficial to learn about a company’s or brand’s sustainability-related efforts from the label and stated “I would like to see more companies' sustainability efforts, but, I also know that I will be skeptical about it if I see it.”

It is apparent that sustainability-related information may not be fully communicated through the label even though academic experts seek that information.

### ***Industry Experts’ Interviews***

Two themes, fiber content and sustainability-related information, emerged from the responses to this question.

*Fiber content.* Three industry experts remarked that fiber content is important information on the label. Expert Adi reads apparel labels and hangtags to learn about many things. Fiber content is the second piece of information that is important to Adi. The fiber content informs Adi about garment life and wearability. Expert Hiku stated, “I am not a technical expert. [I look for] where is it made and how much synthetic [is] in it.”

Expert Hiku already expressed his concerns on depletion of resources that are used in production of synthetic fibers under Question 2 on ecological challenges.

*Sustainability-related information.* Sustainability-related information was important to all experts. There was a variety of sustainability-related information that the experts specifically seek. Expert Adi looks at labels to see if the materials used are environmentally safe or they are recycled, and country of origin to make a decision about the credibility of the information provided on label. Expert Bani looks for special certification of fair labor practices such as Okeo-Tex or Fair Trade. Expert Hiku and Expert Neha both go for the sustainable brand as they claim that they are educated about sustainability practices of different companies and brands. Expert Sita looks for transparency in the supply chain by the brand to make informed decisions; she gave an example of Patagonia's Footprint Chronicles. Patagonia acknowledges that any product leaves an impact on the environment and The Footprint Chronicles allows an individual to track the impact of specific Patagonia products from design through delivery making the supply chain transparent (Patagonia, n.d.). It is evident that all industry experts consciously make efforts to support products that are sustainable from one or more perspectives.

### ***Summary of Question 7***

Student focus groups have one common theme with academic experts – country of origin. The other themes for students were related to image and impact on their personal self. Academic experts and industry experts have two themes in common: fiber content and sustainability-related information.



### **Q8. T-shirts**

Question: If you have three t-shirts, one made of 50% Recycled polyester and 50% recycled cotton (Made in USA), another one made of 70% viscose from bamboo and 30% Organic Cotton (Made in China), and a third one made of 100% cotton (made in Haiti) which one is the most sustainable? Please explain your reasoning.

The three t-shirts chosen as the visual prompt for this question were limited in their selection because of convenience and availability. The t-shirts were used only as a prompt to initiate thinking and discussion. The researcher searched for t-shirts in natural color. The researcher selected one made from conventional cotton, one made from recycled fibers, and one made from natural and organic materials. The country of origin was different for the shirts: US, China, and Haiti.

#### ***Student Focus Group Interviews***

The majority of the participants felt that they were not competent to make a comparison and judgment on which shirt was most sustainable. However, based on the discussion from all focus groups, it was evident that the first t-shirt was favored. Participants demonstrated curiosity and a desire to learn about the materials to make informed decisions in the future. Because of the diversity of responses and reasoning behind their choices, each focus group is discussed individually for this question.

*Focus group I.* The first thing that came to their mind was longevity, “Which shirt would last longer?” After a lot of deliberation the focus group concluded that they need a stronger educational preparation to make a decision on the most sustainable t-shirt. Participants were keen to learn about the carbon footprint for each t-shirt. The t-shirt made from recycled cotton and polyester blend fabric was assumed to have a shorter life-

cycle based on their prior knowledge about recycled wool. Participant Alison stated, “Recycled materials may not last that long just like recycled wool. Anything that is reprocessed breaks down faster.\*” Participants asked very specific and profound questions related to sustainability of the presented t-shirts. For the first t-shirt that was 50 percent recycled cotton and 50 percent recycled polyester blend, the question was: “How much energy is used in recycling?” For the second t-shirt, participant Amy stated, “Bamboo is bad, too.\*”

*Focus group II.* Focus group II favored the first t-shirt because of its recycled and Made-in-the-US attributes. However, the participants were not confident of their rationale. Participant Mindy stated,

The 50/50 is recycled, can be washed in cold, may use less energy, made in the US so fair work[ing conditions for the producers], jobs here [in the US], less shipping and a smaller footprint.

This statement has three interesting components: recycled is considered reducing the footprint, washing in cold implies reduction in the care process, and Made-in-the-US is favorable because it would make use of fair and local labor with less travel from production to distribution in the US. Although, participants did not provide a final verdict, it is clear that the first t-shirt seemed to have qualities that would place it first among the three shirts.

*Focus group III.* Focus group III also did not make a clear decision but provided their opinion about the three t-shirts. The first t-shirt was favored as it is recycled and uses waste materials. The second t-shirt of bamboo and organic cotton was considered harmful for the environment. Participant Berta stated, “bamboo is very toxic.\*” The third

t-shirt was considered equivalent to the first because it promised the ability to recycle.

Participant Errin stated, “100 percent cotton as you can reuse.”

*Focus group IV.* The fourth focus group seemed to pay attention to each material and the country of manufacture. The t-shirts provided a prompt for thoughtful discussion. Participants provided their inputs and thoughts for each t-shirt, but did not decide on the most sustainable t-shirt. Their comments included:

“Bamboo and organic cotton as it has organic,”

“Recycled as you are not using new products so it is sustainable because you are recycling;”

“Not sure if cotton is expensive to produce. Bamboo is easy to produce, not sure about cotton. Recycling is good but not sure of operating costs [recycling cost];”

“The one made in the US will be the better quality as production from China and Haiti is like mass produced and they cannot maintain quality;”

“The one made in Haiti may be providing labor to a poor country and is socially responsible;” and

“The one made in China is synonymous with low wages and poor working conditions.”

Based on these comments, one can interpret that the recycled t-shirt that was made in the US scored best from the group’s perspective.

*Focus group V.* Focus group V clearly found the first t-shirt to be the most sustainable because it is using existing materials and eliminating waste, extending the life of the fabric, and reducing packaging as it is made locally. However, they also mentioned

that they were not sure of the effect of recycling processes on the environment.

Participant Rama stated, “There could be residues and stuff [from recycling].”

Participants also expanded their discussion on the first t-shirt and questioned their own decision by stating that the dyes used in coloring the t-shirt, if used (the sample t-shirt was in its natural color) could be harmful to the environment. Clearly, they were debating the factors that would help them determine the most sustainable t-shirt. This focus group did not discuss country of manufacture as their discussion was focused on environmental aspect of the materials.

*Focus group VI.* Focus group VI ranked the three t-shirts in this order: recycled 50 cotton and 50 polyester blend, bamboo and organic cotton blend, and 100 percent cotton. The first ranked recycled shirt was chosen because it was recycled, strong and long-lasting, and made in the US ensuring the lowest possibility of use of sweatshop labor in its production. The bamboo and organic cotton blend shirt got second place because it contained organic fiber, although they commented that bamboo is not good as it goes through chemical treatments and that bamboo is a weak fiber. The cotton t-shirt (100% cotton) was placed last because participants commented that it would not be as strong as the polyester/cotton blend. Two participants Opal and Gillian stated, “I think sustainability as a lasting thing versus more of a like eco-friendly and from what I know “Polyester/cotton blend is a better mix than 100 percent cotton and viscose [bamboo was assumed to be similar to viscose rayon] is weak\*” and “Well, if it is made in the US, that’s probably a lot less sweatshop labor going on than if it is made in China.\*”

*Focus group VII.* Focus group VII gave equal scores to the recycled cotton/polyester blend and the bamboo/organic cotton blend shirts. They considered both

t-shirts to be having one or another positive attribute from the perspective of the environment: recycling and organic. The focus group participants also appreciated the tactile quality of the t-shirt that contained bamboo. Participated Dela commented, “Bamboo shirt feels soft, it looks very comfortable.”

### *Academic Experts’ Interviews*

The discussions generated by the shirts were exceptionally insightful. Four experts considered the t-shirt made from recycled materials and made in the US as most sustainable. The reasoning for this selection resonated among the experts who selected this shirt. One category of responses focused on the materials that are recycled, getting a second life, and being kept away from landfills. A second category of responses emphasized that Made-in-the-US provided two advantages: assurance on environmental and social standards and that the t-shirts would have had a lower carbon foot-print because of the reduced distances in its supply chain as compared to t-shirts that are sourced from another country. Expert Arun commented,

I would say the shirt made in the US is the most sustainable as it is made from waste materials that have been diverted from landfills and converted into something useful again. Plus, the shirt hasn’t traveled as far as the other two shirts, thereby saving fuel. And, most likely the chemicals (dyes, etc) used to produce the shirt were recovered prior to disposal of the effluent into the sewers.

Expert Deepa’s comments (through e-mail response) resonated with Expert Arun’s,

I would say the first t-shirt would be the most sustainable based on

- Its use of recycled materials, therefore in its 2<sup>nd</sup> life,
- Production in USA would presumably minimize transportation costs, and

- Production in USA may indicate higher standards for environmental practices, fair labor practices, human rights, health and safety.

Discussion on the country of origin provided further insight. Two experts mentioned that they were not confident of social and environmental responsibility practices in China and Haiti. Expert Hani declared that if there is choice she would avoid buying from China. Expert Sanya chose the 100% cotton t-shirt made in Haiti because Haiti needs jobs for their economy and it is geographically close to the US ensuring a relatively shorter supply chain distance.

The sustainability-related discussion focusing on fiber content enlightened the advantages and disadvantages of fiber production, processing, and carbon footprint because of supply chain. Two experts considered the bamboo and organic cotton blend t-shirt to be most unsustainable because experts Arun and expert Deepa thought that the common method of processing bamboo to make fibers uses harmful chemicals. Expert Ram stated, “Not all organic fabrics are made in a sustainable manner.”

Only one expert chose 100% cotton but had a very convincing argument. According to Expert Sanya, “There are lot of advances in conventional cotton that have reduced need of pesticides and things like that. Considering it is made in Haiti, it would be probably US cotton that is most advanced in that way [less pesticides].” This reasoning emphasizes the complexity of factors that can influence the total ecological impact of a product, but such knowledge and interpretation is probably uncommon.

### ***Industry Experts’ Interviews***

The discussions generated by the industry experts were exceptionally insightful. Three experts selected the recycled t-shirt as their choice for most sustainable. Expert Adi

seems to have extensive knowledge and experience within the industry and his discussion as quoted below was very detailed and insightful,

If you are using the word sustainable as synonymous with environmentally safe for the planet, I believe this is wrong! In today's conversations it is common to hear Green, Sustainable, Environmentally Friendly and Carbon footprint to all mean the same. They do not necessarily equate! Bamboo is a sustainable plant but the making of bamboo textile fiber is not environmentally friendly. Organic cotton is grown without pesticides and chemical fertilizers (although utilizes an enormous amount of water and huge acreage) and is a very "green" and "environmentally fiber" until you dye the yarn, fabric, or garments. Dyeing pollutes the water environment to say nothing about gallons of wasteful fresh water and energy usage. *The 50/50 recycled Poly/cotton blend is the greenest of the three T-shirts.* It utilizes cutting room waste that is processed in a water- and chemical-free environment to make the recycled cotton portion and it recycles plastic bottles heading for landfills and our shore lines for the polyester portion. The yarn already has color coming from the cutting room scraps therefore there is no need for dyeing.

Expert Bani suggested that none of the shirts were sustainable and added,

The recycled blend would have a problem as it is down-cycling of and the fabric will be weak and will not last as long. Although it is made in US so it will have less ecological footprint. Bamboo one is out. The 100% cotton may be if it uses rotational crops. There are factors on either side of supply chain starting from land to core consumer.

Expert Hiku chose the 100% cotton shirt as most sustainable because it was natural and renewable, recyclable and made in Haiti. Looking from the technical knowledge perspective, every selection seems to have a valid reason. It was difficult for informed and educated individuals to make a unanimous selection because of the complex nature of the textiles and apparel industry.

### ***Summary of Question 8***

The recycled t-shirt made of fifty percent recycled polyester and fifty percent recycled cotton (Made in USA) was considered most sustainable by the majority of the participants because of its being recycled and produced within the US.

## **Q9. Actions in Personal Life**

Question: What specific actions in your personal day-to-day life do you see as sustainable efforts?

Table 11 summarizes the results for Question 9 and demonstrates the differences and similarities among the three groups.

Table 11. Themes on actions in personal life.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
Conserve water	Conserve water	Conserve water
Conserve electricity	Conserve electricity	Conserve electricity
Conserve fuel		Conserve fuel
Shop local	Shop fair	Shop Organic
Shop secondhand	Shop secondhand	
Shop strategic	Shop strategic	Shop strategic
Shop less		
Shop green		
Recycle, reuse	Recycle, reuse	Recycle, reuse
Reduce waste	Reduce toxic waste	Reduce waste
	Political action	



### *Student Focus Group Interviews*

Under this section participants were asked about the specific actions in their day-to-day life that they see as sustainable efforts. All participants ( $n=11$ ) in one focus group very strongly agreed that they have the power to start any trend such as a trend to go sustainable. Participant Katy passionately stated while others agreed by their affirmation, “we can start [going sustainable] at the individual level. Groups of people will follow. Something people will notice and that’s how fashion usually [is established].”

During the discussion in focus groups, some participants realized that several of their normal everyday actions are sustainable efforts. However, further probing helped to identify that the main thought behind those actions was inadvertently something other than sustainability. Participant Ima stated, “I like walk to class. Like, I mean, I try to walk as much as possible, but I never think of it as being sustainable. I’m, like, I’m being healthy walking, It’s, like, selfish.”

The following themes emerged during the focus group discussions: conserve water, conserve electricity, conserve fuel, shopping behavior (shop local, shop secondhand, shop strategically, shop less, shop green), recycle and reuse, and reduce waste. Other reflections have been presented as a separate theme.

*Conserve water.* Water conservation is viewed as a pro-environmental behavior in a study conducted on water conservation behavior by Corral-Verdugo et al., (2008) Participants in two focus groups reported conscious efforts to conserve water by watching their water consumption during daily activities such as brushing, showering, and doing dishes. Participants in two focus groups stated they have reduced the frequency of doing

laundry although for economic reasons and the fact that certain products may not need frequent laundering. Participants Fatima and Mya stated,

I try to wear my clothes as much as I can without washing. Do you know what I mean? Because I feel bad doing loads of laundry and I think of it because we have to split our bill as roommates in dorms; and increase the number of wears on jeans and towels before wash

Participant Neva from another focus group mentioned practicing simple conscious behavior in the college cafeteria, “I don’t always use a tray when I go to the cafeteria. If you use a tray and there’s, like, two things on it, you still have to wash it. So, that saves water and all that stuff.” However, another participant from a different focus group stated that she is conscious of not producing waste but chooses to take long showers and does not think about water usage or conservation.

*Conserve electricity.* Six focus groups gave examples of a variety of actions in their day-to-day life that demonstrate energy conservation. These include turning off the electric gadgets, unplugging gadgets that are convenient to unplug when not in use, installing energy-efficient light bulbs, and hang-drying clothes in the summer. One of the participants stated that she conserves energy for economic reasons. Participant Yvonne said, “Now that I’m in my own apartment, we pay electric and heating bill and all that stuff, I think we really try to conserve a lot more energy.”

*Conserve fuel.* Fuel conservation was mentioned in four focus groups. The most common actions that resulted in conserving fuel included walking, biking, or using public transport for their travel to school and work need. Some interesting reasoning for using or

not using a car emerged. One example mentioned at the beginning of this section focused on participants walking to remain fit. Another reason was that they did not own a car.

Participants gave examples of not only their personal actions but also the actions of someone they know. Participant Pamina stated, “not for me particularly, but my dad will take the bus from home to [work] and I think in that way you’re conserving energy by transporting as like a mass [transportation].

*Shopping behavior.* Several subthemes regarding shopping emerged: shop local, shop secondhand, shop strategically, shop less, and shop green. Each subtheme will be discussed separately because of the specific comments made by participants.

Supporting local business by shopping for local produce and other products is considered a sustainable effort. Recent literature such as Barbara Kingsolver’s *Animal, Vegetable, Miracle* (2007) provides evidence of the economic, social, and health benefits by producing organically and buying locally. Buying local is considered an evidence of sustainable behavior (“Green Consumerism,” 2007). Participant Tanika stated, “I shop local as much as I can, support local businesses, I really like shopping at farmers’ market.”

Shopping secondhand for products from places such as Goodwill and selling them back to thrift stores so that they can be reused are sustainable actions. Participant Polina acknowledged, “I could buy new clothes if I wanted to but I like going to thrift stores or Goodwill and finding t-shirts or sweaters. It’s, like, kind of reusing.”

Shopping strategically to focus on the longevity of clothes was mentioned in two focus groups. Participants stated that shopping for versatile clothes, classic styles, solid

colors instead of trendy prints, and avoiding fast fashion saves money. They realized that even though their main goal was to save money through these actions, nevertheless, these were identified as sustainable efforts in their group discussions.

Reducing consumption by shopping less and developing a utilitarian mind set as compared to the ubiquitous consumption-based mind-set is yet another way that some participants described as personal sustainable action. Participant Sana appreciated that from her grandmother, she has learned to strategize and avoid impulsive shopping and thus shops less,

My grandma used to tell me, like, every time you go shopping and it could be for anything and she'd say if you picked something, look at it and be, like, in the next 2 weeks or at the max a month, you think you're you'll be picking that same thing out? And, just think about it while you're doing that and maybe even come back after two weeks and if even till then you want it that thing really bad, then get it. And, so now I do that for everything so by the time I'm done shopping I have nothing. But, that's the whole idea! You change your thoughts. You want to get it right now but then the next two weeks there will be something else, so"[marketers keeps putting new products and instigate you to buy, and the chain continues].

Participants acknowledged that the products that are labeled "green" capture their attention and encourages them to shop green. They further added that they may not understand the greenness of the product; however, they choose to buy based on the appearance of the term "green" on the labels and their personal judgment is based on senses such as smell. Participant Annie stated,

I buy things that say green. I buy the Green Clorox cleaning products. I don't really know. I haven't done the research into what exactly makes them so green but I feel like I'm doing something better and I think you can just tell the scent of them and things like that. They don't smell as harsh, harsh chemicals and things like that."

According to a survey many MBA students make a favorable buying decision for a product that has natural ingredients as these students associate natural ingredients with "green" (Knight, 2008). The above participant quotes indicate that the participants associate chemical-free with the term "green."

*Recycle and reuse.* Recycling and reuse behavior emerged as the most commonly taken action in the personal lives of the participants. These terms are commonly associated with sustainable behavior. All the focus groups mentioned the term recycle more than once during the focus group interviews. Five focus groups specified recycling as a sustainable action taken in their personal lives. Participants recycle a wide variety of products: bottles, paper, cardboard, and other materials.

Reusing plastic shopping bags and water bottles made of metal or other reusable materials is another way of incorporating sustainable actions in daily life. Reusing plastic grocery bags as trash bags was mentioned in two focus groups. Participant Nan said, "Instead of buying garbage bag on top of the plastic we get at stores, I reuse the plastic grocery bag for my trash collection."

A statement by a participant Nikki was an example of reuse and recycle for the same product – plastic water bottles. The participant mentioned that she uses them

repeatedly until they are no longer usable, and then discards them in recycling.

Participant Molly stated,

I think recycling for me, too, with like water bottles is, like, yeah I have a pack of water that I use but I never throw them away, I'm always just refilling them and, taking them to class and then they're, like, scrunched and stuff. Then I'll recycle them you know. But, I use them as long as I can.

Use of recycle bins for recycling is also considered a sustainable behavior.

However, participants stressed that easy accessibility of these recycle bins is an important factor encouraging them to use those bins.

When I'm at home, I'm more sustainable than when I'm, like, on my own. I know at my house, like, my mom and dad have, like, plastic in, like, different containers, whereas here, I don't have room for all that stuff in my apartment. So it's harder here than it would be at home to go out to the garage [to use the recycle bin].

*Reduce waste.* Creating and discarding waste was viewed as negative behavior.

Participants in three focus groups reiterated that they make efforts to reduce the amount of waste their daily activities generate. Participants related their donation of used apparel to thrift stores as another way to avoid creating waste. Reusing and recycling is also viewed as not being wasteful. Supporting statements include:

I get rid of my clothes, I give them to thrift stores, I don't put them in the trash.”

“When I'm done with my old clothes, I have little cousins or otherwise I'll take them to the second hand store so other people can reuse them too if they're still in good condition;

I don't waste food. Like, I only take as much as I'm going to eat; and  
 Bring your own mug at Caribou and also reuse plastic containers of yogurts that  
 would have waste.

One of the participants reflected on her efforts of minimizing the waste generation and how that is part of her thoughtful behavior. For her, water conservation or fuel conservation is less important. She stated,

I don't think I think about water as much as I do or even fuel as I do waste. Just personally, like, when it comes to recycling and throwing things away, I don't want to use paper plates or I want to use my actual silverware. But then again, I don't really think about because I'm just trying not to create so much garbage. But, I don't really think about the water I'm using to wash the silverware.

*Other reflections.* Some reflections from the participants presented interesting perspectives on their personal actions and the core purpose of those actions. A participant mentioned not washing black color garments as an example of her sustainable actions but also mentioned that the reason she chooses not to wash them is because they fade.

Another participant stated that during washing her main concern is the effect of washing on clothes and not the environment. It is apparent that participants are concerned about the impact of their actions on personal, tangible products rather than the impact on the general environment and intangibles. It is evident that the participants may belong to the mid-level consumer segment as defined by the Hartman Research Group. The report divided consumers into three segments, periphery, mid-level, and core based on a continuum of choosing sustainability from three dimensions: convenience, personal benefit, and greater good. The individuals who fully understand the concept and relate it

to the greater good are referred as “core” and formed only 18 percent of the surveyed population (“The Hartman Report..”, 2007).

### ***Academic Experts’ Interviews***

The most frequently mentioned themes identified by the academic experts for this question were conserve water, conserve electricity, shopping behavior, recycle and reuse, reduce chemicals, and political action.

*Conserve water.* Two experts mentioned that conserving water is part of their daily life sustainability efforts. They conserve water by altering washing equipment and practices. Expert Manu said that, “I wash [clothes] once a week only,” and expert Deepa stated, “I reduce the amount of water I use through practices such as front-load washer.”

*Conserve electricity.* Four experts mentioned ways they try to conserve energy in their personal lives. Examples included setting the thermostat for best conservation, adding house insulation to increase efficiency and decrease the need for heating or cooling, garment drying temperature and time settings, and changing to energy efficient bulbs. Some examples of energy conservation provided by the experts are quoted here:

We’ve insulated our house and turned down the thermostat;

Washing only when soiled (i.e., more than one day) and line drying without use of the electric dryer;

I wash on cold water and never go through [the] full cycle for drying. I stay around and after 10 minutes. I will check. If they are dry, I pull it out. I switched to liquid detergent as it breaks down in cold water easily; and



I increasingly try to change light bulbs for better ones, I drip-dry when I can, I use less hot water in [the] shower, use [more] cold water in washing than hot water, I do not run around and shut everything off but I try to do [it] a lot.

*Shopping behavior.* A sustainable choice through buying behavior was mentioned by four experts. Each response is categorized under the subthemes of shop fair, shop second-hand and shop strategically.

Shop fair emerged as a subtheme. “I think pretty closely about whom I buy clothing from, but it doesn’t always work because you need certain things. I try to support the brands with the fair labor association because that the most advanced work done in compliance with labor standards in factories,” stated expert Sanya.

Another theme was shop second-hand. “I buy a lot of used clothing, vintage, second hand so that you do not have to make a new one for me. I buy from these second-hand shops more than I buy from mainstream,” stated expert Hani.

Shopping strategically included selecting products that have some sustainability related characteristic and, if possible, consuming less by postponing a purchase that may be considered unsustainable, in general, such as personal vehicles. “Purchasing only clothing that I will wear regularly and long is the most important action,” stated expert Deepa. “I try to purchase sustainable products whenever I can—food, clothing, household items, etc” stated expert Ram. Ram further added “I have put off buying a vehicle which is a more sustainable action than purchasing any new vehicle.”

*Recycle and reuse.* Three experts mentioned recycling in their response to this interview question. Two experts stated that they recycle actively, but they did not provide details as to the kind of recycling activities they engage in. On further reflection, it

occurred to the researcher that recycling for experts might be a normal daily behavior and was assumed that they consciously recycle every item that can be recycled. The third expert mentioned recycling with specific reference to apparel and stated, “I take garments for recycling.” Expert Arun on behalf of the household declared, “We recycle or compost probably 90 percent of our household waste.”

*Reduce toxic waste.* Two experts gave specific examples of their efforts and actions to reduce the chemical and toxic waste from their household: eliminate use of dry-cleaning chemicals by purchasing apparel products that does not require dry-cleaning and use of tennis balls as dryer sheets to serve the purpose of aerating during the drying process for apparel.

*Political action.* Political action can be defined as a pragmatic action that is carried out for reasons that best serve a desired outcome by using appropriate venues. A venue could be strategically chosen or the person taking action is already situated in a position to be effective with action. Examples of certain actions taken by four experts can be categorized under the theme of political action. Expert Deepa chooses to educate others through her teaching professions. Expert Hani engages in any venture that is directed toward sustainability and she acknowledged that participating in this interview is also such a venture. Expert Manu votes for candidates who embrace sustainability, and expert Sanya harasses companies to promote sustainability.

### ***Industry Experts' Interviews***

The most frequently mentioned themes identified by the industry experts for this question were conserve water, conserve electricity, conserve fuel, shopping behavior, and reduce, recycle, and reuse.

*Conserve water.* Two industry experts engage in conserving water by installing water savers on valves, faucets and showerheads (expert Adi), shutting off the water while brushing their teeth (expert Bani), and minimizing the amount of water to flush a toilet (expert Adi). Expert Adi recommended, “Put water savers on valves and faucets and showerheads. Minimize the amount of water to flush a toilet.”

*Conserve electricity.* Three industry experts engage in conserving energy. Examples included turning lights off in unoccupied rooms (expert Adi), turning down the heat throughout the house (experts Adi and Sita), using timed thermostats (expert Adi), washing clothes in cold water (expert Bani), hang drying clothes (expert Bani), and using solar power (expert Bani). Expert Sita stated, “All my actions...to lowering the thermostat at night... [are personal actions].”

*Conserve fuel.* Three industry experts engage in conserving fuel by walking (expert Bani), biking (expert Bani), using public transport (expert Hiku), and buying hybrid cars (expert Neha) instead of using traditional personal vehicles. Expert Neha stated, “I have two children and have bought two cars, and we bought them hybrid cars.”

*Shopping behavior.* In general, industry experts gave broader ideas of their shopping behavior, but did not provide details or specific examples of their shopping behavior. One expert stated, “I change my personal purchasing habits to buying sustainable products as much as possible.” Two subthemes of shop organic and shop strategically were identified.

Two industry experts try to shop organic apparel, food and drinks. Expert Bani stated, “...drinking organic and fair trade...”

Two industry experts acknowledged reducing packaging in their life and supporting minimalistic packaging by strategically choosing products that have minimum packaging and they buy local when possible. Expert Hiku stated, “I [try to] buy things with minimal packaging” and expert Bani said, “I buy organic and local.”

*Reduce, reuse and recycle.* Three industry experts engage in reducing, reusing, and recycling. Expert Adi has a business focused on recycling, “Every day at work I promote and produce the use of recycle materials.” Expert Neha also in a recycling business, gave example of personal life actions. Expert Neha stated, “I look at the waste my family creates, that is something I try to minimize consumption from day to day, minimize packaging, minimizing food trash.” The concept of minimizing packaging waste was mentioned by two industry experts. Reducing consumption and conscious consumption appeared in expert Sita’s response to this interview question. Sita called it “conscious consumption”, “all my actions-from the coffee I drink in the morning – to lowering the thermostat at night, including the food I eat, and products I use during the day – I also prescribe to conscious consumption.”

### ***Summary of question 9***

Student focus groups had many parallel themes for this question. It is evident that certain sustainable actions are common behaviors in the society; however, the extent in which they are acted may vary from person to person. The themes for the industry experts are similar to ones that emerged from the academic expert interviews.

## **Q10. Challenges to Sustainability**

Question: What do you see as a challenge to sustainability? Any thoughts on how it can be changed?

Table 12 summarizes the results for Question 10 and demonstrates the differences and similarities among the three groups.

Table 12. Themes on challenges to sustainability.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
Mass engagement	Mass engagement	Political will and mass engagement
Cost	Cost	Cost
Lack of awareness, education	Lack of awareness	Lack of awareness
Selfishness		
Ignorance about cause-effect		
Lifestyle, habits,		
Poverty		
Market-based economy		

### *Student Focus Group Interviews*

This question generated a large amount of discussion, many suggestions, and numerous themes. Themes identified include

- Mass engagement;
- Cost of sustainable products;
- Lack of information, awareness, education, or government initiatives;
- Selfishness (also included in the question 2 on ecological challenge);
- Ignorance about the cause-effect relationship of behaviors;
- Lifestyles, habits, and convenience-driven society (also included in question 2 on ecological challenge);
- Poverty across the globe; and
- Market-based economy model and the culture of consumption.

*Mass engagement.* Two focus groups considered society-wide acceptance as one of the biggest challenges to sustainability. Two other focus groups came-up with several ideas that can facilitate mass engagement by the society. The suggested ideas involved the role of many stakeholders: including marketers and the media. One suggestion for making every individual an active participant of change toward sustainability was to make sustainability as a “cool” and trendy idea. Participants provided examples of implementing the ideas in everyday personal and work life including targeting the younger generation. This group is change-ready and easily accessible through state-of-the-art networking and technology. The term cool as used by this generation can be best defined by referencing Online Urban Dictionary (n.d, ): “Cool” has several definitions. One definition that fits this context is “an adjective referring to something that is very good, stylish, or otherwise positive. It is among the most common slang terms used in today's world.” Participants suggested that media, celebrities and corporations have a huge impact on societal trends. Participant statements that represent the above ideas include,

- I think making it [sustainability] cool is something that they’ve definitely done to get people to do it even if they’re not doing it exactly for the exact right reasons.
- I think just getting it out there, getting the issue out there is one, and then also just showing things you know that are considered cool like fashions or cars or things you can do and also just making people aware of, I think, things on a smaller sense. Not everyone can go out and buy a hybrid but just making it kind of tangible where everyone can do these little things and they can feel like

maybe I don't have all the money in the world or are the resources but I can do little things in my everyday life.

- I think big corporations, too, could help. They should! I mean they have so much control that they could do things to, you know, demonstrate or show people or just the tiniest things, I mean 1000 employees! You know, don't buy as many post-it notes or just tiny things like that even.
- I think celebrities did a lot to get those trends going.
- I think, like, our generation is so affected by the media. Like, if you look at ads that have changed our minds or changed our opinion, I think that's a big part of where it needs to go.
- And, we're networking so much more now. Like, our you know, the whole blogging and stuff like that. Like, that older generation didn't do that and now it's I guess that's why they target the young audience more because we can get it out there if we want to our minds are, we can mold it around faster then.
- If you think about it, calling it second-hand, like a second-hand store. Like, it's all about how you market it, too. Like, you could say a second-hand store and people, like, think of it as a negative thing. It has a very negative connotation but, like, calling it vintage people are, like, "oh, it's vintage!"

*Cost of sustainable products.* All focus groups felt that sustainable products, if available, are comparatively more expensive than traditional products. Reducing product costs will encourage purchase of these products. Participant Abbie said, "I would consider it if it is right there and the price difference wasn't insane. I would probably go with the better and more sustainable choice." Participant Olive mentioned that organic

materials cost more, “It’s expensive to buy organic.” Participants also stated that the economy is currently not doing very well and their first thought in making shopping decisions comes from financial considerations. Under the current economic downturn, sustainability is not the first priority for many consumers. It was noted that, with time, more efforts would go into developing technology to produce sustainable products at an affordable cost. Participant Caitlin said,

I think the cost is a big thing because a lot of times sustainable materials cost more to produce and therefore cost more to the consumers. And so I think some people who are on a budget, like, will choose the cheaper, non sustainable option just because of the price. I think as technology is developed the production of sustainable materials will be a lot cheaper, I think a lot of it is just time.

*Lack of information/awareness/education/government initiatives.* It was evident that participants felt that individuals are not well informed or educated about sustainability. Education is considered important not only for the current generation, but also for parents and older generations. Education will facilitate decision making for sustainable choices and life-style. Participants had several ideas as to how individuals can be educated. Newspapers, TV, World Wide Web, billboards, and similar other communication channels can be used to communicate direct or subliminal messages to diverse audience, expand understanding, and help individuals implement sustainable choices and life-style. In a focus group discussion, two participants Nadia and Rorie stated,

Like news. They could think of the issue more, but, like, a lot of people don’t watch the news or read the newspaper. So, internet for sure.



I've seen a lot of like billboards, too. Like Going Green.

Television.

I ride buses. Like on the sides [billboards] of them [buses].

As participants acknowledged, certain initiatives to disseminate knowledge and educate people are underway, but that more individuals remain uneducated about sustainability perspectives. Such efforts need to intensify. Participants provided several suggestions and a variety of ways to educate all sectors of the society. Participant Karla stated, "Use volunteerism [celebrity] to raise awareness as it is huge." Another participant Gia suggested that labels can be a good source of information on sustainable practices, "they should make labels that discourage people from machine drying." Yet another participant added the possibility to use celebrities in TV commercials to communicate and promote use of sustainable product. The celebrities can choose to become role models and life-style pioneers. Degenhardt (2002, p. 124) defines "lifestyle pioneers" as individuals whose knowledge, attitudes, and behavior considering sustainable development are consistent and they have achieved ecologically and socially amicable lifestyles.

*Selfishness.* Two focus groups expressed that most individuals care only about themselves and not the greater good. This resonates with the Hartman Group's consumer research finding. Participant Sadie stated, "I feel, like, getting everybody to be on the same page. Like, as far as like everybody working together. Not just caring about their own personal [good]."

In three focus groups participants stated that providing some enticement for recycling could be an effective strategy to make people take action. Participant Martha

stated, “I think incentive. If people have a reason to do something that way then they will.” This is an example of selfishness as people may take action for their personal benefit.

*Ignorance about cause-effect relationship of behaviors.* According to participant Fatima “The number one challenge to sustainability is just flat out ignorance. Like, if you’re not educated.” Or, as participant Fallon stated “a lot of people are just unaware of the impacts that really their buying behavior has.” Both of these statements point directly to people’s lack of knowledge.

*Lifestyles, habits, and convenience-driven society.* This theme emerged in six focus groups. Participants felt that America is a convenience-driven society resulting in a lazy and comfortable lifestyle that has shaped everyday habits. Convenience and comfort have become the desired values for any product or service. It is very difficult for individuals to change this value and the associated habits. The life-style has created time shortage for jobs that require extra thought and time. The habits are deep-rooted, routine, and hard to change. However, participants expressed that it would be less difficult for the younger generation to change as compared to the older generation. Participant Olive stated, “It is hard to remember to do these things as we did not grow up with these habits.” Participant Henna stated,

I think it’s harder to convince, like, especially the older generations to change.

Like, I know, I think younger people are more apt to, you know, change. I mean, I know my parents just couldn’t care less about saving energy. That’s just the way they are. I’m not going to change them.

Even for things like recycling, individuals seek convenient solutions. Participant Molly stated, “ Making it [recycling] easier, like, I don’t remember which town it is but they’re doing recycling ...If it’s recyclable, just put it in the bin, and we’ll [recycling or trash company] sort it later.” Convenience of recycling initiatives varies from state to state. Participant Dee stated, “Iowa makes it kind of inconvenient for us to recycle here because in Illinois you have bins out by the trash [making it easy].”

*Poverty across globe.* Although only one focus group discussed global poverty as the main challenge to sustainability, their discussion was very strong and convincing. The needs pyramid was talked about and one of the participants acknowledged that first and foremost any individual has to address basic survival needs. Once those needs are met, individuals can consider other factors in their decision making. Participant Deidre said,

While third world country, like, people in China or Asia or in Africa, they don’t have enough to be alive yet, how would you expect them to think about environment? They have their basic needs. They want to keep themselves from just keep warm and just not hungry. That’s enough for them. They don’t. How do you expect them to think about environment in terms of, I’m still hungry, I don’t have enough food to eat, I’m really cold, how can you think about “I’m going to buy a higher quality, environmentally friendly brand?”

Another participant, Ebony, from the same focus group said, “Well, they could do a daily thing to recycle.” Each individual can have a role or participation in creating a sustainable world. Each person can contribute in an individual way based on circumstances and resources.

*Market-based economy model and culture of consumption.* Participants lamented that the market-based economy model encourages consumption. This model has created a consumer society with a culture of more-is-better. More also becomes synonymous with status. Individuals are never satisfied with what they possess and always feel the pressure and need to buy more. Marketers promote shopping and shopping in quantity by promoting sales to lure customer interest. Stores invest in bigger carts to take advantage of comparative sizing. Participant Opal shared,

Recently when I was back home for Thanksgiving, I went to Target and they had all those plasma screens and all that stuff ready, set for the Thanksgiving sale. A lot of people will just come there whether they want a TV or not. It's not just TV, but they'll come in thinking "It's sale time!" You end up spending more thinking "it's sales" and you're getting it cheaper. So, let's just go buy in bulk. But, now you spent a lot more for things you didn't even need but you're just doing it because right now! It's on sale! Just get it! Even those carts – you have a big fat cart. You'll be, like, "Oh I just bought this stuff!" You know I was at the mall and this is all I got to pile it on and it's all that marketing tactics that you end. Bigger carts make you feel like you're not buying that much and the little cart make you feel, like, "Oh my God! I'm buying so much!"

### ***Academic Experts' Interviews***

Three main themes emerged through the responses for this question: mass engagement, cost, and lack of awareness and education.

*Mass engagement.* Three experts focused on mass engagement from individual, company, institutional or macro perspectives. According to expert Hani, promoting

sustainability by educating about actions that support sustainability without compromising on profit (for companies and nation) or cost (to individuals) can be triggers to engage the masses. Expert Sanya also described that communication can facilitate mass engagement,

Getting consumers to be more thoughtful and responsible in their purchasing and trying to figure out a way in communicating with them in the most effective way.

I think that is big. There is some good work being done out there but at this time I do not necessarily have a solution. Another is, getting a lot more companies to think about that and ask lot of questions and defines goals and work with each other. I think there are a lot of good leaders and then the rest of the pack that is kind of clueless which is what I harass companies for.

*Cost.* Cost as a challenge was mentioned by two academic experts. Cost has become an important consideration especially because of current economic times. The World Bank (2010) recently issued this statement:

The acute phase of the financial crisis has past and a global economic recovery is underway. However, the recovery remains fragile and is expected to slow in the second half of 2010 as the growth impact of fiscal and monetary measures wane and the current inventory cycle runs its course (¶ 1)

Currently, the cost of sustainable choices is higher compared to traditional non-sustainable choices. If there is mass engagement, the consumer will understand the cost differential and may be more willing to support sustainable choices. According to expert Manu, “Finances of sustainability is an issue. People have to understand that they will have to pay [for sustainable choices].” Expert Arun reaffirmed,

The costs associated with sustainability. It seems that most sustainable materials, such as organic foods, organic cotton, recycled materials, are more expensive than those made via non-sustainable methods. People are cost conscious, especially in the past year and probably continuing for the next year or so.

*Lack of awareness and education.* Three academic experts stated lack of education as one of the challenges to sustainability. Academic experts strongly advocate the role of educating the masses at every age level, starting with early in childhood.

Expert Hani included all in her statement,

Every effort making people aware, teaching, interactions with industry, raising awareness and educating all sectors of society, customers, and legislatures as they make regulations. The education could start early...

In addition, discarding old unsustainable lifestyles and relearning new sustainable methods for individuals will create awareness and knowledge that is relevant in today's context. For instance, expert Deepa said, "Re-educating the consumers to make small changes that add up to big changes to their everyday behavior. She further added that it is important to make it easy for consumers to take action, promote sustainability in a way that is culturally acceptable and is zeitgeist. She stated, reducing overconsumption by making "sustainable" clothing "fashionable," or engaging in "clothing swaps."

Expert Ram considered lack of awareness and education as the biggest challenge and suggested that schools and government needs to invest more in a child's education and public education initiatives. Creating an informative document such as doing LCAs and documenting the findings in consumer-friendly language and format will facilitate informed shopping decisions by the consumers. Expert Deepa asked, "Could the apparel

industry institutionalize LCA (life cycle assessment) so that consumers would have data to evaluate their clothing purchases?”

### ***Industry Experts' Interviews***

Themes that emerged from the industry experts' responses to this question are parallel to the themes that emerged from academic experts' interviews. The themes include: political will and mass engagement, cost, and lack of awareness and education.

*Political will and mass engagement.* Political will and action work together with awareness of the need to change as discussed in the previous theme. Five industry experts expressed that willingness to bring change through individual action is a huge challenge. Expert Bani opined that individuals are in denial of the issue that it is challenging to change. Expert Mila shared that both individuals and institutions are not yet willing to change. Expert Neha commented that individuals are stuck in their convenience-driven life habits and they resist change. Expert Adi felt that individuals need to step up and take actions in their personal life and these efforts will eventually multiply for change to take effect. He stated,

Our planet's sustainability will be determined by how seriously all individuals take on the responsibility towards recycling and minimizing waste! It only takes one baby step at a time. If everyone took one baby step towards being environmentally responsible, it would make an enormous impact on our world.

Expert Sita's suggestion is to look at newer ways of creating products and doing business while keeping the entire supply chain in perspective. This will facilitate looking at layers of challenges that arise. She also suggested shifting from a shareholder paradigm to a stakeholder paradigm and strongly feels that it can be done without causing financial

problems. She stated, “it’s a myth that it will cost money to go green” and going green actually adds profit to an enterprise in the broader perspective.

*Cost.* To move from a traditional system to a sustainable system is an expensive change. Expert Neha said,

Specific to textiles and apparel industry is that we have old and antiquated equipment. People cannot afford to change in current economic environment. If I have to buy new equipment, I will go out and buy Energy-Star but [a] lot of businesses that are working with antiquated equipment and antiquated buildings and they cannot make those investments. They don't have [the] economic capability right now. They cannot come-up with new products, eco products. Their revenues are down so economic again is hugely important.

Expert Mila’s comments added the dimension of strategizing for the change to happen,

Given that the solution to most sustainability challenges requires new ways of thinking and doing, change will be slow in coming, especially when it affects the pocketbooks or bank accounts of large private- or public-sector entities. The solutions will require careful alignment of incentives with changes, which will increase participation and minimize resistance.

*Lack of awareness and education.* Three industry experts expressed their concern about awareness, knowledge, and education of consumers about sustainability. Expert Hiku suggested, “Consumer education is very important. Educate what is not sustainable and help them understand the long term benefits of changing their purchasing habits and buying sustainable products.” Expert Sita felt the need to educate individuals to change



their mindset very compelling. According to her, creating awareness and educating masses in addition to strategizing and taking action for sustainability are important to bring a positive change.

### ***Summary of Question 10***

Themes from student focus groups and expert groups covered these three themes: mass engagement, cost, and lack of awareness and education. Student focus groups had additional themes representing broader societal challenges.

### **Q11. Fashion and Apparel Industry Initiatives**

Question: What specific actions being taken by fashion and apparel industry do you see as being sustainable or contributing to sustainability?

Table 13 summarizes the results for Question 11 and demonstrates the differences and similarities among the three groups.

Table 13. Themes on sustainable actions taken by fashion and apparel industry.

<b>Student Focus Group</b>	<b>Academic Experts</b>	<b>Industry Experts</b>
Recycling	Recycling	Recycling
Organic	Footprint reduction	Environmental Responsibility
Brands	Social responsibility	Social responsibility
Reusable shopping bags		Best practices
Fair trade		Green washing
Textual messages on products		
Incentives to promote sustainability		

### ***Student Focus Group Interviews***

Participants identified examples of designers, brand names and stores that they relate to or where they shop. Themes that emerged include: recycling, organic materials,

brands, reusable shopping bags, no-sweat or fair trade, textual communication on sustainability, and incentives to promote consumer sustainability. Other actions that were mentioned only once include: design for prolonged use, reduced carbon footprint and reduced packaging.

*Recycling.* Participants in three focus groups provided specific examples of company recycling efforts: Tom Shoes, Urban Outfitters, and M.A.C Makeup.

Tom's Shoes, they take recycled shoes and yet they're trendy. And they give back. And they give a pair to somebody who really needs shoes a lot worse than we need shoes because we have more than numerous shoes in our closet.

Urban Outfitters has the urban renewal line which is, like, they take old clothes and they rework them into, like, they'll take a guy's plaid shirt and rework it into a dress for a girl, it's kind of, like, reusing clothes.

M.A.C makeup, when you buy their products, like, the little compacts that they come in or the bottles whatever. When you're done with them, you can return it to them and they I think what they do is, like, reuse it somehow and then you get a percentage off your next purchase or something.

*Organic materials.* Organic materials were mentioned by four focus groups.

Specific organic fibers named by participants included corn fiber and organic cotton.

Organic and biodegradable are important components of ethical fashion (Joergens, 2006).

Stella McCartney, Delta Galil, and some items from Forever 21 were the name brands mentioned for organic fibers. Participant Gena said,

Some designers are introducing organic fibers or more green stuff related to their lines. They actually have. I know some designers have actually done that on their runway show.

Participant Rama gave a specific example of a designer,

I know that Stella McCartney uses organic fibers and I know that she doesn't ever use fur and I don't know if she uses synthetics but I know that as a whole her clothing line is very sustainable.

Participant Polina gave a specific example of fiber and the brand, "I'm looking at an internship with Delta Galil and they have organic cotton." One participant felt that organic is good but expensive as compared to regular cotton. The concern about the additional cost of sustainable materials has been mentioned as a challenge to sustainability in the discussion for Question 3 on issues related to sustainability.

Participants may be aware of such efforts in the industry but are still not able to make the shopping decision that they would like to due to financial constraints in spite of personally holding a broader and more holistic perspective.

*Brands.* Several brands and companies were mentioned during the focus group interviews. The reasons for mentioning these names included both environmental and social responsibility perspectives. Names cited include: Stella McCartney, Delta Galil, Patagonia, R.EI, American Apparel, LA Made, Lucky Jeans, True Religion, Global Mamas, Old Navy, The Gap Company, Tom Shoes, Urban Outfitters, Forever 21, Herbergers, M.A.C Makeup, Plato's Closet, Goodwill, and Ragstock. Participant Berta also mentioned that there is an organization that educates society about the sustainable

efforts of apparel companies; but she could not recall the name of the organization. She stated,

There's actually a new organization that I just heard about. They're very informative. These companies that are in this organization and in the apparel industry make all their information public. So, like sources and production methods and whatnot. That would help people more to get on the same page and make a concentrated effort or whatever to do things in the industry that are more sustainable.

*Reusable shopping bags.* Shopping bags emerged as an item recognized and appreciated across the focus groups. It has surfaced in their personal efforts or their observations in grocery stores and other shopping venues. Participant Karla recognized that "lot of retailers are asking instead of giving a shopping bag for every shopping a customer does." With specific reference to the fashion and apparel industry, participants mentioned bags in two focus groups. Participant Lana stated,

Forever 21 is my major store and they are doing the light cloth bags instead of plastic and, like, they you, like, you spend so much and then you get it free, I don't know and it's really cheap to buy, too.

*Non-sweatshop or fair trade.* Two focus groups used the terms non-sweatshop and fair trade. The term non-sweatshop was frequently used by one focus group and the participants in that focus group provided several examples of brand names that are non-sweat because they are made in the United States: American Apparel, Global Mamas, LA made, Lucky Jeans, Hudson Jeans, and True Religion. Many of these brands represent staple items, such as a pair of jeans. Target Corporation was also used as an example with

the reasoning that they monitor their factories in other countries to ensure non-sweatshop production. Participant Cai stated, “Target monitors their factories in other countries to make sure that they are pristine... and not sweatshops.” The other focus group appreciated free and fair trade efforts across the industry. Participant Nadia stated,

The free and fair trade that works a lot with, like, women and other kind, and, like, less developed countries to be able to generate money for them. But, I mean it’s apparel that’s normally doing it. Or, like accessories. And it’s, like, helping with the human morale.

*Textual communication on sustainability.* This theme emerged as participants provided examples of information on labels and information on apparel products. Participants in one focus group revealed that they are not necessarily convinced by catchy and green terms used on labels and resent the misuse and overuse of the terms. Participant Olga said, “Companies are just throwing the terms in, like, labels.” Participants also appreciated how some companies use subliminal messages by imprinting a sustainability-related message on their products. Participant Martha said, “I think just stamping it organic, green, buy green, be green.”

### ***Academic Experts’ Interviews***

Three themes emerged from the responses to the question on fashion and the apparel industry’s sustainability-related initiatives: recycling, footprint reduction, and social responsibility.

Some companies use creative strategies to facilitate recycling and reuse of their apparel. For instance, expert Manu stated that “Levis has labels on jeans that say when you finish with these jeans, please donate to [the] Salvation Army.”

*Recycling.* Three experts mentioned recycling efforts and provided some examples of the brands and companies that recycle. Recycling is carried out in different ways: use recycled raw materials, use waste materials to create accessories or use in other applications, and encourage consumers to donate used apparel to second-hand stores.

Expert Arun said,

A few years ago I saw several US- based apparel companies attend a conference devoted to sustainability. Several of them had real inquiries about recycling their waste as well as finding alternatives to fabrics produced overseas.

According to expert Deepa, “Use of organic and recycled materials is the most obvious [initiative].” Several brand names that were mentioned by academic experts that recycle are: Anvil, Levis, Nau, NIKE, Patagonia, Tom Shoes, and Urban Outfitters.

Expert Ram added that many designers and companies are responding to consumer demand for sustainable products.

*Footprint reduction.* Three experts mentioned different initiatives that companies are taking to reduce their company’s ecological footprint. These initiatives are quoted below:

Striving to match production with consumption using technology to better forecast/predict how many garments will sell and produce just that many. In this way, there will be less unsold product;

Reducing warehouses;

Trying to get to zero-waste through the entire supply chain;

Recycling; and

Using organic materials.

*Social responsibility.* Two experts mentioned social responsibility and fair labor practices in the industry as sustainability initiatives. Expert Hani stated that many companies have created divisions on social responsibility and increased efforts to reduce violations of associated standards. Expert Sanya gave a specific example of involvement of the Fair Labor Association and that participating-member companies strive to improve the working conditions in their factories. Sanya also acknowledged that there is a rise in leadership within the industry for environmental and social aspects of sustainability.

### ***Industry Experts' Interviews***

Four themes emerged from the responses to the question on fashion and the apparel industry's sustainability-related initiatives: best practices, recycling, environmental and social responsibility, and green washing.

*Recycling.* Recycling was mentioned by two industry experts. Each expert gave specific examples of different levels of recycling. Expert Adi talked about waste recycling and use of recycled materials. He said,

Many manufacturers are making efforts to recycle their waste rather than incinerating or dumping into landfills. Some garment manufacturers use fabrics made with regenerated materials and hang tags from recycled paper.

Expert Mila stated, "Some companies have take-back programs that turn old garments into new ones." It is evident that recycling is being done at a variety of levels by some companies.

*Environmental and social responsibility.* Diverse environmentally-responsible practices are being initiated in many companies. Each expert gave examples of such initiatives. Some initiatives include using sustainable materials, organic materials, getting

certified for organic, using closed-loop manufacturing, buying carbon off-sets, using greener products, using greener processes, greening the facility, becoming more aware of labor and human rights issue, investing in community, and educating consumers about the environmental and social impact of apparel production.

*Best practices.* Three industry experts appreciated the best practices that are being shared and embraced by companies. Expert Bani gave examples of Indigenous, Eileen Fisher's organic knitwear line. Expert Hiku also provided several examples where best practices are being implemented around the globe, he stated,

Companies around the world, in Sri Lanka, India, US, and Honduras that have taken sustainability programs to minimize the use of non-sustainable resources or to eliminate them altogether, lot of market demonstration projects are going on. IAF and other member associations are having best practices meetings in the use of sustainable products and more.

Expert Sita and Neha added that companies are forming groups and sharing these best practices that will perpetuate the best practices for sustainability across the industry.

One such collaborative network group is OIA Sustainability-Eco Working Group with a goal of supporting one another with reaching practical, applicable, and commercially-viable, unified, sustainable goals.

According to expert Neha, other groups getting together are the Footwear and Apparel Association, the Non-Wovens Association, and the University of Arkansas Consortium on Sustainability. Expert Neha also expressed interest in learning about the best practices of other companies.



*Green washing.* Green washing, a marketing ploy used by some companies, claims more sustainable practices than are actually used. Two experts expressed their opinion that some companies are using the green attribute as a niche marketing strategy.

Expert Adi commented,

Interchanging the words sustainability and environmentally safe as well as stretching the environmental claims and benefits in advertising, is misleading and harmful and causes confusion at the consumer level.

This effort is as undesirable as it is unethical.

### ***Summary of question 11***

Recycling theme was common from all three. Two themes were parallel from academic and industry experts: (foot print reduction) environmental responsibility and social responsibility. The footprint reduction theme was mentioned in focus groups only once and did not qualify as a theme for that group. The themes of best practices and green washing are unique to the industry experts' interviews.

## **Q12. Curriculum**

Question: What would you like to learn in your courses about sustainability or what do you think is important to include in curriculum about sustainability? Please give specific examples with courses?

### ***Student Focus Group Interviews***

Based on the content analysis of the focus group interview responses to the question about curriculum, the following content themes were identified (in order of frequency):

- Sustainability courses focusing on knowledge and education,
- Learning style where students learn from each other,

- Processing and production (learning content),
- Class projects,
- Sourcing,
- Sustainability to be covered across the curriculum,
- Real world inputs,
- Current events and eco-initiatives in the industry,
- Consumer behavior and education, and the
- Value of student organizations.

The themes most frequently mentioned were sustainability course (knowledge and education) and learning style (learning from each other) followed by processing and production (learning content) and class projects.

*Sustainability courses focusing on knowledge and education.* Education for sustainability within the textiles and apparel curriculum is becoming critical. Educators have identified this and some schools have incorporated it either in existing curriculum or designed separate courses or programs that focus on sustainability. The University of Delaware is a pioneer of a certificate program in Socially Responsible Business. The need for such programs, courses, and content is felt by educators and students alike. Several subthemes emerged as participants had numerous ideas on how to incorporate sustainability education.

1. The participants felt that this construct is very important and universal across disciplines. Courses dedicated to sustainability that should be required were general education courses and were mentioned in three focus groups, often more

than once. Martens (2006) and Orr (1992) emphasize the importance of making sustainable development a guiding principle through the program of study at all educational levels. Participant Sana stated, “All students in the university take so they know about all the consequences of what they’re buying.”

2. Two focus groups agreed that a special course or class on sustainability is a good idea whereas participants of another focus group unanimously believed that one course may not be as effective as the inclusion of sustainability in all courses. Participant Julie felt, “one course on sustainability...probably wouldn’t be as effective...cause you learn how it effects different parts you know”
3. Within textiles and apparel, it should be included in every course because if it is taught in selected courses, those courses may not be required for every major. Participants felt that it was an important aspect and should be included in every student’s education. Participant Rorie stated,

Only certain classes teach those. And I don’t think they teach them in entirety. But as that being our major, I don’t care if you’re merchandising. Because merchandisers have to sell and you want to sell a good product that does honestly take care of the world. We have to live in it and I don’t want to work for an industry that is, like, hurting the world.”

Participant Molly stated, “You realize that sustainability is in everything, and we are learning different aspects.”

4. Repetitive learning by getting the message in every class has a more lasting impact. Participant Darcy states, “It just gets it stuck there so it’s on the top of

your mind. I mean it's something you're constantly thinking about and it has to be a conscious thing for everybody in the world."

*Learning style.* Four focus groups stated that free flowing in-class discussions such as focus groups facilitated their thinking and learning. "We have learned so much just by sitting here and talking about it." "I think that getting in groups like this is a good idea because that's what you're going to do at work."

In addition they felt it was important to have sustainability in every course to learn from multiple perspectives of professors and peers. It emerges that the concept of sustainability is best learned and understood through multiple lenses and dialogues. "We are learning different aspects, it is in different professors' point[s] of view, different class peoples' point[s] of view." "Assignments where you're doing group discussions and coming out with some deliberations out of the group discussions." Considering the nature of the textiles and apparel major where more creative students enroll, students want to learn through specific examples that relate to their personal life. Such examples illustrate behavioral changes they should make and provide a process of how to make change happen.

"We're all really artistic people and to see something and go somewhere is a lot more helpful than reading, like, specific examples that relate to our lives."

Millennial generation has been given several names including *igeneration*. They have been brought up with increased use of media, digital technologies, and communication systems. This generation is media-focused, using media as a learning tool. Watching a video on a relevant subject becomes a powerful tool. Participant Annie stated, "I mean I learned a lot and I obviously remember the American Apparel video."

And participant Fallon stated, “That [*China Blue*] video should have been watched by everybody.”

*Processing and production (learning content).* In all focus groups, processing and production was mentioned under several subthemes:

- Processes that materials undergo during production,
- Informed judgments about environmentally harmful and beneficial materials,
- Effects on self, and
- In-depth learning

“Processing and production (learning content)” refers to an interest in learning about the processing and production of raw materials used in the apparel industry. Participants mentioned that they would like to learn about the composition of apparel materials, the source of apparel materials, and the beneficial or harmful aspects of their production on the environment. Terms that are commonly used for environmentally safe, such as organic, need to be understood better, especially as to their difference from other materials. Participant Lila stated that she wanted to “learn about processes that fibers and fabrics go through to get to a consumable product.” Participant Karla thought that “It would be good to include what is organic. I guess I still don’t really have a clear definition and how that is produced and how is that different.”

Some focus groups discussed that courses only touch upon sustainability and that depth and detail are missing. Details would help students understand the positive and negative dimensions of a material or process. Participants showed a keen interest in learning about the reasoning as to why materials and processes are categorized as beneficial or harmful to the environment and how different choices will change things for

the better. Participant statements include, “We need to go a little further than what we are taught” and “We just touch on it. We don’t really go in-depth.”

*Class projects.* Class projects were identified as a common tool that could be used to incorporate sustainability. It was mentioned at least twice in each focus group. Some popular examples of projects from the focus group discussions are:

- Reading about current trends on sustainability,
- Class group discussions,
- Research on sustainability and apparel materials,
- Small assignments or small projects, and
- Projects on how to make sustainable products.

These project ideas came from four focus groups, however, another focus group endorsed that projects and research would be the best method for teaching about sustainability.

Projects provide students with an opportunity to take ownership in creating learning by examining all aspects of a chosen subject. Participant Jessie stated, “It’s more like it’s not just a straight-up paper that you just have to write about it. It’s kind of examining all aspects of it, that’s just what I think about when I think about projects.”

*Sourcing.* Sourcing was mentioned by three groups. “Sourcing” addresses multiple dimensions including procuring materials for product manufacture, buying as a professional, and buying as a consumer. Participants suggested that finding usable fabrics rather than buying new fabric for apparel design and construction projects is a better idea. They also expressed interest in identifying ecologically friendly companies to assist consumers in making better buying decisions. One of the focus groups demonstrated keen interest in making sustainability an important component of buying. Buying is an

extremely important component of retail; buyers locate suppliers and purchase products from designers, manufacturers, and others (Diamond & Pintel, 2008). Students' awareness about ecologically-friendly companies will influence their supplier recruitment. For example, participant Sadie stated that students also need information on buying and sourcing, "even the sourcing piece of it. Like, you know, you may be sourcing from. So merchandising students might go into that line, too."

*Real world inputs.* Two focus groups identified the importance of real world inputs regarding their learning. Guest speakers from companies that are engaged in sustainable production and practices are considered imperative. In addition, participants encouraged projects that require searching the marketplace and analyzing real products.

I like projects that make you go out into the real world. So, I think it would be fun if we went to a store and we had to look through all the labels and see what was the most or something like. Like, actually going out to the real world and doing it instead of sitting behind a computer screen and Googling what, like, we should try to find for our research project. I just think, like, has a bigger impact and helps me learn about it personally.

*Current events and eco-initiatives of the industry.* Curriculum can be strengthened by including examples of current developments in industry and current initiatives of designers. Sustainability gained impetus in the textiles and apparel industry in 1990s as there was rising consumer consciousness and environmentalism – organic cotton, natural colored cotton, and hemp, and today it is taking a center stage of fashion (Dickson, et al. 2006; Hethorn & Ulasewicz, 2008). Students realize that the industry is taking many initiatives. However, they feel that their

knowledge of these initiatives is minimal and that information should be included in their curriculum. These quotes illustrate their perspectives.

I would be interested to learn more about, like, what initiatives are being taken in our own country to be ecological friendly within the apparel industry for, like, creating ecological sustainability;

Need to be taught more about what the industry is actually doing because there are a lot of breakthroughs that are made as far as clean production and clean drying and non-toxic printing; and

Just getting the knowledge out there, which companies are being socially responsible and using sustainable materials and, kind of, like, which brands aren't.

It could incorporate, kind of, but even set examples of companies that are really, like, you know, this company is maybe a little bit, or just touch on a couple little companies. But if we had lists and kind of learned about what they do all together and not just, you know, everything they're doing to be sustainable and force that sustainability is not just the green movement.

*Consumer behavior and education.* Awareness and learning about good and poor behavior as it relates to sustainability was reflected in five focus groups. Behavior could pertain to sustainable thinking, sustainable practices for textiles and apparel, and buying behavior. Positive behavior can be promoted by increasing knowledge and awareness about materials, practices, and behaviors that are harmful to the environment and society. A course focusing on developing a responsible consumer is one option. Participants commented that,



I think we kind of know, oh, certain dyeing processes are harmful to the environment, but we don't necessarily know why or what ways that you can dye them that are less harmful;

In that curriculum, I think purchasing habits, not necessarily what decomposes and what not, but purchasing habits is a big thing; and

Thinking about, you know, what you're buying. Why is this?, Like, why is this nice huge beaded shirt only \$7? Because some 7 year old made it?

Consumer education should be included from elementary school or even earlier as those are formative years of childhood and behaviors can be molded and changed easily. For example, participant Darcy stated that, "if we would have started in elementary school and you grow up with it and so it's just second nature."

Being textiles and apparel majors, students get respect and attention for their opinions about products related to their field. If the students are well informed about sustainable products and practices, they will be able to communicate that to other individuals including friends and family. This was suggested in three focus groups by such comments as,

People would respect our opinions. So, I think that would help if we were just more knowledgeable about it in general to, like, spread it out and That's our education to, like, empower other people.

*Value of organizational efforts.* Participation in institutional grass-root initiatives and student organizations further promote sustainability. An example of such a statement was that "The University of Iowa is part of Students against Sweatshops."

Through the use of such organizational marketing materials as campus flyers, sustainability can be advocated by providing relevant numbers and facts. Because the numbers are huge, they communicate a strong message. For example, participant Martha stated, “drop shocking facts because that’s shocking!”

### *Academic Experts’ Interviews*

As experts in the field of academics and sustainability, their suggestions could be extremely valuable to academia. Three experts strongly felt the need to incorporate elements of sustainability in every course. Expert Ram recommended that all classes should have components focusing on the three tenets of sustainability: economic, equity, and environmental responsibility. Expert Ram stated,

I think that all classes should have sustainability messages, units, lessons in them regarding the three tenets of sustainability. In textiles, talk about how fibers/fabrics are grown/produced in sustainable ways and how to recognize them. For buying, it could be what to look for when purchasing large amounts of products that address the three tenets of sustainability, etc.

Content-related themes that emerged were environmental responsibility and social responsibility. Quotations are listed in bullets under each heading:

#### *Environmental Responsibility.*

- “Environmental regulations and its enforcement challenges,”
- “Use of chemicals in most widely used fibers such as cotton,”
- “Availability of recycled fibers,”
- “Challenging recyclability of all materials,”
- “Length of supply chain and its impacts,” and

- “Smart designs to reduce waste.”

*Social responsibility.*

- “Ethical issues in broader sense,” and
- “Social responsibility issues.”

Pedagogy-related themes that emerged were class projects, course complexity, special course and across courses.

*Class projects.* Two experts suggested including application of sustainability in class assignments or projects. Expert Deepa suggested, “For design, sustainable materials, design strategies, consideration of production waste and end-of-use potential alternatives such as recycling, reuse, and redesign can be written into the requirements of some design assignments.”

*Course complexity.* One expert suggested starting a curriculum program plan with an introduction to industry course and then adding sustainability complexities in upper-level courses.

*Special courses and across courses.* Five experts suggested including sustainability-related content either in specially designed course(s) or across all courses including design, product development, production, manufacturing, management, marketing, visual merchandising, and other courses in a program of study. Expert Sanya stated that the choice of having either special courses or including it in all courses with a balance of both can be individually determined by the institution based on their structure. There could be different models of structuring the sustainability content; one model may not be necessarily better than the other. Every institution should strive to cover all aspects through the model that works best for them. Expert Sanya noted,

Whether to include in every course or have a special course depends on the capacity of an institution and a program. There are different ways of going about it. One is not necessarily better than the other but it does take time to process. If you have it in one class, students may not have a chance to process or reflect about the issues.

It is evident that incorporating any issue in just one class may not be the best model as all the five experts have reinforced covering sustainability at multiple levels.

### ***Industry Experts' Interviews***

Two themes emerged from the responses to this question:

- Impact of each touch-point in the supply chain and
- Consumer communication and education

*Impact of each touch point in the supply chain.* Five experts emphasized that each material and step in the making of a garment should be studied, dissected, and analyzed for its social and environmental impact. Expert Adi said,

To understand that just because fibers may come from sustainable sources such as bamboo, that it is not automatically environmentally-friendly. That because fibers come from organic sources, if you add color by dyeing it is no longer 100% env.[ironmentally] friendly. When organic cotton fiber is shipped into the USA from Mexico, it must be fumigated with a very caustic treatment minimizing the positive effect of the term “organic.”

Expert Neha added that doing LCA and carbon footprint calculations for each touch point can help develop comparisons for making good decisions at every level from an environmental perspective. She said, “sustainability has to begin with design,

materials to use, processes, impacts of processes, regional implications of design, where you can manufacture, and how far it has to travel and where it's going to be sold." Expert Sita added the perspective of transparency in the supply chain and maintaining the integrity of the product.

*Consumer communication and education.* Communicating effectively to consumers was mentioned by two industry experts. Expert Neha suggested,

We can also teach-how to communicate sustainability and I think that is just budding now and doing well. Foot Chronicles are the best example of a brand that builds integrity on the issue of sustainability and communicates it strongly and uses it as tool. That ability to communicate sustainability will drive progress.

Another industry expert specified that we need to educate the consumer and also educate the educator as to the flow of correct information and knowledge from educator to future professionals and then also communicate that information to the ultimate consumer.

### ***Summary of Question 12***

Focus group interviews reflected more on student learning styles and pedagogy and experts provided more input on content.

### **Additional Question 1 for experts**

Question: Are there issues or concerns you have about sustainability and preparing new professionals for the field that have not been addressed in the questions above and your responses? If yes, please describe them.

### *Academic Experts' Interview*

Four experts stated that all issues were covered by the researcher. One expert chose not to respond to this question. Expert Deepa stated,

We have an obligation to prepare new professionals for the industry as it will evolve in the future. This means that the issue of sustainability must be part of the curriculum. Graduates of our program can help effect change, can help transform the industry into one in which we are proud. They have an opportunity and we have a responsibility to energize them with a passion for social and environmental responsibility and the tools to implement these practices in their lives, as individuals and employees.

### *Industry Experts' Interviews*

All industry experts had a different response to this question. Responses ranged from creating a universal definition and terminology to learning about importance of sustainability-related certifications and organizations to the fact that since textiles and apparel is a dynamic field, professional needs to be a life-long learner. Expert statements were:

First, we need a universal glossary of environmental terms so that everyone is speaking the same language. We need an organization to police advertising claims on labels and hang tags. We need credible certification of environmentally-safe products. Students need to learn to ask for certification and go beyond the surface of organic and sustainability claims.

Learn and teach about Organic Exchange, TransFair USA, B-Corp, BALLE, Slow Money, Social Venture Network, vertical production models, wind-powered energy, organic fibers.

It is wide open field, has tremendous opportunity. For apparel and textiles, we need to integrate more in coming years.

Changing every minute and it is hard to keep-up.

[Educate about] cultural integration of sustainability into corporate and workplace environments. [Also] learning about barriers and solutions on the road to social compliance and social responsibility.

Cotton and yarn business so that they can help any business who is looking for such materials.

### **Additional Question 2 for experts**

Question: What more would you like to learn about sustainability?

#### ***Academic Experts' Interviews***

Five academic experts felt that the field of textiles and apparel sustainability is evolving and as educators, keeping up with development is part of their personal learning process.

Expert Hani said, "Keeping up with developments." Expert Manu stated,

I always want to learn more. Want to know about your research. One of the aspects that interest me more is the process of color on fabric, the dye, and the processes behind the coloration process, getting the print on the fabric. I read anything I can.

### *Industry Experts' Interviews*

Three industry experts answered this question. No generalizations can be made from their wide-ranging responses. Expert's statements are:

“Would like to learn author's definition of sustainability;”

“I read and learn as much every day;” and

“Interested in best practices of companies. How the product come to market, how it is implemented, how do they present the eco message, how is the labeling on a garment, how is the certification. Who and what the endorsements are and how credible the endorsements are? Anything like that, I would like to learn.”

This wide range of comments demonstrates the different perspectives of the experts as well as their life-long learning focus, a critical point that educators must help students understand and endorse.



## CHAPTER 5

### Conclusions and Implications

Sustainability is a buzzword, a trend, and a cultural movement *zeitgeist*. It is a strategic initiative in 44 percent of the companies surveyed by Retail System Research funded by DigiPOS Stores Solution and IBM (Wilson, 2008). Companies are using sustainability as a competitive edge and may not understand the depth and breadth of the issue (Anderson, Amodeo, & Hartzfeld, 2010). Because of its increasing importance, the UN declared 2005-2014 as the decade of sustainable development encouraging educational institutions at all levels to transform their curricula. In the 2010 Worldwatch Institute Report, Orr asks the question, “What kind of education will enable the rising generation to deal with increasingly complex and portentous global issues?” (p. 76). Orr (2004) was concerned that the education system prepares graduates without any broad and integrated idea of things. The curriculum needs fundamental change that prepares students to understand sustainability and interdependence of life (Orr, 2010). Worldwide, universities and other educational systems are increasing efforts to incorporate sustainability issues in their curriculum.

This study focused on developing an understanding of the definition of the term sustainability and expectations related to sustainability for education in the discipline of textiles and apparel. This study provides a better understanding of a student’s position and contextualizes sustainability-enhanced content and curriculum. In order to get a holistic perspective, individual interviews with two additional audiences (academic and industry) were included. This chapter summarizes findings from the three types of interviews: student focus groups, academic experts, and industry experts. These

three groups provide multiple perspectives that complement each other to create a holistic perspective fulfilling the purposes of the study. A holistic perspective on sustainability incorporates social justice and environmental integrity as major goals (Kermath, n.d.).

Sustainability has become a cultural phenomenon. According to Will Marre, Emmy Award winning writer and expert on sustainability and social responsibility, one needs to fully embrace sustainability for success in business and a sustainable future (ThoughtRocket, 2009). To embrace sustainability, sustainability or ecologically literacy is imperative. Ecological literacy stems from the tenets of human ecology, the study of interrelations among people, their habitat, and the environment beyond their immediate surroundings that form an ecological unit (Lawrence, 2005). The explanation of ecological literacy provided by David Orr leads to a comprehensive understanding of ecological literacy and is based on three major components: knowledge, attitudes, and actions or behavior. The conclusions are presented under these themes (Appendix I).

There is an increased awareness of global problems and a realization that humans and their lifestyles harm the environment (Abdul-Wahab, 2008; Merchant, 1992; Schulz & Zelezny, 1998; Sia Su, 2008). University students typically fall in the millennial generation that is identified by birth years between 1977 and 1994, according to the Center of Digital Education (CDE, 2007). There is substantial evidence that university students are ecologically literate. They have undertaken several initiatives related to sustainability (Boekeloo, 2008; Ruben, 1993). The ecologically-literate person has the knowledge necessary to comprehend interrelatedness among individuals, society and nature, an attitude of care or stewardship, and the practical competence required to act on the basis of knowledge and feelings (Orr, 1992). Although, ecological literacy is

sometimes also referred to as sustainability literacy, some authors consider sustainability literacy to be more general than ecological literacy (Stibbe, 2008).

### *Sustainability Literacy*

#### *Interpretation of Definitions of Sustainability*

The definition derived by the researcher from the student focus groups responses to the question on defining sustainability is: “Sustainability is being educated and changing your lifestyle to makes choices of organic, natural, and environment-friendly products that can be recycled, reused, and reproduced endlessly without creating waste.”

The academic experts individually defined sustainability. The definition derived by the researcher from the academic expert interviews definitions to the question on defining sustainability is: “People making conscious environmental and socially responsible choices for enduring human activity and environment leading to human health and well-being.”

The definition derived by the researcher from the industry expert interviews responses to the question on defining sustainability is: “A harmony between social and environmental factors that endure mutually beneficial relationships between environment, economy, and people.”

These three definitions include several similar concepts: choices or decision-making and interconnections among the environment and people. However, concepts key to one definition are missing from at least one of the other definitions. The student definition is the most limiting, while the expert definitions are broader and more inclusive. The literature reports that the concept of sustainability is not widely understood and may mean different things to different individuals (Scully, 2000). Academic experts

provided comprehensive definitions that had several similar, yet differently worded concepts. Dickson & Eckman (2006) in a survey for apparel and textile scholars' definition of a socially responsible apparel business defined sustainability using three major conceptual dimensions that can be identified in these research-generated definitions.

### ***Awareness and Knowledge***

Awareness is knowledge that something exists and knowledge means understanding of the information that one gets from either experience or study (see definitions).

Participants demonstrated a clear familiarity with the term sustainability. Their responses address two research questions: What is the meaning of the word "sustainability" for college students who are majoring in textiles, apparel, and allied fields? How do textiles and apparel students define sustainability? However, when asked to define and identify its dimensions, it was evident that there are multiple meanings and levels of interpretation among the individuals participating in this study.

In a study on conceptual analysis, it was found that definitions of sustainability and sustainable development are vague (Jabreen, 2008). In a survey ( $n=1600$ ) conducted by Hartman Group, the term "going green" was reported as the millennial's synonym for sustainability and that only 54 percent of the surveyed individuals had familiarity with the term sustainability and most of these individuals could not define it (L. Demerritt, e-mail communication, November 14, 2008). Going green did not appear as part of the definition by the focus group participants in this study. The terms that they associated with sustainability include: environment, organic, natural, eco-friendly, recycle, reuse, reproduce, zero-waste, change lifestyle, buy local, and education. Some of these terms

that were also reported in literature are organic, recycle, and environment (Connolly & Shaw, 2006).

Emergent themes reflect that participants made a direct connection between environment and sustainability. Sustainability was viewed as favorable to the environment avoiding harm, and helping the environment keep its pure and natural form. The common terms associated with environmental care and concern (ozone depletion, deforestation, loss of biodiversity, climate change, and global warming) reported in literature were not mentioned by the students (Dunlap et al., 2000). The terms organic, natural, and eco-friendly favor the environment. The action terms related to sustainability were changing lifestyle by reusing, recycling, reproducing, and not wasting.

Buying local was discussed in detail by only one focus group, even though the literature reported 80 percent of UK's population makes buying local a choice ( "Green Consumerism", 2007). *Buying local* did not emerge as a theme in the question on sustainability, but it did emerge as a theme in the actions taken for sustainability since participants support local businesses and farmers. *Awareness* and *education* to facilitate *lifestyle changes* also emerged as a theme.

All the themes that emerged from the focus group can be linked. This means that participants are concerned about being educated to make sustainable lifestyle changes that help the environment maintain its natural state for a long time. Themes that were shared across the three interview groups were (a) being responsible toward the environment and (b) supporting and creating enduring products and processes. However, in one study it was found that ISU students had a moderate level of environmental knowledge and that the students in the College of Human Sciences had low level of

environmental knowledge (O'Brien, 2007). Another study in the literature also reported poor understanding of the terms associated with environmental responsibility (Morris, Hastak, & Mazis, 1995).

When asked about ecological challenges, participants in the student focus groups considered their personal environment to be an ecological environment, but they were not able to list and discuss broader ecological challenges. However, environmental responsibility was reflected in the theme *resource depletion* that was universal across all three groups. Student discussion of resources centered on electricity and water, resources they use on a daily basis. Other themes focused on individual and corporate action. The results of the focus group interviews indicated that participants did not clearly understand the term ecological challenges and described general societal problems as ecological problems or concerns. The terms reported in literature such as ozone depletion, deforestation, loss of biodiversity, climate change, and global warming (Dunlap et al., 2000) were not listed by the students.

For instance, *laziness* in the society and *ignorance* about personal actions are seen as contributing to ecological challenges. In the literature, many authors have found that there is an increased awareness of global problems as there is a realization that humans and their lifestyles are harming the environment (Abdul-Wahab, 2008; Merchant, 1992; Schulz & Zelezny, 1998; Sia Su, 2008). The *market-based economy* model was also identified as an ecological challenge. However, themes related to personal behavior and health emerged as stronger connections to how participants viewed general ecological challenges. This indicates that the participants could be identified as *periphery*

(convenience is the guiding value) or *mid-level* (personal benefit is the guiding value) as classified by the Hartman Consumer Research Group (2007).

Participant responses to question on issues related to sustainability focused on business responsibility, consumer responsibility, educational institutional responsibility, and the cost of sustainable choices. *Business responsibility* was a theme shared by all groups while the theme on *cost* was shared by focus group participants and industry experts. The theme on *lifestyle habits* focused on three aspects: laziness, incentive, and overconsumption. *Overconsumption* also emerged as an independent theme from the academic expert interviews. Consumption expenditures per person have grown significantly in the last five decades (Assadourian, 2010). Because the textiles and apparel industry thrives on consumption, it is not expected that such a theme would emerge from the industry group. Environmental responsibility did not emerge as a sustainability issue in the focus group interviews, probably because it was emphasized in the definition question. The researcher used the probing prompts because it was challenging for participants to respond to this question. The other two groups discussed the issues in detail with two of the three themes from each expert group overlapping (social and environmental responsibility). The third theme from each expert group addressed two diverse issues: consumption and cost. The textiles and apparel industry tries to minimize cost and boost sales (Fiber2fashion, 2009; Keiser & Garner, 2003). Because higher cost of sustainable raw materials and processes reduce profit, cost is an issue for industry experts. The academic experts have some connection with either consumer education or family and consumer sciences in their education or within their professional expertise, thus making the issue of consumption important.

Focus group participants also considered lack of awareness about sustainability as an issue. This group provided suggestions to use social network media to create awareness. They emphasized that companies and other societal institutions should play a role in educating the masses about sustainability.

Responses to the question on mental images of sustainable products focused on both ends of the scale. This answered the research question: What mental pictures and notion of sustainability do college students majoring in textiles and apparel subscribe to? Products mentioned were either examples of *tangible sustainable products* or examples of highly unsustainable tangible products. None of the participants referred to a socially-responsible perspective in their response. Products mentioned included everyday products: shopping bags, apparel, cleaning products, cars, fuel, and other miscellaneous products. Is it because manufacturers of these products communicate sustainability clearly and the products are used on regular basis? If that is so, then the repetitive message has made an impression on this group. Student discussion of these products focused on the reusability and the recyclability of bottles, bags, and apparel, and natural and organic ingredients in cleaning products and fuel. Energy efficiency was the reasoning behind selecting cars that use alternative energy. Sustainable actions in their personal life demonstrated that the participants understood the sustainable aspects of and make conscious efforts to implement their choices. This selection is supported by the Muhlenberg College student publication *Sustainability Living Guide* with a focus on recycling, reduction in energy consumption, and green cleaning products (June, 2007).

The academic and industry experts described the conceptual elements that make a product sustainable. They focused on process, product groups, and the supply chain. The



themes that emerged were people (decision makers), low-impact products, recyclable products, fair trade products, and natural and organic products. This difference between students and experts clearly demonstrated that experts have a higher and broader-based level of understanding and the ability to apply that understanding to a variety of products, while students were only able to name specific products that had been described to them as sustainable. An interesting aspect emerged in comparing academic and industry expert interviews. The responses from all the academic experts except one focused on the environmental responsible aspect of a product while the industry experts' responses highlighted both environmental and social responsible aspects of a product. This difference between the groups illustrates the challenges present in the multilevel and complex structure of the textiles and apparel industry.

In general, focus group student participants were not well conversant about fibers or fabrics in general. Academic expert interviews provided four themes and industry expert interviews provided two themes. However, while these themes did not share a common vocabulary, there was a conceptual overlap. The themes of natural and renewable had common characteristic of "organic". Student focus groups and industry expert interviews shared one theme – natural. The concept that natural is favorable to sustainability has appeared in many responses. Some students communicated uncertainty about the sustainability characteristics of some natural fibers because of their incomplete knowledge. Students expressed a keen desire to learn about these aspects during their college education.

*Country of origin or manufacture* information on product labels was important to students and academic experts since both groups indicated that made-in-the-US means

that production is local. Local manufacture was supported by both the groups for different reasons. Students expressed that made-in-the-US implies that a product is fairly made because they were aware of labor issues in other countries from which apparel products are sourced. Academic experts favored made-in-the-US because it means that the product has travelled less in the supply chain making it more sustainable. In the discussion, different emotional responses emerged from students based on their awareness about different countries and the associated issues. Pride, an emotion that emerged for made-in-the-US label, suggests that students would like to see more local production. It was evident that students think they make buying decisions based on this information while academic experts do not. The other themes for students were related to image and impact on their personal self. Image associated with a brand or company's name has always been important to students. Care instructions are important as they impact students by either making it easy and inexpensive to care for or challenging and expensive to care for apparel. In most instances, students prefer a garment for its easy low-cost maintenance and determine that information from care labels.

Regarding labels, academic experts and industry experts have two themes in common: fiber content and sustainability-related information. Fiber content informs both expert groups for product functionality. Functionality includes utility and permanence features indicating usefulness for the purpose and durability (Brown & Rice, 2001). This assessment on functionality can be made only by individuals who have knowledge about fiber properties.

Sustainability-related information was sought for several reasons that pertain to social and environmental responsibility. This was a revelation that informed the

researcher. When asked about sustainable products, social responsibility did not emerge as a theme. However, academic experts do seek such information on the label, even though not all labels provide enough information. Visual logos are found on many eco-labels (labels that are designed to communicate environmental implications about a product) while only a few labels contain detailed verbal messages (Tang, Fryxell, & Chow, 2004). Nevertheless, the focus for social responsibility was different for each expert group. Academic experts focused on locally-made because it would sustain local communities and economies while industry experts focused on fair labor certifications. A consumer survey reported that on 16 percent of the participants used the sustainability-related “No Sweat” label in hypothetical task situations although 56 percent expressed preference for labels having such information (cited in Rudell, 2006, p. 293).

The environmental perspective for both expert groups was similar; they look for sustainable fibers and green efforts of companies. Sustainability in fiber content was assessed based on use of organic, recycled, and environmentally safe materials. To make such judgments, knowledge is necessary; it is expected that experts in the field would have that knowledge. Assessments of sustainability efforts of companies were slightly different between these two groups. Academic experts focused on written communication of company efforts provided via labels while industry experts depended on their personal knowledge about brands and the sustainability-related efforts of a brand or company.

The question focusing on comparative sustainability using three t-shirts as visual prompts for focus groups and descriptive prompts for both expert groups provided insightful information. The visual prompt engaged the focus groups in extended and thoughtful conversations. The descriptive prompt interested some experts while others

responded to it as simply another question. The researcher felt that because of the difference in the execution of the prompt, the responses from focus groups should not be compared with responses from the expert groups. In the results chapter, separate responses for all seven focus groups are presented. Although the first t-shirt that was 50 percent recycled cotton and 50 percent recycled polyester made in the US was most favored, participants were not confident of their selection and acknowledged their inability to make informed judgments. Their unsure, yet thoughtful, discussion described sustainable and unsustainable features for each shirt.

Experts' discussion on the t-shirts question was exceptionally insightful because they provided very specific reasoning for their selection of the first t-shirt that was 50 percent recycled cotton/50 percent recycled polyester and made in the US. The reasons were that the material used for the shirts is not new (recycled) and, thus, being kept out of landfills, it is made in the US ensuring environmental and social standards in the product, and it has a smaller travel footprint. In each expert group, one expert chose the 100 percent cotton t-shirt as most sustainable for different reasons. Academic expert Sanya assumed some details about the supply chain for this t-shirt based on her extensive knowledge and expressed that the cotton for the t-shirt is probably genetically modified because it would most likely have been produced in US and then transported to Haiti for production. Industry expert Hiku chose the 100 percent cotton t-shirt because cotton is a renewable and recyclable fiber with production in Haiti. In general, it was difficult for informed and educated individuals to make a unanimous selection because of the complex nature of the textiles and apparel industry. In addition, the sustainability-related

information provided about the t-shirts was limited; it could be argued that there is no single best answer.

### *Attitudes*

The students group may not truly represent the attitude of college students within the selected population because the students groups were self-selected as it was volunteer participation. Although two incentives were provided for participation, it is highly possible that the students chose to participate because of their interest in sustainability. The positive attitudes that emerged were reflected throughout the research and are represented by the thought processes explained and opinions shared during the focus group discussions. Overall, this research demonstrates that students are committed emotionally to sustainability, that they think about their attitudes and acknowledge the shortcomings in the society, that they are somewhat aware and have some knowledge about sustainability, that they are taking actions based on their limited knowledge, and that they are ambitious to learn more. In a study of college students in the Philippines, it was found that students expressed strong environmentally-supportive views and beliefs (Sia Su, 2008). Another study found that ideologies and worldviews are better indicators of environmental concern (Morrone, Mancl, & Carr, 2001). Yet another study reported that students at the University of Plymouth possess general pro-sustainability attitudes (Kagawa, 2007). Researchers have found that the emotional perspective has a stronger impact on sustainable behavior and commitment to sustainability by an individual (Degenhardt, 2002; Schmuck & Schulz, 2002). All students realized the importance of sustainability and felt that it should be included in every student's education in depth and with detail. For the best outcome, student-directed and collaborative learning should

include sustainability-focused group discussions, small projects, research-based projects, and sharing. Students also mentioned the importance of media and subliminal messages to communicate sustainability related information. This is in agreement with the study that found new information about the environment through media, conversation with other, and everyday experiences shape worldviews (Stern, Dietz, & Gugnano, 1995).

### ***Actions***

Student focus groups had many parallel themes with academic and industry experts for the question on personal sustainable actions. The results for this question address the research question: Do textiles and apparel students take actions related to sustainability? It is evident that certain sustainable actions are common behaviors in the society; however, the extent in which they are enacted varies from individual to individual. Each individual participating in this study took action within their personal sphere of influence. The themes that emerged were conservation of water, electricity, and fuel; shopping behaviors ranging from shop strategic, shop local, shop less, shop green, shop secondhand, shop fair, and shop organic; and reuse, recycle, and reduce. Kagawa's research on the University of Plymouth students also reported they modified shopping habits to select organic, fair trade, locally produced, and healthy items (2007). Shop fair did not emerge as a theme in the focus groups but college students are taking action to demand collegiate apparel brands to source products from fair or "no-sweat" factories ("Students demand that...", 2005).

Six focus groups, four academic experts, and three industry experts gave examples of personal actions that *conserve energy*. The actions between students and experts varied based on the level of control an individual has. For instance, thermostat

adjustments did not appear in focus groups perhaps because students are either living in dormitories or apartments and may not have access to the thermostat or utilities may be included in their rent. Cold water washing, hand-drying, and lowering the dryer temperature were examples of energy conservation efforts related to laundry across the three groups. However, students took this action to save money. Installing energy efficient bulbs was an action common between students and academic experts.

*Water conservation* emerged as a theme in all three groups, but the level of action varied between students and experts. Student actions were specific to an activity while expert actions were at a deeper level. For example, everyone reduced water consumption by turning off water when not in use during brushing teeth or reduced water use by washing less, but the experts installed additional gadgets or replaced existing equipment to conserve water. This reflects that all individuals are taking action within the sphere of decisions available to them.

*Fuel conservation* emerged as a theme in focus groups and industry experts. It could have been an oversight for academic experts or an action that has already been embraced as a lifestyle habit and is not considered a special or thoughtful effort.

*Shopping* is an activity that society engages in regularly to address both needs and wants. It was expected that shopping-related behaviors would emerge as a theme for sustainable actions. Several subthemes emerged among which shop strategically was parallel across all three groups. *Shop strategically* was related to making selections that may contribute to sustainability. Specific actions include:

- Students shopping for styles and colors in clothes for longevity of a product in their wardrobe,

- Academic experts shopping for products that have some sustainability feature or postpone their shopping action, and
- Industry experts strategized shopping for products with reduced packaging. This is a specific example of selecting a product with some sustainability feature that was also mentioned by the academic experts.

*Shop less* emerged as a theme from student focus groups that academic experts also engage in. *Shop secondhand* emerged as a subtheme in both focus groups and academic experts. *Shop green* and *organic* represents environmental sustainability actions, while *shop local* and *shop fair* represent socially sustainability actions. Shopping for social responsibility was represented in student focus groups and academic expert interviews while shopping for environmental responsibility was a theme in all three groups.

*Reuse* and *recycle* emerged as a theme from all three groups. Reuse and recycle emerged as most commonly taken actions in the personal lives of students as well as experts. Recycling was also reported as the second most frequent action chosen by college students at University of Plymouth (Kagawa, 2007). Students identified specific products that they *recycle* or *reuse* while experts stated that reusing and recycling is part of their “conscious consumption.” The term conscious consumption was provided by industry expert Sita. *Reduce* emerged as a separate theme in focus group interviews and academic expert interviews because they provided more and specific examples while *reduce* was part of reuse and recycle in the industry expert interviews. Students viewed creating waste as a negative behavior and tried to minimize waste in general. Academic experts gave specific examples of reducing chemical and toxic waste and industry experts



gave specific examples of reducing packaging waste. A significant concern for the industry is the environmental impact resulting from the amount and composition of packaging materials. Minimizing packaging is considered a “best waste management strategy” from the environmental footprint perspective (Dickson, Loker, & Eckman, 2009).

*Political action* emerged as a theme only from the academic expert interviews because educators considered themselves to be advocates for pragmatic action (action carried out for reasons that best serve a desired outcome of sustainable present and future). Academic experts gave specific examples of personal actions that advocate for sustainability within their personal and professional spheres of interest and influence.

Student focus groups described most challenges to sustainability. Their discussions made it obvious that they were emotionally engaged in sustainability. Student’s sustainable actions were as numerous as those taken by the experts. Researchers have found that the emotional perspective has a strong impact on sustainable behavior of individuals. It is important to find the specific conditions, both internally and externally, for individuals that favor sustainable versus non-sustainable behavior (Schmuck & Schulz, 2002). Degenhardt’s study (2002) found that emotional concern is an essential driving force for the implementation of sustainable lifestyle decisions. Kollmuss and Agyeman (2002) created the term “pro-environmental consciousness”, a complex structure consisting of environmental knowledge, values, attitudes and emotional involvement (p. 256). Kollmuss and Agyeman (2002) suggested a model of pro-environmental behavior in which emotional involvement is core internal factor supporting pro-environmental behavior that supports the findings of this research.

Three themes were parallel among the groups: mass engagement, cost, and lack of awareness. All three groups considered individual engagement as a big challenge; academic experts described getting all stakeholders, including companies and institutions, involved as a challenge. Students provided many suggestions to bring a positive change to increase individual engagement and focused on the role of businesses and institutions in achieving that goal. Industry experts emphasized the importance of a willingness to become engaged in sustainability. *Cost* emerged as significant challenge from the student groups as it appeared several times during their discussions. Currently, the cost of sustainable choices is higher compared to traditional non-sustainable choices. The higher cost of sustainable choices deters students, and probably other consumers, from sustainable product selections. According to the academic experts, if there is mass engagement, consumers will understand the cost differential and may be more willing to support sustainable choices. Ignatow supports the role of mass education as a means to foster an ecological worldview by the public (2006). An ecological worldview may facilitate enhanced understanding of sustainability. Consumer education was considered very important. Lack of awareness and education is another challenge that students felt can be changed by using multiple channels to educate the masses and create more awareness. A research group at the University of Trier, Germany, compared 20 studies and concluded that ecological awareness is a strong predictor of sustainable behavior (Kals & Maes, 2002). Students and academic experts suggested making sustainability popular and “cool.” Academic experts also suggested that sustainable choices should be designed for easy implementation.

Other themes related to challenges that emerged from the focus group interviews included selfishness, ignorance about cause-effect relationships, lifestyle habits and convenience-driven society, and market-based economy with a consumption culture. All these themes indicate a culture that has focused on undesirable behaviors of convenience and consumption leading to an unsustainable outlook.

*Recycling* emerged as a popular fashion and apparel industry sustainability effort for all three groups. Recycling is one of the major strategies followed by at least 1,000 textiles and apparel companies (Anderson, August 2008). In one study it was reported that recycling behavior is a normative behavior and may not have underlying environmental values, knowledge, and concern (Barr, 2007). Some aspects of environmental responsibility initiatives were acknowledged by all three groups: students included *organic*, academic experts described *footprint reduction* across the supply chain, and industry experts listed broader examples focused on the theme of *environmental responsibility*. Students were not aware of any *social responsibility* initiatives in the industry, but social responsibility emerged as a theme for both expert groups. Brand names were a major theme with students who mentioned several names of stores and designers who are engaged in some sustainability initiatives. An interesting theme emerged related to the subliminal messages on labels focusing on sustainability. Students considered that these messages would be helpful in developing a sustainability culture.

Academic experts mentioned several environmental responsibility initiatives that include lean manufacturing, zero-waste, recycling, and use of organic materials. Academic experts were well informed about CSR (Corporate Social Responsibility) departments and efforts of companies.

Industry experts gave examples of companies that are sharing their best practices. They also mentioned a negative feature of *green washing*, the marketing ploy that is used by some companies to claim sustainable practices. Students supported this theme stating they do not always believe many companies' claims.

Several themes were identified from the responses to the question on curriculum expectations. Students desire depth in content coverage, more information on raw materials and processes for sourcing decisions, more information on actions taken by industry for awareness, and real world inputs. Students prefer sustainability content across curriculum and across majors or (counter theme: one core course), research based projects, small projects followed by class sharing and presentations, and group discussions that feature discourse.

These responses answer the research question: What are the expectations among college students majoring in textiles, apparel, and allied fields for their education relative to sustainability? The themes most frequently mentioned were sustainability course (knowledge and education) and learning style (learning from each other) followed by processing and production (learning content) and class projects. Students preferred sustainability-related content in every course for two reasons. First, they felt that sustainability is applicable to everything and having it in every course will ensure that they learn different aspects in different courses. Second, the discussion of sustainability in every course will ensure that learning about sustainability leaves a lasting impact on their minds and eventually will become a part of their personal and professional persona. Implications of these results suggest the need for course and curricula refinement and change. Course content should be reconsidered to accommodate extra detail and depth

related to the sustainability of textile materials and processes with immediate effect.

Students desire that faculty design new projects that are focused on student-centered and collaborative learning. Students want ownership in the generation of new knowledge.

Students also suggest development of an entry level and/or a capstone course in addition to incorporating sustainability in every course.

The most favored learning styles were identified to be research projects, group discussions, and the richness of multiple perspectives that flow from group discussions. It emerges that the concept of sustainability is best learned and understood through multiple lenses and dialogues. In addition, use of media as a communication channel was preferred. Class projects were a theme that emerged from academic experts and parallels that of the student groups. Industry experts did not have any suggestions on teaching or learning methods.

Participants showed a keen interest in learning about the reasoning behind materials and processes being categorized as beneficial or harmful to the environment and how changing their choices will make improvements related to sustainability. It was encouraging to learn that students are excited about learning more and in-depth about the concepts related to sustainability.

One theme that emerged from this question, *current events and eco-initiatives of the industry*, explained why the students were only able to identify brands for the question related to sustainability initiatives of the textiles and apparel industry. Students expressed that they realize that the industry is taking many initiatives. However, their awareness about these initiatives is minimal, but they want industry initiatives to be included in their curriculum.

Academic experts reiterated the same message: include elements of sustainability in each course. Themes that emerged were: environmental regulations and challenges, use of chemicals, recyclable materials and challenges, length of supply chain and its implication, design for minimizing waste, ethical and social responsibility issues, class projects, linear dissemination of concept of sustainability, and variety of courses.

Academic experts presented a planned dissemination of sustainability content and articulated the importance of including all three tenets of sustainability in a curriculum: economic, equity, and environmental responsibility. Academic experts suggested a conceptual organization for delivering sustainability content to students across the curriculum. One expert suggested having rudimentary sustainability concepts in lower division courses with detailed and in-depth content in upper division courses. Academic experts stated that there is no single way to teach sustainability and incorporate it into the curriculum. The selection a method should be based on contextual factors.

Industry experts also emphasized covering all aspects in content in the curriculum. They suggested that each touch-point in the supply chain and that each material and step in garment production should be studied, dissected, and analyzed for its social and environmental impact. This component addresses the students' perspective of learning in-depth. Industry experts provided the real-world implications of learning sustainability content and its application. These inputs from industry experts focused on environmental impacts. Learning about methods of conducting LCA (Life Cycle Analysis) to study, dissect, analyze, and compare various options when making decisions about sustainable production and distribution was highlighted. Industry experts also stressed the importance of learning about communication methods and venues to

communicate sustainability efforts of a company in a way that informs and educates consumers. They consider effective communication to be very important in helping consumers make informed decisions. The experts assumed that consumers will choose more sustainable options after learning about and understanding the impact of their decisions and eventually that knowledge will result in progress related to sustainability.

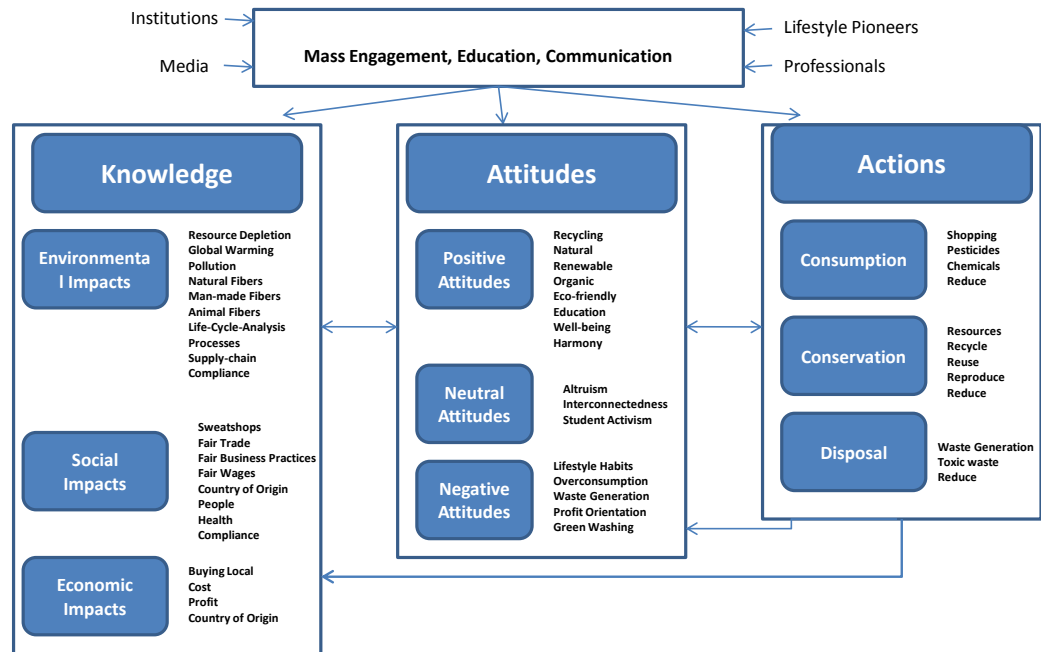
In response to the additional questions for the experts, industry experts made further suggestions: create a universal definition and terminology and learn about the importance of sustainability-related certifications and organizations. Another point they raised was that since textiles and apparel is a dynamic field, a professional need to be a life-long learner. Both academic and industry experts felt that although teaching and learning about sustainability is important, it is essential that a professional be a life-long learner with an open mind to embrace newer materials and processes in the dynamic and complex field of textiles and apparel. If the students are educated more, they will be able to engage more in personal responsibility, make lifestyle changes, select environmentally and socially sustainable options through each touch-point in the supply chain, and communicate sustainability to masses through their personal and professional spheres of influence.

### ***Model Development***

Upon analysis of the conclusions and mapping of themes and the interconnections among them, a model was developed. Figure 2 represents relationships among the three components of ecological [sustainability] literacy, external factors influencing ecological literacy, and the feedback cycle between the components for decision making in personal and professional spheres of textile and apparel audiences. In this model, knowledge

(about environmental impact, economic impact, and social impact) leads to attitudes (positive, negative, or neutral) which leads to action (consumption, conservation, and disposal) which might then lead back to knowledge and attitudes. Knowledge, attitudes, and actions keep reshaping the reality by continuous interactions and interchanges that is represented by the arrows.

**Figure 2: Participant Model for Decision Making in Personal and Professional Spheres**



Subsequent Figures 3, 4, and 5 represent similar models focusing on each individual audience: students, faculty experts, and industry experts. These three groups provide multiple perspectives that complement each other to create a holistic perspective. Each of the models in Figures 3, 4, and 5 represent the comments of a specific audience and are narrower and more restrictive than the comprehensive model shown in Figure 2.



Figure 3: Student Model for Decision Making in Personal and Professional Spheres

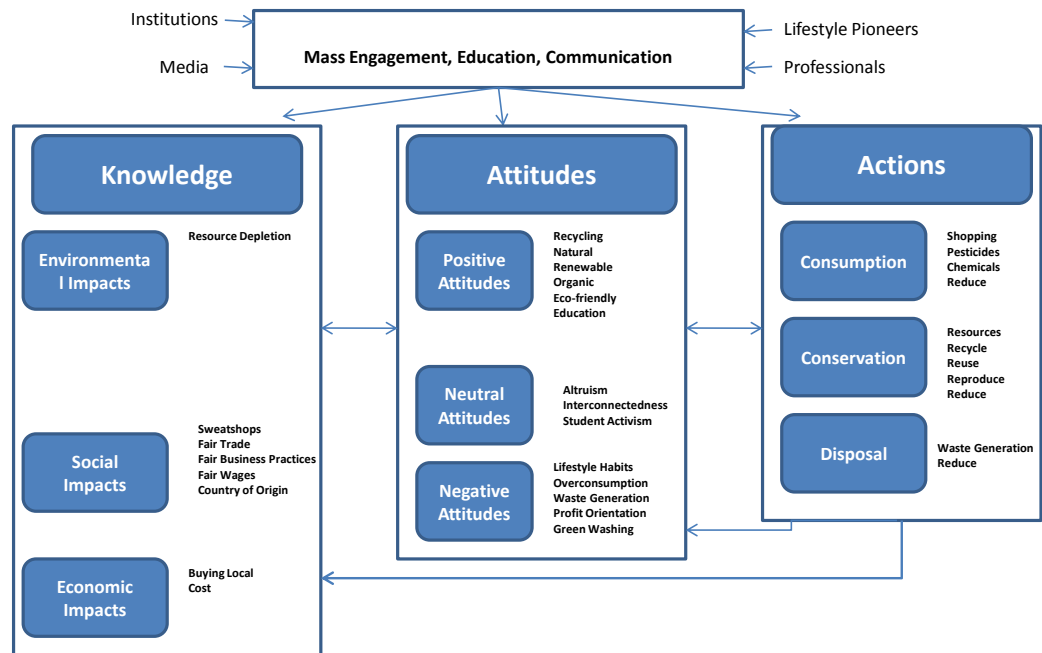


Figure 4: Faculty Model for Decision Making in Personal and Professional Spheres

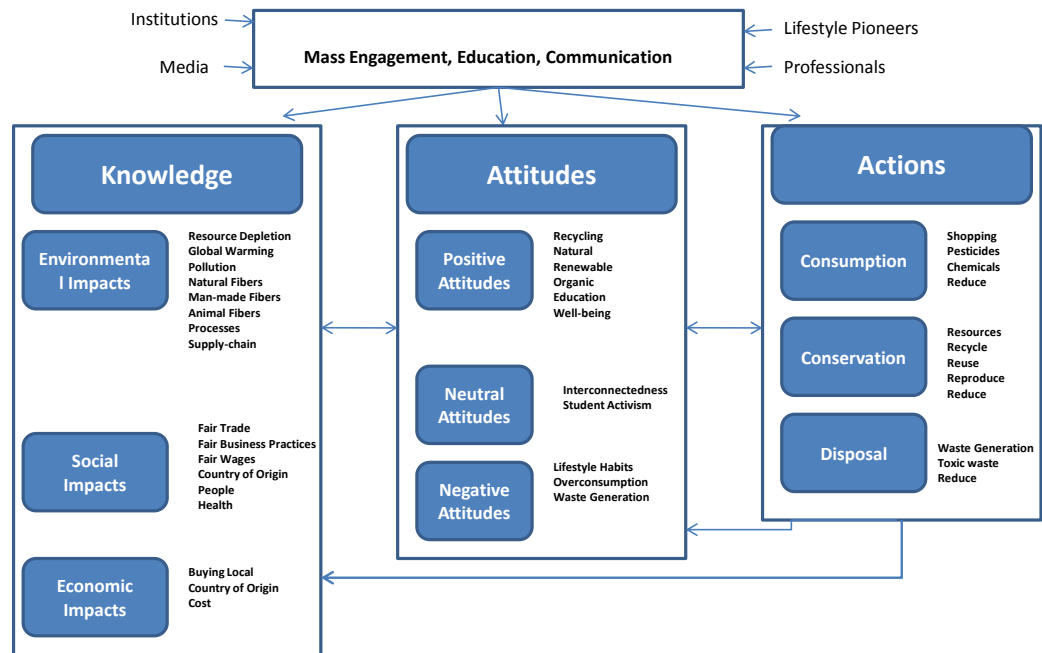
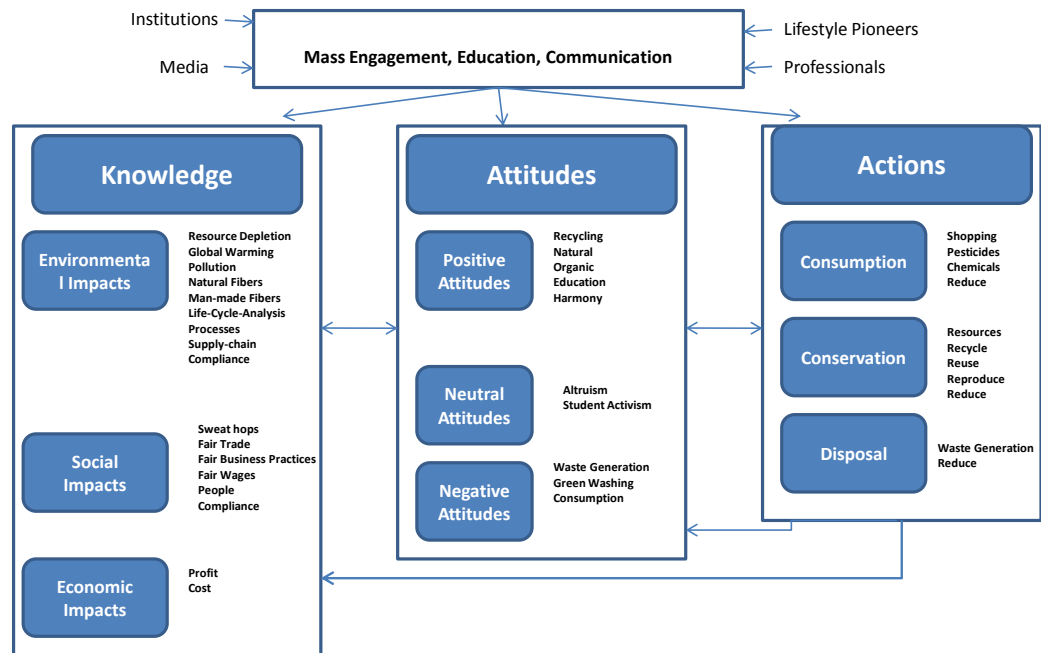


Figure 5: Industry Model for Decision Making in Personal and Professional Spheres



### *Factors for Sustainability Literacy*

Factors related to sustainability and ecological literacy for textiles, apparel, and allied fields identified through the focus group interviews, expert interviews and literature review are listed below. Additional research will be required to determine how these factors influence ecological literacy

- Synonyms used by students for sustainability;
- Terms associated with sustainability provided by experts and literature;
- Understanding of sustainability related terminology;
- Definition or description as to what makes a sustainable product;
- Terms associated with non-sustainable behavior or practices;

- Shopping behavior: overconsumption, shop strategically, shop less, shop secondhand, shop green, shop organic, shop local, and shop fair;
- Specific content related to their major: fibers, finishes, other raw materials, dyes, dyeing/printing, detailed supply chain, country of origin, manufacturing processes, reducing/reusing/recycling, packaging, sustainable design, consumption culture, sourcing;
- Ecological challenges or environmental responsibility: resource depletion, conservation practices, reuse, recycle;
- Social responsibility: Fair business practices, fair labor, certifications, human health, well-being;
- Awareness of sustainable practices, companies, and products;
- Human ecology perspective: balance between social and environmental considerations;
- The sliding gray scale of sustainability (no clear right or wrong answer, complexities involved in the global textile and apparel industry);
- Economic factors: profit/loss;
- Specific actions that students take based on concerns about sustainability versus actions that are sustainable but that are driven by other needs: time, availability of resources, (convenience seems to involve several of these dimensions), control over use of resources, income/expenses, etc.;
- Political action or advocacy: mass engagement, promoting sustainability as cool and popular;

- Challenges to sustainability (from a cultural, consumer, or individual perspective);
- Lifestyles; and
- Green washing.

### *Sustainability or Ecological Literacy Assessment/Measurement*

A possible next step that builds on this research would focus on assessment. The assessment/measurement instrument will more than likely include specific components that address knowledge (fact-based questions with responses – essentially test questions), a range of statements with scaled-responses to address attitudes; and action/practice-related questions to address behavior and action. Items from existing scales can be selected (Appendix H) for the assessment of student knowledge, attitudes, and actions. Some examples of concept statements that would require refinement and testing are listed below.

- I am very familiar with Life Cycle Analysis as it relates to the ecological impact of a product.
- I am aware of sustainability-related certifications for textiles and apparel products.
- I am aware of the ecological footprint of organic fibers.
- I am aware of health problems in the communities where cotton is grown by traditional method using pesticides.
- I know a lot about the biodegradability of textile materials.
- I know a lot about sweatshops.

- Made in the US does not necessarily mean that it is made fairly.
- Society can progress by engaging in conscious consumption.

### *Implications and Future Directions*

In this research, information was collected from three main stake holders: students, academia, and industry. The outcome of this research is enlightening and may provide academia with (a) an understanding of some basic elements related to the ecological literacy of students and (b) important components of curriculum and pedagogy for teaching about sustainability based on student comments.

Educators have a responsibility to energize students with a passion for social and environmental responsibility and the tools to implement these practices in their lives, as individuals and employees (Expert Manu). Educational institutions have a compelling responsibility to increase awareness and knowledge to prepare future professionals to be the agents of change (Calder & Clugston, 2003; Dickson et al, 2006). Sustainable textiles and apparel production processes require professionals who are well prepared to be proactive in making sustainable personal and professional decisions (Dickson, Loker, & Eckman, 2009).

Orr (1992) describes the ecologically literate person as someone who has the knowledge necessary to comprehend interrelatedness among individuals, society and nature, an attitude of care or stewardship, and the practical competence required to act on the basis of knowledge and feelings. This research found that textiles and apparel students have the necessary attitude and competence to act on the basis of knowledge and feelings; however, because their knowledge is partial they are currently limited as to actions they can take. The study reinforces the literature that there is a lack of education

and that educators need to act to change the scenario. To educate for textiles and apparel-related personal and profession personas, the research provides implications for curriculum and pedagogy.

Results of this research suggest several dimensions and issues of importance for students, especially for, but not necessarily restricted to, textiles and apparel students.

These dimensions and issues are briefly described below:

- Students use a variety of terms to define sustainability, but a complete understanding and comprehensive definition is absent. This indicates that students need education to learn more about sustainability and understand all the components of sustainability.
- Students seem to have an *ecocentric* belief system because environment was a term they closely associated with sustainability. This indicates that components of human interdependence and social responsibility should be communicated to students through the curriculum. While developing a scale, items from the NHIP developed by Corral-Verdugo (2008) could be considered for inclusion.
- Students interpreted the literal as well as figurative meanings of sustainability while the literature mainly focuses on the figurative meanings.
- The term organic also has multiple meanings in the minds of students emphasizing the ambiguity of terms associated with sustainability. One of the industry experts suggested that a universal glossary is needed and communicated through curriculum.
- Lifestyle habits emerged as a strong theme throughout the focus group interviews. It was identified as an ecological challenge. It indicates that students may not

have clear differentiation between societal challenges and ecological challenges.

A universal glossary will facilitate clear understanding. Lifestyle habits were also identified by academic experts but they pinpoint outcomes of lifestyle habits. It was evident that academic experts made the connection between the habits and the associated ecological challenges.

- Social responsibility includes fair business practices, labor, health, fair wages, benefits, safe working conditions, and responsibility to the community. Because students were unclear as to the multiple dimensions of social responsibility, a much wider spectrum of social responsibility components should be included in the curriculum.
- Students were not aware of all the sustainability-related benefits of buying local. Teaching about each touch point in the supply chain would improve this deficit.
- Students should be prepared to be cognizant of regional differences in environmental and social issues in order to function more effectively in the global textile and apparel industry.
- The difference between eco-friendly and sustainable should be clarified and communicated to students. This will encourage achieving balance between sustainable and unsustainable, mentioned in the previous bullet.
- Students represented different academic levels. They acknowledged that, currently, they are not well informed or educated to compare products on the basis of sustainability. Students are interested in learning about sustainability in depth and detail. It is difficult even for informed and educated individuals to make a unanimous selection because of the complex nature of the textiles and apparel



industry. This indicates that it will be challenging to effectively teach about sustainability. Much thought and planning will be needed in revising curricula.

- Students had limited knowledge about fibers and fabrics and their functional properties. While experts made their judgments about sustainable and unsustainable features based on functionality requirements, students could not make such decisions. Effort to include sustainability and functionality aspects while teaching about fiber and fabric properties will facilitate better decision-making by students in their personal and professional personas.
- Reading labels is an uncommon activity for students. Students should be encouraged to reading labels because of the amount and type of information included.

Results of this research suggest several dimensions and issues of importance for educators, especially for, but not necessarily restricted to, textiles and apparel educators.

These dimensions and issues are briefly described below:

- Life Cycle Analysis is an important tool that should be included in the curriculum so that comparative choices can be made and a balance between sustainable and unsustainable features achieved.
- The curriculum should include information about sustainability organizations and certifications that are available.
- Projects based on sustainability were considered beneficial by students. Projects provide them an opportunity to take ownership in creating learning by examining all aspects of a chosen subject.

- Teach about barriers and solutions to environmental and social sustainability and compliance. Problem solving could be incorporated to help students find solutions through critical thinking.
- The development of special courses or the inclusion of sustainability in every course needs to be determined by the institution based on their structure. One model of structuring sustainability content may not be necessarily better than any other. However, if a special course is designed, the educators must be cognizant of the fact that it should be designed in such a way that students have an opportunity and time to reflect on their learning.
- Advocacy for reducing consumption should be maintained so that individuals are prepared to be conscious consumers. A course on becoming a responsible consumer would be beneficial.

Results of this research suggest several dimensions and issues of importance for the global textile and apparel industry and consumers, especially for, but not necessarily restricted to, products made from textiles and businesses that manufacture or sell such products. These dimensions and issues are briefly described below:

- Assessing or measuring the cost of sustainable choices is a huge challenge. The economic tenet of sustainability has been grossly overlooked. Because of the great importance of sustaining individuals, businesses, communities, and nations, sustainable economic models should be incorporated in the curriculum.
- By educating the masses and creating mass engagement for sustainability so that consumers can make sustainable choices, the cost of sustainable products might become comparable to traditional products. One expert suggested that sustainable

products do not cost more in long-run and teaching and learning about a business model that is founded on stakeholder paradigm versus shareholder paradigm will facilitate understanding the comparative costs and a realization that going green might actually add profit to an enterprise.

- Facilitate design for sustainability-related processes that make it easy for consumers to take action.
- Use of media channel, especially social networking media, is a powerful tool that should be utilized to reach the younger generation and educate them about sustainability and conscious consumption.

Results of this research suggest several additional research projects. These potential future projects are briefly described below:

- The model shown in Figure 2 needs to be tested with additional audiences in textiles and apparel and other disciplines as well as with consumers to gain a better understanding of decision making related to sustainability.
- Student participants had an egocentric perspective; a research on whether it is because of developmental stage of the college age students or because of some generational factors, or a combination of both may provide a better understanding of their attitudes and behavior.
- Focus group participants were more aware of green household cleaning products than other products. Understanding how this has developed could provide information of use in educating consumers about other sustainable products.

- Reusable shopping bags are being promoted by many businesses. Understanding how consumers perceive these reusable bags and understanding other perceptions and LCA would provide useful information for product design and development..
- Being wasteful was perceived as a negative value. During the discussion it was not clear if participants actually practiced not being wasteful in their lives. A behavioral study would generate information about waste management behavior and provide information focusing on minimizing waste as a very pro-environmental behavior.
- Many of the comments by academic and industry experts have not been verified in the literature. Research is needed as to current and potential future practices within the textile and apparel global complex related to sustainability, environment friendly, and life cycle and carbon footprint assessment.
- Current best practices by the industry should be included in the curriculum. Because of rapid changes in the industry, these best practices should be continuously updated. An international database on sustainability initiatives in industry should be developed and shared with students.
- A human ecology perspective was provided by only the industry experts. More research is needed to understand why responses from the other groups did not describe a human ecology perspective. Understanding this perspective might be of use in educating the public as to the need for sustainable practices and products.

This study was very useful and enlightening for the researcher. However, the limitations must be acknowledged. The sample size was small (students, n=45; academic experts, n=6; industry experts, n=6).The student population was from a limited

geographical area with the majority of students as Caucasian (n=37), making generalizations a challenge. The process of transcribing, coding and analyzing the data was labor-intensive and human error may have contributed to oversight or omissions. The researcher made a conscious effort of countering this through multiple peer debriefings and checking transcripts against written notes and audio recording. Personal bias could be another limitation that may have influenced interpretation of the results. Regardless of these limitations, this study has created a resource that can be utilized by educators and researchers. The study has opened many options for conducting research and added to the body of knowledge in the fields of textiles and apparel, sustainability, consumer behavior, and consumer education.

## REFERENCES

- AASHE (n.d). About AASHE. Retrieved June 30, 2010 from <http://www.aashe.org/about>
- Abdul-Wahab, S. A. (2008). A preliminary investigation into the environmental awareness of the Omani public and their willingness to protect the environment. *American Journal of Environmental Sciences*, 4(1), 39-49.
- Albarraacin, D., Zanna, M. P., Johnson, B. T., & Kumkale, G. T. (2005). In D. Albarraacin, B. T. Johnson, & M. P. Zanna (Eds.) *The handbook of attitudes* (pp.3-20). New Jersey: Lawrence Erlbaum Associates, Publishers.
- Anderson, R., Amodeo, M., & Hartzfeld. (2010). Changing business cultures from within. *In 2010 State of the World* (pp. 96-102), New York: W.W. Norton & Company.
- Anderson, K. (2007, March 21). Going green. *[TC<sup>2</sup>] Bi-Weekly Technology Communicator*. Retrieved December 11, 2008 from <http://www.tc2.com/newsletter/2007/032107.html#two>
- Anderson, K. (2007, April 4). Doing good and doing well: The triple bottom line. *[TC<sup>2</sup>] Bi-Weekly Technology Communicator*. Retrieved December 11, 2008 from <http://www.tc2.com/newsletter/2007/040407.html#two>
- Anderson, K. (2008, April 16). Apparel companies pursue green strategies with a vengeance. *[TC<sup>2</sup>] Bi-Weekly Technology Communicator*. Retrieved December 11, 2008 from <http://www.tc2.com/newsletter/2008/041608.html#two>
- Anderson, K. (2008, August 20). Sustainable apparel products: Defined and flourishing. *[TC<sup>2</sup>] Bi-Weekly Technology Communicator*. Retrieved December 11, 2008 from <http://www.tc2.com/newsletter/2008/082008.html#thr>

Assadourian, E. (2010) The rise and fall of consumer cultures. In L. Starke & L. Mastny (Eds.), *2010 State of the World* (pp.3-20). New York: W. W. Norton & Company.

Azapazgic, A., Perdan, S., & Shallcross, D. (2005). How much do engineering students know about sustainable development? The findings of an international survey and possible implications for the engineering curriculum [Electronic version]. *European Journal of Engineering Education*, 30(1), 1-19. DOI: 10.1080/03043790512331313804.

Barr, S. (2007). Factors influencing environmental attitudes and behaviors [Electronic version]. *Environment and Behavior*, 39(4), 435-573.

Bird, T. (2008). We have ways to make you green. *Alternatives Journal*, 34(1). Retrieved August 9, 2008 from [http://find.galegroup.com.proxy.lib.iastate.edu:2048/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A173407272&source=gale&userGroupName=iastu\\_main&version=1.0&contentSet=IAC-Documents&retrieveFormat=PDF](http://find.galegroup.com.proxy.lib.iastate.edu:2048/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A173407272&source=gale&userGroupName=iastu_main&version=1.0&contentSet=IAC-Documents&retrieveFormat=PDF)

Bodur, M. & Sarigöllü, E. (2005). Environmental sensitivity in a developing country [Electronic version]. *Environment and Behavior*, 37(4), 485-510.

Boekeloo, C.(Feb 2008).Young and green: the millennial generation gets creative to fight global warming.(ENVIRONMENT). *Sojourners Magazine*. 37(2), 1. Retrieved August 06, 2008, from <http://find.galegroup.com/itx/infomark.do?&contentSet=IAC->

Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A174010662  
&source=gale&userGroupName=iastu\_main&version=1.0&contentSet=IAC-  
Documents&retrieveFormat=PDF

- Bowers, C. (1996). The cultural dimensions of ecological literacy. *Journal of Environmental Education*, 5. Retrieved August 16, 2008, from Academic Search Elite database.
- Brown, P. & Rice, J. (2001). *Ready-to-wear apparel analysis*. New Jersey: Prentice Hall.
- Burningham, k. (1995). Environmental values as discursive resources. In Y. Gurrier, N. Alexander, J. Chase, & M. O'Brian (eds.). *Values and the environment*. New York: John Wiley & Sons.
- Butler, S. M. & Francis, S. (1997). The effects of environmental attitudes on apparel purchasing behavior [Electronic version]. *Clothing and Textiles Research Journal*, 15(2), 76-85.
- Buttel, F. H. & Humphrey, C. R. (2002). Sociological theory and the natural environment. In R. E Dunlap & W. Michelson (Eds.), *Handbook of environmental sociology* (pp.33-69). London: Greenwood Press.
- Calder, W. & Clugston, R. M. (2003). International efforts to promote higher education for sustainable development. *Planning for Higher Education*, 30(3), 30-44. Retrieved June 30, 2010 from [http://vnweb.hwwilsonweb.com.proxy.lib.iastate.edu:2048/hww/results/external\\_link\\_maincontentframe.jhtml?\\_DARGS=/hww/results/results\\_common.jhtml.42](http://vnweb.hwwilsonweb.com.proxy.lib.iastate.edu:2048/hww/results/external_link_maincontentframe.jhtml?_DARGS=/hww/results/results_common.jhtml.42)



- Carew, A. L. & Mitchell, C. A. (2002). Characterizing undergraduate engineering students' understanding of sustainability. *European Journal of Engineering Education*, 27(4), 349-361.
- Caron, J. A. (1989). Environmental perspectives of blacks: Acceptance of the "new environmental paradigm." *Journal of Environmental Education*, 20, 21-26.
- Center for Digital Education. (2007). Teaching the Millennials. Retrieved from [http://www.centerdigitaled.com/publications.php?pub\\_id=87](http://www.centerdigitaled.com/publications.php?pub_id=87)
- Charmaz, K. (2000). Grounded theory: Objectivists and constructivists methods in N. K. Denzin & Y. S Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed.) (pp. 509-536). Thousand Oaks, CA: Sage Publications Inc.
- Connolly, J. & Shaw, D. (2006). Identifying fair trade in consumption choice [Electronic version]. *Journal of Strategic Marketing*, 14, 353-368.
- Consumed (n.d.). American Public Media. Retrieved June 7, 2010 from <http://sustainability.publicradio.org/consumed/>
- Corral-Verdugo, V. Carrus, G., Bonnes, M. Moser, G., & Sinha, J. B. P. (2008). Environmental beliefs and endorsement of sustainable development principles in water conservation: Toward a new human interdependence paradigm scale [Electronic version]. *Environment and Behavior*, 40, 703-725. Retrieved September 14, 2008 from <http://eab.sagepub.com/cgi/content/abstract/40/5/703>.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed method approaches* (3<sup>rd</sup> ed.). California: sage Publications, Inc.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches* (2<sup>rd</sup> ed.). California: sage Publications, Inc.

- Currie, D. H. (1994). "Going green" Mythologies of consumption in adolescent magazines. *Youth and Society*, 26(1), 92-117.
- Degenhardt, L. (2002). Sustainable lifestyle pioneers. . In Schultz, W. P. & Schuck, P. (Eds.), *Psychology of sustainable development (pp. 123-148.)*. Boston: Kluwer Academic Publisher.
- Diamond, J. & Pintel, G. (2008). *Retail buying*. New Jersey: Prentice Hall.
- Dickson, M. (2000). Personal values, beliefs, knowledge, and attitudes relating to intentions to purchase apparel from socially responsible business. *Clothing and Textile Research Journal*, 18(1), 19-30.
- Dickson, M. & Eckman, M. (2006). Social responsibility: The concept as defined by apparel and textile scholars. *Clothing and Textile Research Journal*, 24(3), 178-191.
- Dickson, M., Rudd, N. A., & Lennon, S. J. (2006). Focused social responsibility: Part 2. *Clothing and Textile Research Journal*, 24(4), 279-281.
- Dickson, M. A., Loker, S. & Eckman, M.(2009). *Social responsibility in the global apparel business*. New York: Fairchild.
- Do you know green? (n.d.). Retrieved November 4, 2008 from <http://www.thefabricofourlives.com/cotton-green-quiz/?gclid=COO1ipPa3JYCFQQRswodJGul2w>
- Drucker, P. (1993) *Post-capitalist society*. New York: Harpers Business.
- Dunlap, R. E. & Jones, R. E. (2002). Environmental concern: Conceptual and measurement issues. In R. E Dunlap & W. Michelson (Eds.), *Handbook of environmental sociology* (pp. 482-524). London: Greenwood Press.

- Dunlap, R. E. & Catton, W. (1994). Struggling with human exemptionalism: The rise, decline, and revitalization of environmental sociology. *The American Sociologist*, 25(1), 5-30.
- Dunlap, R. E., Van Liere, K. D., , A. G., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56, 425-442.
- Dunlap, R. E., & Van Liere, K. D. (1978). The “New Environmental Paradigm”: A proposed measuring instrument and preliminary results. *The Journal of Environmental Education*, 9(4), 10–19.
- Education and awareness* (2006, February 15). UNESCO retrieved August 3, 2008 from <http://www.un.org/esa/sustdev/sdissues/education/edu.htm>
- Elkington, J., Hailes, J. & Makower, J. (1990). *The green consumer*. New York: Penguin Books.
- Fiber2fashion (2009, May 22). VAI S2K helps NAFECO to minimize cost and maximize profitability. Retrieved June 22, 2010 from [http://www.fibre2fashion.com/news/textiles-technology-news/newsdetails.aspx?news\\_id=72822](http://www.fibre2fashion.com/news/textiles-technology-news/newsdetails.aspx?news_id=72822)
- Garret, H. (1999). Two cultures – or three filters? On being ecolate as well as literate and numerate, *The Social Contract*, Spring 1999, 139-144.
- Gambini, B. (2006). Cultural assumptions against sustainability: an international survey. *Journal of Geography (online version)*, 30(2), 263-279.
- Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine Publishing Company.

Going green.(2006, September 26 ) *WWD*, p.14. Retrieved August 06, 2008 from

[http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-  
Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A152026923  
&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-<br/>Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A152026923<br/>&source=gale&userGroupName=iastu_main&version=1.0)

Green consumerism: Who is the ethical consumer? (2007, July 11) *Marketing*, 28.

Retrieved August. 8, 2008 from

<[http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-  
Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A166264934  
&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-<br/>Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A166264934<br/>&source=gale&userGroupName=iastu_main&version=1.0)>.

Haanpää, L. (2007). Consumers' green commitment: Indication of a postmodern

lifestyle? [Electronic version]. *International Journal of Consumer Studies*, 31,  
478-486, ISSN 1470-6423.

Henderson, B. & DeLong, M. (2000). Dress in a postmodern era: An analysis of aesthetic  
expression and motivation. *Clothing and Textiles Research Journal*, 18(4), 237-  
250.

Hesse-Biber, S. N. & Leavy, P. (2006). *The practice of qualitative research*. California:  
Sage Publications, Inc.

Hethorn, J. & Ulasewicz, C. (2008). *Sustainable fashion: Why now?* New York: Fairchild  
Books, Inc.

Howe, N. & Strauss, W. (2000). *Millennials rising: The next great generation*. New  
York: Vintage Books.

Ignatow, G. (2006). Cultural models of nature and society: Reconsidering environmental  
attitudes and concern. *Environment and Behavior*, 38, 441-461

- Jabreen, Y. (2008). A new conceptual framework for sustainable development [Electronic version]. *Environmental Development and Sustainability*, 10, 179-192. DOI 10.1007/s10668-006-9058-z
- Johannesburg plan of implementation* (n.d.) UNESCO retrieved August 3, 2008 from [http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/POIChapter10.htm](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIChapter10.htm)
- Johnson, C. Y., Bowker, J. M., & Cordell, H. K. (2004). Ethnic variation in environment belief and behavior: An examination of new ecological paradigm in social psychological context [Electronic version]. *Environment and Behavior*, 36(2), 157-186.
- Joergens, C. (2006). Ethical fashion: myth or future trend? *Journal of Fashion Marketing and Management*, 10(3), 360-371.
- June, A. W. (2007, July 20). Muhlenberg college students publish their own guide to sustainable living. (Muhlenberg College Guide to Sustainable Living)(Brief article). *The Chronicle of Higher Education*.(53)46.p.NA.Retrieved August 06, 2008 from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A166535002&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A166535002&source=gale&userGroupName=iastu_main&version=1.0)
- Kadolph, S.J., 2010. *Textiles*, 11<sup>th</sup> ed. Upper Saddle River, New Jersey: Pearson Education.
- Kagawa, F. (2007). Dissonance in student's perceptions of sustainable development and sustainability: Implications for curriculum change. *International Journal of Sustainability*, 8(3), 31-338.

- Kals, E. & Maes, J. (2002). *Sustainable development and emotions*. In Schultz, W. P. & Schuck, P. (Eds.) *Psychology of sustainable development* (pp .97-122). Boston: Kluwer Academic Publisher.
- Keeler, D. (2010, June 7). Corporate social responsibility. *Global Finance* [online]. Retrieved June 7, 2010 from <http://community.nasdaq.com/news/2010-06/corporate-social-responsibility.aspx?storyid=23968>
- Keiser, S. J. & Garner, M. B. H (2003). *Beyond design: The synergy of apparel product development*. New York: Fairchild Books, Inc.
- Kermath, B. (n.d.). *Sustainability*. Retrieved July 30, 2009 from [http://www.uwsp.edu/cnr/GEM/ambassador/What\\_is\\_sustainability.htm](http://www.uwsp.edu/cnr/GEM/ambassador/What_is_sustainability.htm)
- Kim, H. & Damhorst, M. L. (1998). Environmental concern and apparel consumption. *Clothing and Textile Research Journal*, 16(3), 126-133. Retrieved on August 2, 2008 from <http://ctr.sagepub.com>
- Knight, R. (2008, June 9).Sustainability not a priority for students. *The Financial Times*. p.13. Retrieved August 08, 2008 from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T004&prodId=AONE&docId=CJ179856115&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T004&prodId=AONE&docId=CJ179856115&source=gale&userGroupName=iastu_main&version=1.0)
- Kollmuss, A. & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research [Online version]*, 8(3), 239-260.
- Krueger, R. A. (1994). *Focus groups: A practical guide to applied research* (2<sup>nd</sup> ed.). California: Sage Publications, Inc.

- Krueger, R. A. & Casey, M. A. (2000). *Focus groups: A practical guide to applied research* (3<sup>rd</sup> ed). California: Sage Publications, Inc.
- Laughlin, J. and Kean, R.C. (1995). Assessment of textiles and clothing academic programs in the United States. *Clothing and Textiles Research Journal*, 13(3), 184-199.
- Lawrence, R. J. (2005). Human ecology and its application for sustainability research. In W. L. Filho (Ed.), *Handbook of Sustainability Research* (pp.121-147). New York: Peter Lang.
- LeHew, M. L. A. & Meyer, D. J. C. (2005). Preparing global citizens for leadership in the textile and apparel industry. *Clothing and Textiles Research Journal*, 23(4), 290-297.
- Lipka, S. (Oct 20, 2006). Students Call for Action on Campuses. *The Chronicle of Higher Education*, (53)9.p.NA.Retrieved August 06, 2008 from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC- Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A152939052 &source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC- Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A152939052 &source=gale&userGroupName=iastu_main&version=1.0)
- Maguire, K. (October 1, 2008). [TC<sup>2</sup>] Activity- Textile printing symposium. *[TC<sup>2</sup>] Bi-Weekly Technology Communicator*. Retrieved December 11, 2008 from <http://www.tc2.com/newsletter/2008/100108.html#tc2>
- Martens, P. (2006). Sustainability: science or fiction? *Sustainability: Science, Practice, & Policy* 2(1) (Online version). Retrieved on December 10, 2008 from <http://ejournal.nbii.org/archives/vol2iss1/communityessay.martens.html>

- McGregor, S. (2002, April). Consumer citizenship: A pathway to sustainable development? Keynote at International Conference on Developing Consumer Citizenship, Hamar, Norway.
- McNamara, M. (May 18, 1994). Ecology goes mainstream. *WWD*, 167,n96 .p.10 (1). Retrieved August 06, 2008 from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A15259245&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A15259245&source=gale&userGroupName=iastu_main&version=1.0)
- Merchant, C. (1992). *Radical ecology*. New York: Routledge.
- Meinhold, J. L. & Malkus, A. J. (2005). Adolescent environmental behaviors: Can knowledge, attitudes, and self-efficacy make a difference. *Environment and Behavior*, 37(4), 511-532.
- Mertig, A. G., Dunlap, R. E., & Morrison, D. E. (2002). The environmental movement in the United States. In R. E Dunlap & W. Michelson (Eds.), *Handbook of environmental sociology* (pp.448-481). London: Greenwood Press.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Josse-Bass.
- Morgado, M. A. (1996). Coming to term with postmodern: Theories and concepts of contemporary culture and their implications for apparel scholars. *Clothing and Textiles Research Journal*, 14(1), 41-53.
- Morgan, D. L. (1988). *Focus groups as qualitative research*. California: Sage Publications.



- Morris, I. A., Hastnak, M., & Mazis, M. B. (1995). Consumer comprehension of environmental advertising and labeling claims. *Journal of Consumer Affairs*, 29(2), 328-350.
- Morrone, M., Mancl, K., & Carr, K. (2001). Development of a metric to test group differences in ecological knowledge as one component of environmental literacy. *The Journal of Environmental Education*, 32(4), 33-42.
- Murphy, T. P. & Olson, A. M. (2008). *The third Minnesota report card on environmental literacy: A survey of adult environmental knowledge, attitudes and behavior*. Funded by Minnesota Pollution Control Agency, available from [www.mnseek.net](http://www.mnseek.net)
- NAS Insights. (2006). Generation Y: The Millennials ready or not, here they come. Retrieved from <http://www.NASRecruitment.com/TalentTips/NASinsights/GenerationY.pdf>
- National Weather Service NOAA (n.d.). Glossary. Retrieved June 3, 2010 from <http://www.crh.noaa.gov/glossary.php?letter=g>
- Noe, F. P. & Snow, R. (1989). Hispanic cultural influence on environmental concern. *Journal of Environmental Education*, 21, 27-34
- O'Brien, S. R. M. (2007). Indications of environmental literacy: using a new survey instrument to measure awareness, knowledge, and attitudes of university-aged students. Unpublished masters thesis, Iowa State University, Ames.

- O'Neal, G. (2007). Continents, cultures, curriculum: Some thoughts on the future of the profession. *Clothing and Textiles Research Journal*, 25(4), 375-379. Retrieved August 15, 2008 from <http://ctr.sagepub.com.proxy.lib.iastate.edu:2048/cgi/reprint/25/4/375>
- Orr, D. W. (2010). What is higher education for now? In *2010 State of the World* (pp. 75-82), New York: W.W. Norton & Company.
- Orr, D. W. (2004). *Earth in mind*. Washington: Island Press.
- Orr, D. W. (1992) *Ecological Literacy: Education and the Transition to a Postmodern World*. Albany, NY: State University of New York Press.
- Oskamp, S. (2002). Summarizing sustainability issues. In Schultz, W. P. & Schuck, P. (Eds.), *Psychology of sustainable development* (pp. 301-324). Boston: Kluwer Academic Publisher.
- Ottman, J. A. (1992). "Green consumerism: the trend is your friend." *Directors & Boards*. 47(4). Retrieved August 8, 2008, from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A12865989&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A12865989&source=gale&userGroupName=iastu_main&version=1.0).
- Our common future (n.d.). UN Documents: From A/42/427. Our Common Future: Report of the World Commission on Environment and Development [electronic version]. Retrieved June 4, 2010 from <http://www.un-documents.net/ocf-02.htm>
- Patagonia (n.d.). *The footprint chronicles*. Retrieved June 12, 2010 from [http://www.patagonia.com/web/us/footprint/index.jsp?slc=en\\_US&sct=US](http://www.patagonia.com/web/us/footprint/index.jsp?slc=en_US&sct=US)

Patten, M. L. (2007). *Understanding research methods: An overview of essentials* (6<sup>th</sup> ed.). Glendale, CA: Pyrczak Publishing.

Pogoda, D. M. (April 19, 1993). Retailers give a 'green' light to more style. *WWD*.

(165)74. p.1(2). Retrieved August 06, 2008, from

<http://find.galegroup.com/itx/infomark.do?&contentSet=IAC->

Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A13656632&

source=gale&userGroupName=iastu\_main&version=1.0

Resources (n.d.). Retrieved December 6, 2008 from

<http://sustainability.publicradio.org/resources/>

Robertson, P. A. B. (2007). Sustaining the river: A grounded theory exploration of the

bridges and barriers to environmental education in British Columbia (M.A.

dissertation, Royal Roads University, Canada, 2007). Dissertations & Theses:

A&I database. (Publication No. AAT MR24314).

Ruben, B. (Winter, 1993). Greening the ivory tower. *Environmental Action Magazine.*,

(24)4.p.15(3). Retrieved August 06, 2008, from

<http://find.galegroup.com/itx/infomark.do?&contentSet=IAC->

Documents&type=retrieve&tabID=T003&prodId=AONE&docId=A14008038&

source=gale&userGroupName=iastu\_main&version=1.0

Rudell, F. (2006). Shopping with a social conscience: Consumer attitudes toward

seashop labor. *Clothing and Textiles Research Journal*, 24(4), 282-296.

Ruff, C. L. & Olson, M. A. (2007). The attitudes of interior design students towards

sustainability. *International Journal of Technology and Design Education*

[online], 19, 67-77.

- Schmuck, P & Schulz, W. P. (2002). Sustainable development as a challenge for psychology. In Schultz, W. P. & Schuck, P. (Eds.) *Psychology of sustainable development* (pp.3-18). Boston: Kluwer Academic Publisher.
- Scully, M. G. (Jan 28, 2000).The rhetoric and the reality of 'sustainability'. *The Chronicle of Higher Education.*, (46)21. p.B9(2). Retrieved August 06, 2008, from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A59036001&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A59036001&source=gale&userGroupName=iastu_main&version=1.0)
- Schultz, P. W., & Zelezny, L. C. (July 1998). Values and proenvironmental behavior: a five-country survey. *Journal of Cross-Cultural Psychology*, (29)4, 540(19). Retrieved August 06, 2008 from: [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A20808055&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A20808055&source=gale&userGroupName=iastu_main&version=1.0)
- Selby, D. (Spring, 2000). A darker shade of green: The importance of ecological thinking in global education and school reform. *Theory into Practice* 39 (2), 88-96. Retrieved August 5, 2008 from <http://www.jstor.org/stable/1477282>
- Sia Su, G. L. (2008). Environmental worldview and concern of college students in the Philippines. *International Journal of Sustainability in Higher Education*, 9(1), 39-47.
- Stibbe, A. (2008). Words and worlds: New directions for sustainability literacy. *Language and Ecology [online]*, 2(3), 1-11.

- Stern, P. C., Dietz, T. & Guagnano, G. A. (1995). The new ecological paradigm in social-psychological context. *Environment and Behavior*, 27(6), 723-743.
- Stewart, Shadasani, P. N., & Rook, D. W. (2007). *Focus groups: Theory and practice*. California: Sage Publications, Inc.
- Strauss, A. & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. California: Sage Publications, Inc.
- Strauss, A. & Corbin, J. (1990). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. California: Sage Publications, Inc.
- Strauss, A. & Corbin, J. (1998). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds), *Strategies of qualitative inquiry*, pp. 158-183. California: Sage Publications, Inc.
- Students demand that collegiate apparel brands source from “sweatfree” factories and pay enough for living wages (2005, September 25). *US Newswire*. Retrieved June 6, 2009 from Academic OneFile.
- Sustainable consumption and production research (n.d.). The Center for Business Relationships, Accountability, Sustainability, & Society. Retrieved August 8, 2008 from [http://www.brass.cf.ac.uk/projects/11Sustainable\\_Consumption\\_and\\_Production.html](http://www.brass.cf.ac.uk/projects/11Sustainable_Consumption_and_Production.html)
- Sustainability (n.d.). Retrieved December 6, 2008 from <http://sustainability.publicradio.org/>
- 'Sustainability' From A to Z: a Round-Table Discussion.(Discussion).(2007, February 23). *The Chronicle of Higher Education*, (53)25. p.NA. Retrieved August 06,

2008 from [http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A159933443&source=gale&userGroupName=iastu\\_main&version=1.0](http://find.galegroup.com/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A159933443&source=gale&userGroupName=iastu_main&version=1.0)

Sweatshops (n.d.). Retrieved April 17, 2010 from

<http://www.greenamericatoday.org/programs/sweatshops/whattoknow.cfm>

Tang, E, Fryxell, G. E., Chow, C. S. F. (2004). Visual and verbal communication in design of an eco-label for green consumer products. *Journal of International Consumer Marketing*, 16(4). p. 85. Retrieved June 20, 2010 from

<http://proquest.umi.com.proxy.lib.iastate.edu:2048/pqdlink?did=778868001&sid=1&Fmt=2&clientId=60760&RQT=309&VName=PQD>

Tbilisi declaration (1977) (n.d.). Retrieved August 13 from

<http://www.gdrc.org/uem/ee/tbilisi.html>

*The consumer side of sustainability* (2008, April 22). The Hartman Group, Inc: HartBeat.

Retrieved November 14, 2008 from <http://www.hartman-group.com/hartbeat/2008-04-22>.

*The Hartman report on sustainability* (2007). The Hartman Group, Inc. Available from [www.hartman-group.com](http://www.hartman-group.com)

ThoughtRocket (2009, October 15). *10 top things every business leader should know about strategic sustainability*. Retrieved January 14, 2010 from

<http://www.thoughtrocket.com/blog/top-10-things-every-business-leader-should-know-about-strategic-sustainability/2009/10/15/>

Tobin, W. (2006). Pro-environmental behavior in the socio-historical structure of 21<sup>st</sup> century American culture: An investigation into identity dynamics. Abstract

from unpublished dissertation retrieved August 15, 2008, from Dissertation & Thesis: A &I Database. (Publication No. AAT 1441223).

UNESCO, n.d. *Education for sustainable development*. Retrieved on March 8, 2008 from [http://portal.unesco.org/education/en/ev.php-URL\\_ID=27234&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/education/en/ev.php-URL_ID=27234&URL_DO=DO_TOPIC&URL_SECTION=201.html)

Urban dictionary (n.d). Cool. Retrieved May 27, 2010 from <http://www.urbandictionary.com/define.php?term=cool>

Van Den Born, R. J. G. (2008). Rethinking nature: Public visions in Netherlands. *Environmental Values*, 17(1), 83-109.

Wilson, M. (2008, June). Going green. *Chain Store Age*, 84(6), 12.

World Bank (2010, January 21). *Prospects for the global economy*. Retrieved June 6, 2010 from <http://web.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/EXTGBLPROSPECTS/0,,menuPK:615470~pagePK:64218926~piPK:64218953~theSitePK:612501,00.html>

Worldwatch Institute Report (2006). *State of the world 2006*. New York: W.W. Norton & Company.

**APPENDIX A: IRB HUMAN SUBJECT REVIEW**



**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

Institutional Review Board  
Office for Responsible Research  
Vice President for Research  
1138 Pearson Hall  
Ames, Iowa 50011-2207  
515 294-4566  
FAX 515 294-4267

**DATE:** November 11, 2009

**TO:** Anupama Pasricha  
4715 Bristol Blvd.  
Eagan, MN 55123

**CC:** Dr. Sara J. Kadolph  
1064 LeBaron Hall

**FROM:** Office for Responsible Research

**TITLE:** Understanding of ecological literacy of textiles and clothing students:  
Development of a holistic scale

**IRB ID:** 09-505

**Submission Type:** New

**Study Review Date:** 11 November 2009

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as proposed in the IRB application**, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- **Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes**, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to **use only the approved study materials** in your research, including the **recruitment materials and informed consent documents that have the IRB approval stamp**.

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

<b>For IRB Use Only</b>	Review Date: <u>November 11, 2009</u>	IRB ID: <u>09-505</u>
	Approval Date: <u>November 11, 2009</u>	Length of Approval: <u>n/a</u>
	Approval Expiration Date: <u>n/a</u>	FULL Committee Review: <u>no</u>
	EXEMPT per 45 CFR 46.101(b): <u>2</u> Date: <u>11/11/09</u>	Minimal Risk: <u>✓</u>
	EXPEDITED per 45 CFR 46.110(b)	More than Minimal Risks: <u>      </u>
	Category <u>      </u> , Letter <u>      </u>	Project Closed Date: <u>      </u>

**INSTITUTIONAL REVIEW BOARD (IRB)** **IRB**  
**Application for Approval of Research Involving Humans** OCT 09 2009

**SECTION I: GENERAL INFORMATION**

Principal Investigator (PI): Anupama Pasricha		Phone: 651-9944684	Fax: <u>      </u>
Degrees: PhD	Correspondence Address: 4715 Bristol Blvd Eagan MN 55123		
Department: AESHM	Email Address: anupama@iastate.edu		
Center/Institute:	College: College of Human Sciences		
PI Level: <input type="checkbox"/> Faculty <input type="checkbox"/> Staff <input type="checkbox"/> Postdoctoral <input checked="" type="checkbox"/> Graduate Student <input type="checkbox"/> Undergraduate Student			
Alternate Contact Person: Dr. Sara J. Kadolph		Email Address: skadolph@iastate.edu	
Correspondence Address: 1064 LeBaron Hall		Phone: 515-2943012	
<b>Title of Project:</b> Understanding of ecological literacy of textiles and clothing students: Development of a holistic scale			
Project Period (Include Start and End Date): [mm/dd/yy][10/12/2009 (Upon IRH Approval)] to [mm/yy/dd][05/30/2010]			

<b>FOR STUDENT PROJECTS</b>	
Name of Major Professor/Supervising Faculty: Dr. Sara J. Kadolph	Signature of Major Professor/Supervising Faculty: <u>Sara J. Kadolph</u>
Phone: 515-2943012	Campus Address: 1064 LeBaron Hall
Department: AESHM	Email Address: skadolph@iastate.edu
Type of Project: (check all that apply)	
<input checked="" type="checkbox"/> Research	<input type="checkbox"/> Thesis
<input type="checkbox"/> Independent Study (490, 590, Honors project)	<input checked="" type="checkbox"/> Dissertation
	<input type="checkbox"/> Class project
	<input type="checkbox"/> Other. Please specify: <u>      </u>

**KEY PERSONNEL**

List all members and relevant experience of the project personnel. This information is intended to inform the committee of the training and background related to the specific procedures that each person will perform on the project.

NAME & DEGREE(S)	SPECIFIC DUTIES ON PROJECT	TRAINING & EXPERIENCE RELATED TO PROCEDURES PERFORMED, DATE OF TRAINING
✓ Anupama Pasricha, MSc, MEd	Principal Investigator	ISU Human subject Training, Sep. 10, 2003
✓ Sara Kadolph, PhD	Supervisor	ISU Human subject Training, Sep. 19, 2000

To list additional personnel please attach separate sheet.

**FUNDING INFORMATION**

<input type="checkbox"/>	Internally funded, please provide account number:
<input type="checkbox"/>	Externally funded, please provide funding source and account number:
<input type="checkbox"/>	Funding is pending, please provide OSPA Record ID on GoldSheet:
	Title on GoldSheet if different from above:
<input type="checkbox"/>	Other: (e.g., funding will be applied for later)
<input checked="" type="checkbox"/>	Student Project—no funding or funding provided by student

**SCIENTIFIC REVIEW**

Although the assurance committees are not intended to conduct peer review of research proposals, the federal regulations include language such as “consistent with sound research design,” “rationale for involving animals or humans” and “scientifically valuable research,” which requires that the committees consider in their review the general scientific relevance of a research study. Proposals that do not meet these basic tests are not justifiable and cannot be approved. If an assurance review committee(s) has concerns about the scientific merit of a project and the project was not competitively funded by peer review or was funded by corporate sponsors, the project may be referred to a scientific review committee. The scientific review committee will be an ad hoc and will consist of your ISU peers and outside experts as needed. If this situation arises, the PI will be contacted and given the option of agreeing that a consultant may be contacted or withdrawing the proposal from consideration.

☒ Yes   ☐ No   Has or will this project receive peer review?

If the answer is “yes,” please indicate who did or will conduct the review: **The research design and focus group interview protocol were reviewed by the student’s Program of Study Committee**

If a review was conducted, please indicate the outcome of the review: **The outcome was positive, minor modifications were made to the focus group protocol and research design**

**COLLECTION OR RECEIPT OF SAMPLES**

Will you be: (Please check all that apply.)

☐ Yes   ☒ No   Receiving samples from outside of ISU? See examples below.  
☐ Yes   ☒ No   Sending samples outside of ISU? See examples below.

Examples include: genetically modified organisms, body fluids, tissue samples, blood samples, pathogens.

If you will be receiving samples from or sending samples outside of ISU, please identify the name of the outside organization(s) and the identity of the samples you will be sending or receiving outside of ISU. If the outside organizations have not been identified, please check no for both questions above.

--

Please note that **some samples may require a USDA Animal Plant Health Inspection Service (APHIS) permit**, a USPHS Centers for Disease Control and Prevention (CDC) Import Permit for Etiologic Agents, a Registration for Select Agents, High Consequence Livestock Pathogens and Toxins or Listed Plant Pathogens, or a Material Transfer Agreement (MTA) [EH&S Website](#)

### ASSURANCE

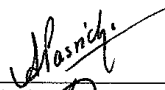
- I certify that the information provided in this application is complete and accurate and consistent with any proposal(s) submitted to external funding agencies.
- I agree to provide proper surveillance of this project to ensure that the rights and welfare of the human subject or welfare of animal subjects are protected. I will report any problems to the appropriate assurance review committee(s).
- I agree that I will not begin this project until receipt of official approval from all appropriate committee(s).
- I agree that modifications to the originally approved project will not take place without prior review and approval by the appropriate committee(s), and that all activities will be performed in accordance with all applicable federal, state, local and Iowa State University policies.

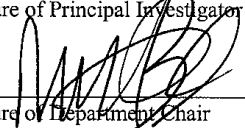
### CONFLICT OF INTEREST

A conflict of interest can be defined as a set of conditions in which an investigator's or key personnel's judgment regarding a project (including human or animal subject welfare, integrity of the research) may be influenced by a secondary interest (e.g., the proposed project and/or a relationship with the sponsor). ISU's Conflict of Interest Policy requires that investigators and key personnel disclose any significant financial interests or relationships that may present an actual or potential conflict of interest. By signing this form below, you are certifying that all members of the research team, including yourself, have read and understand ISU's Conflict of Interest policy as addressed by the ISU Faculty Handbook (<http://www.provost.iastate.edu/faculty>) and have made all required disclosures.

- ☐ Yes ☒ No Do you or any member of your research team have an actual or potential conflict of interest?  
☐ Yes ☐ No If yes, have the appropriate disclosure form(s) been completed?

### SIGNATURES

 10/6/09  
 Signature of Principal Investigator Date

 10/8/09  
 Signature of Department Chair Date

The Major Professor/Supervising Faculty member must sign the cover page in the section entitled "For Student Projects".

**PLEASE NOTE: Any changes to an approved protocol must be submitted to the appropriate committee(s) before the changes may be implemented.**

**Please proceed to SECTION II.**

## SECTION II: IRB SECTION - STUDY SPECIFIC INFORMATION

Please complete all of the following questions.

### STUDY OBJECTIVES

Briefly explain in **language understandable to a layperson** the specific aim(s) of the study.

Using a focus group interview we will explore participant knowledge, attitudes, and behaviors in the field of textiles and clothing as it relates to ecology and sustainability. The purpose of this study is to develop a scale of ecological literacy and sustainability.

### BENEFITS TO SOCIETY AND PARTICIPANTS

Explain in **language understandable to a layperson** how the information gained in this study will advance knowledge, and/or serve the good of society. Please also describe the direct benefits to research participants; if there are no direct benefits to participants, indicate that. **Note:** monetary compensation cannot be considered a benefit to participants.

This study will provide educators with information on ecological literacy of students who are majoring in textiles and clothing. This information will be useful for curriculum modification to include sustainability related course content. Participants may be benefited by the process of focus groups and discussion to clarify their own stance on ecology and sustainability. This study will contribute to literature by identifying the constructs that measure ecological literacy and student expectation from their college education in the field of textiles and clothing.

### PART A: PROJECT INVOLVEMENT

- 1) ☐ Yes ☒ No Is this project part of a Training, Center, Program Project Grant?  
Director Name: \_\_\_\_\_ Overall IRB ID: \_\_\_\_\_
- 2) ☒ Yes ☐ No Is the purpose of this project to develop survey instruments?
- 3) ☐ Yes ☒ No Does this project involve an investigational new drug (IND)? Number: \_\_\_\_\_
- 4) ☐ Yes ☒ No Does this project involve an investigational device exemption (IDE)? Number: \_\_\_\_\_
- 5) ☐ Yes ☒ No Does this project involve existing data or records?
- 6) ☐ Yes ☒ No Does this project involve secondary analysis?
- 7) ☐ Yes ☒ No Does this project involve pathology or diagnostic specimens?
- 8) ☒ Yes ☐ No Does this project require approval from another institution? Please attach letters of approval. **(applied for)**
- 9) ☐ Yes ☒ No Does this project involve DEXA/CT scans or X-rays?

### PART B: MEDICAL HEALTH INFORMATION OR RECORDS

- 10) ☐ Yes ☒ No Does your project require the use of a health care provider's records concerning past, present, or future physical, dental, or mental health information about a subject? The Health Insurance Portability and Accountability Act established the conditions under which protected health information may be used or disclosed for research purposes. If your project will involve the use of any past or present clinical information about someone, or if you will add clinical information to someone's treatment record (electronic or paper) during the study, you must complete and submit the Application for Use of Protected Health Information.

**PART C: ANTICIPATED ENROLLMENT**

<b>Estimated number of participants to be enrolled in the study</b> Total: 100      Males: 10      Females: 90	
Check if any enrolled participants are:	Check below if this project involves either:
<input type="checkbox"/> Minors (Under 18)	<input type="checkbox"/> Adults, non-students
Age Range of Minors:	<input type="checkbox"/> Minor ISU students
<input type="checkbox"/> Pregnant Women/Fetuses	<input checked="" type="checkbox"/> ISU students 18 and older
<input type="checkbox"/> Cognitively Impaired	<input type="checkbox"/> Other (explain)
<input type="checkbox"/> Prisoners	
<b>List estimated percent of the anticipated enrollment that will be minorities if known:</b>	
American Indian:	Alaskan Native:
Asian or Pacific Islander:	Black or African American:
Latino or Hispanic:	

**PART D: PARTICIPANT SELECTION**

Please use additional space as necessary to adequately answer each question.

11. Explain the procedures and rationale for selecting participants, including the inclusion and exclusion criteria (e.g., where will names come from, what persons will be included or excluded and why, etc.).

The current study will use a convenience sample from classes in the Department of Apparel, education studies and hospitality Management at Iowa State University (ISU) and the Department of Family, Consumer and Nutritional Sciences at St. Catherine University (SCU), St. Paul, Minnesota. The instructors of the classes will be contacted to announce the study. Students will sign up for specific times to meet.

12. Describe the procedures for contacting participants (e.g., letter, email, flyer, advertisements, phone call, etc.). Attach copies of any letters, scripts, flyers, or advertisements that will be used. Recruitment materials should include a statement of the voluntary and confidential nature of the research.

The participants will be contact via e-mail. Script attached.

**PART E: RESEARCH PLAN**

Include sufficient detail for IRB review of this project independent of the grant, protocol, or other documents.

13. The information needed here is similar to that in the "methods" or "procedures" sections of a research proposal—it should describe the flow of events that will occur during your interactions with subjects. Please describe in detail your plans for collecting data from participants, including all procedures, tasks, or interventions participants will be asked to complete during the research (e.g., random assignment, any conditions or treatment groups into which participants will be divided, mail survey or interview procedures, sensors to be worn, amount of blood drawn, etc.). This information is intended to inform the committee of the procedures used in the study and their potential risk. Please do not respond with "see attached" or "not applicable."

The principal investigator will contact the instructors of classes in the textiles and clothing program. Participants will be alerted in classes regarding the opportunity to take part in the focus group interview, and announcement will be posted on the class WebCT at ISU and class Blackboard at SCU. She/he will sign for a specific time to meet. The researchers will remind students by e-mail about data collection. At the beginning of the focus group interview, each student will be asked to complete an informed consent document and a short background questionnaire before the focus group discussion. The principal investigator will provide participants general instructions about the focus group interview. The conversation from the focus group interview will be audio-taped to be transcribed.

• Focus group interview questions include  
Opening question: 1. Will you briefly introduce yourself.

Keep your introduction to less than three minutes so that we have time for all to share. Start by giving your name and maybe sharing about the ecological concerns that are important challenges and why you do think so?

Other questions:

1. How do you personally understand the word/term "sustainability"? How can you define it?
2. What are ecological challenges we face these days? How do you feel about these challenges?
3. What aspects/issues does sustainability include? (Probing prompts: Can you think of sustainability beyond environmental issues? How about sustainable business and communities? Sustainable industry or business practices? Sustainable planet?)
4. What product comes to your mind when you think of sustainability? Why do they come to your mind? Please describe it.
5. Are there any fibers that you will not buy and why?
6. Are there any apparel materials/fabrics that you will not buy and why?
7. Provide the focus group with two shirts – one made with conventional cotton and one made with a more sustainable fiber such as organic cotton, recycled cotton, recycled polyester, rayon made from bamboo, or hemp. Ask the question: which one is more sustainable and why?
8. What specific actions in your personal life you see as sustainable efforts?
9. Is it easy to choose sustainable practices over traditional practices?
10. What do you see as hindrance to sustainability?
11. What specific actions being taken by fashion and apparel industry do you see as being sustainable or contributing to sustainability?
12. What would you like to learn in your courses about sustainability or what do you think is important to include in curriculum about sustainability? Please give specific examples with courses?

Prompt for additional information (Applicable to all questions):

What do you mean by that?

Can you elaborate on that or explain it in a little more detail?

Can you give me an example?

Can you say more about that?

13. Winding down:

- Do you have any further suggestions or contributions? Is there anything that we have left out?
- Thank you for your time and opinions. You have made an important contribution to my research.

14. For studies involving pathology/diagnostic specimens, indicate whether specimens will be collected prospectively and/or already exist "on the shelf" at the time of submission of this review form. If prospective, describe specimen procurement procedures; indicate whether any additional medical information about the subject is being gathered, and whether specimens are linked at any time by code number to the participant's identity. If this question is not applicable, please type N/A in the response cell.

N/A

15. For studies involving deception or where information is intentionally withheld from participants, such as the full purpose of the study, please explain how persons will be deceived or what information will be withheld. Additionally, a waiver of the applicable elements of consent will be needed. Please complete the "Waiver of Elements of Consent" form (available at the IRB website). If this question is not applicable, please type N/A in the response cell.

N/A

**PART F: CONSENT PROCESS**

A copy of any translated informed consent documents and an English version should be submitted with the application. Provide the name of the individual who translated the consent documents, their qualifications for translating documents, and in particular informed consent documents, below.

If the consent process does not include documented consent, a waiver of documentation of consent must be requested. If any information about the study is intentionally withheld or misleading (i.e., deception is used), a waiver of the elements of consent must be requested. Forms for requesting waivers are available at the IRB website.

16. Describe the consent process for adult participants (those who are age 18 and older).

The consent form will be provided to participants at the beginning of the focus group interview. The principal investigator will clearly indicate that if participants do not feel comfortable to participate in the focus group, they can quit anytime. Also, if they are under 18, they will be asked not to participate in the focus group interview.

17. If your study involves minor children, please explain how parental consent will be obtained prior to enrollment of the minor(s).

N/A

18. Please explain how assent will be obtained from minors (younger than 18 years of age), prior to their enrollment. Also, please explain if the assent process will be documented (e.g., a simplified version of the consent form, combined with the parental informed consent document). According to the federal regulations assent "...means a child's affirmative agreement to participate in research. Mere failure to object should not, absent affirmative agreement, be construed as assent."

N/A

**PART G: DATA ANALYSIS**

19. Describe how the data will be analyzed (e.g. statistical methodology, statistical evaluation, statistical measures used to evaluate results).

Qualitative data analysis process will be followed. The interviews will be transcribed line by line, coded for themes and analyzed following grounded theory approach. The analysis may indicate new questions to add to the study.

**PART H: RISKS**

The concept of risk goes beyond physical risk and includes risks to participants' dignity and self-respect as well as psychological, emotional, legal, social or financial risk.

20. ☐ Yes ☒ No Is the **probability** of the harm or discomfort anticipated in the proposed research greater than that encountered ordinarily in daily life or during the performance of routine physical or psychological examinations or tests?

21. ☐ Yes ☒ No Is the **magnitude** of the harm or discomfort greater than that encountered ordinarily in daily life, or during the performance of routine physical or psychological examinations or tests?

22. Describe any risks or discomforts to the participants and how they will be minimized and precautions taken. Do **not** respond with N/A. If you believe that there will not be risk or discomfort to participants, you must explain why.



There are no foreseeable risks from participating in this study. The principal investigator will inform participants that if they do not feel comfortable to respond to the interview questions, they can quit anytime. Also, the participants will be informed that their responses will not be associated with their personal information.

23. If this study involves vulnerable populations, including minors, pregnant women, prisoners, the cognitively impaired, or those educationally or economically disadvantaged, what additional protections will be provided to minimize risks?

The focus group interview will take from an hour to an hour and 15 minutes. Any pregnant woman may voluntarily participate in the focus group interview. The principal investigator will clearly explain the process of the focus group interview and inform that they can discontinue anytime if they feel any risks or discomforts.

#### PART I: COMPENSATION

24. ☒ Yes ☐ No Will participants receive compensation for their participation? If yes, please explain.

Do not make the payment an inducement, only a compensation for expenses and inconvenience. If a person is to receive money or another token of appreciation for their participation, explain when it will be given and any conditions of full or partial payment. (E.g., volunteers will receive \$5.00 for each of the five visits in the study or a total of \$25.00 if he/she completes the study. If a participant withdraws from participation, they will receive \$5.00 for each of the visits completed.) It is considered undue influence to make completion of the study the basis for compensation.

1. \$10 University Bookstore gift certificate to participants
2. 10 Extra credit points toward course grade to participants. The instructor will offer an alternative activity-Summarizing an article about sustainability and textiles, for extra credit to those students who do not fit in the focus groups.

#### PART J: CONFIDENTIALITY

25. Describe below the methods that will be used to ensure the confidentiality of data obtained. (For example, who has access to the data, where the data will be stored, security measures for web-based surveys and computer storage, how long data or specimens will be retained, anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased, etc.)

Information obtained will be kept strictly confidential. The conversation from the focus group interview will be audio-taped to be transcribed and will not be associated with participants' personal information. The audio-tapes will be retained for one year and destroyed after completing the research.

**PART K: REGISTRY PROJECTS**

26. To be considered a registry: (1) the individuals must have a common condition or demonstrate common responses to questions; (2) the individuals in the registry might be contacted in the future; and (3) the names/data of the individuals in the registry might be used by investigators other than the one maintaining the registry.

☐ Yes ☒ No Does this project establish a registry?

If "yes," please provide the registry name below.

**Checklist for Attachments**

Listed below are the types of documents that should be submitted for IRB review. Please check and attach the documents that are applicable for your study:

- ☒ A copy of the informed consent document **OR** ☐ Letter of introduction containing the elements of consent  
☐ A copy of the assent form if minors will be enrolled  
☐ Letter of approval from cooperating organizations or institutions allowing you to conduct research at their facility  
☒ Data-gathering instruments (including surveys)  
☒ Recruitment fliers, phone scripts, or any other documents or materials participants will see or hear

The original signed copy of the application form and one set of accompanying materials should be submitted for review. **Federal regulations require that one copy of the grant application or proposal be submitted for comparison with the application for approval.**

**FOR IRB USE ONLY:**

Action by the Institutional Review Board (IRB):

- ☐ Project approved. Date: \_\_\_\_\_  
☒ Project is exempt. Date: 11/11/09  
☐ Project not approved. Date: \_\_\_\_\_  
☐ IRB approval is not required. Date: \_\_\_\_\_  
☐ Project is not research according to the federal definition.  
☐ Project does not include human subjects as defined by the federal regulations.

Henry A. Aguirre, Jr.  
 IRB Approval Signature

November 11, 2009  
 Date

**SECTION III: ENVIRONMENTAL HEALTH AND SAFETY INFORMATION**

- ☐ Yes ☒ No Does this project involve human cell or tissue cultures (primary OR immortalized), or human blood components, body fluids or tissues?

**PART A: HUMAN CELL LINES**

- ☐ Yes ☒ No Does this project involve human cell or tissue cultures (primary OR immortalized cell lines/strains) that have been documented to be free of bloodborne pathogens? If the answer is "yes," please answer question 1 below and attach copies of the documentation.

- 1) Please list the specific cell lines/strains to be used, their source and description of use.

CELL LINE	SOURCE	DESCRIPTION OF USE

Add New Row

- 2) Please refer to the ISU "Bloodborne Pathogens Manual," which contains the requirements of the OSHA Bloodborne Pathogens Standard. Please list the specific precautions to be followed for this project below (e.g., retractable needles used for blood draws):

N/A

**Anyone working with human cell lines/strains that have not been documented to be free of bloodborne pathogens is required to have Bloodborne Pathogen Training annually. Current Bloodborne Pathogen Training dates must be listed in Section I for all Key Personnel. Please contact Environmental Health and Safety (294-5359) if you need to sign up for training and/or to get a copy of the Bloodborne Pathogens Manual**  
(<http://www.ehs.iastate.edu/cms/default.asp?action=article&ID=214>)

**PART B: HUMAN BLOOD COMPONENTS, BODY FLUIDS OR TISSUES**

- ☐ Yes ☒ No Does this project involve human blood components, body fluids or tissues? If "yes," please answer all of the questions in the "Human Blood Components, Body Fluids or Tissues" section.

- 1) Please list the specific human substances used, their source, amount and description of use.

SUBSTANCE	SOURCE	AMOUNT	DESCRIPTION OF USE
<i>E.g., Blood</i>	<i>Normal healthy volunteers</i>	<i>2 ml</i>	<i>Approximate quantity, assays to be done.</i>

Add New Row

- 2) Please refer to the ISU "Bloodborne Pathogens Manual," which contains the requirements of the OSHA Bloodborne Pathogens Standard. Specific sections to be followed for this project are:

N/A

**Anyone working with human blood components, body fluids or tissues is required to have Bloodborne Pathogen Training annually. Current Bloodborne Pathogen Training dates must be listed in Section I for all Key Personnel. Please contact Environmental Health and Safety (294-5359) if you need to sign up for training and/or to get a copy of the Bloodborne Pathogens Manual (<http://www.ehs.iastate.edu/cms/default.asp?action=article&ID=214>).**

## **CONSENT FORM FOR PHASE I OF: Understanding of ecological literacy of textiles and clothing students: Development of a holistic scale**

This form describes a research project. It has information to help you decide whether or not you wish to participate. Research studies include only people who choose to take part—your participation is completely voluntary. Please discuss any questions you have about the study or about this form with the project staff before deciding to participate.

### **Who is conducting this study?**

This study is being conducted by

Anupama Pasricha, Student, Iowa State University, Department of Apparel, Educational Studies and Hospitality Management, 31 Mackay Hall, Ames, IA 50011

Sara J. Kadolph, Professor, Iowa State University, Department of Apparel, Educational Studies and Hospitality Management, 1064 LeBaron Hall, Ames, IA 50011

### **Why am I invited to participate in this study?**

You are being asked to take part in this study because you are a textiles and clothing major enrolled in TC 165.

### **What is the purpose of this study?**

This research explores student knowledge, attitudes, and behaviors in the field of textiles and clothing as it relates to ecology and sustainability. The results will potentially provide valuable information to educators about the student knowledge, attitudes and behavior as it relates to ecology and sustainability. In addition it will provide information to educator about student expectations for course content related to ecology and sustainability.

### **What will I be asked to do?**

If you agree to participate, you will be asked to complete this informed consent form, a background information sheet and participate in one 60-75 minute long focus group discussion on ecological sustainability. Focus group will have 6-8 participants in all. The principal investigator will audio tape the discussion.

### **What are the possible risks and benefits of my participation?**

There are no possible risks of your participation

Benefits – You will receive a \$10 gift certificate to the university campus bookstore and extra credit points toward your course grade in TC 165. In addition, you may benefit from your involvement in a focus group and the discussion that helps you clarify your own stance on ecology and sustainability. We hope that this research will benefit society by adding to the body of knowledge in the field of textiles and clothing. It will provide an assessment tool to educators that will facilitate curriculum modification to include sustainability related course content so that

the graduates join the professional work force keeping ecology and sustainability in the fore front.

**How will the information I provide be used?**

The information you provide will be used for the following purposes, only the principal investigator will have access to the focus group discussion audio recording, transcription, and your background information. The investigator will analyzed the data to find themes that emerge through the focus group discussion process.

**What measures will be taken to ensure the confidentiality of the data or to protect my privacy?**

Records identifying participants will be kept confidential to the extent allowed by applicable laws and regulations. Records will not be made publicly available. However, auditing departments of Iowa State University, and the ISU Institutional Review Board (a committee that reviews and approves research studies with human subjects) may inspect and/or copy your records for quality assurance and analysis. These records may contain private information. To ensure confidentiality to the extent allowed by law, the following measures will be taken; you will be assigned pseudonyms instead of using your names. When the results are published, your identity will remain confidential. The data will be stored in personal computer as a password protected file. The audio files and computer files will be erased one year after the completion of the study.

**Will I incur any costs from participating or will I be compensated?**

You will not have any costs from participating in this study. You will be compensated for participating in this study in two ways. 1) Extra credit points toward course grade for TC 165 and 2) A \$10 gift certificate to a campus bookstore. Both of these tokens of appreciation will be awarded after the successful completion of a focus group session.

If you are below the age of 18 or do not want to participate in the focus group interview, an alternative extra credit activity will be available for TC 165.

**What are my rights as a human research participant?**

Participating in this study is completely voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason, without penalty or negative consequences. You can skip any questions that you do not wish to answer during the focus group discussion.

By participating you will be doing a favor to the researcher. If you choose not to participate, that decision will have no impact on you as a student.

**Whom can I call if I have questions or problems?**

ISU IRB # 1	09-505
EXEMPT DATE:	11 November 2009

You are encouraged to ask questions at any time during this study.

- For further information about the study contact Anupama Pasricha at 651-994 4684/  
[anupama@iastate.edu](mailto:anupama@iastate.edu) or Major Professor Sara Kadolph at 515-294 3012  
[skadolph@iastate.edu](mailto:skadolph@iastate.edu)
- If you have any questions about the rights of research subjects or research-related injury,  
please contact the IRB Administrator, (515) 294-4566, [IRB@iastate.edu](mailto:IRB@iastate.edu), or Director,  
(515) 294-3115, Office for Responsible Research, 1138 Pearson Hall, Iowa State  
University, Ames, Iowa 50011.

ISU IRB # 1	09-505
EXEMPT DATE:	11 November 2009

**Consent and Authorization Provisions**

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant's Name (printed) \_\_\_\_\_

\_\_\_\_\_  
(Participant's Signature)

\_\_\_\_\_  
(Date)

**Investigator Statement**

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

\_\_\_\_\_  
(Signature of Person Obtaining Consent)

\_\_\_\_\_  
(Date)



**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

Institutional Review Board  
Office for Responsible Research  
Vice President for Research  
1138 Pearson Hall  
Ames, Iowa 50011-2207  
515 294-4566  
FAX 515 294-4267

**DATE:** November 30, 2009

**TO:** Anupama Pasricha  
4715 Bristol Blvd.  
Eagan, MN 55123

**CC:** Sara J. Kadolph  
1064 LeBaron Hall

**FROM:** Office for Responsible Research

**TITLE:** Understanding of ecological literacy of textiles and clothing students:  
Development of a holistic scale

**IRB ID:** 09-505

**Submission Type:** Modification

**Exemption Date:** 30 November 2009

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as proposed in the IRB application**, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- **Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes**, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to **use only the approved study materials** in your research, including the **recruitment materials and informed consent documents that have the IRB approval stamp.**

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

### SECTION III: PROPOSED MODIFICATIONS OR CHANGES

If this application is to request approval for modification or changes to your project, please complete Section I: Key Personnel and Section III.

The submission of a modification form is required whenever changes are made to an approved project. This includes but is not limited to a title change, changes in investigators, resubmission of a grant proposal involving changes to the original proposal, changes in the funding source, changes of an instrument, advertisements, reports from a data safety and monitoring board, addition of a test instrument, etc. **NOTE: All changes must be submitted and approved by the IRB prior to their implementation, unless the change is necessary to protect the safety of participants.**

1. Does your project require approval from another institution, please attach letters of approval?

☐ Yes      ☐ No

2. The following modification(s) are being made (check all that apply):

- ☐ Change in protocol.  
☒ Change in type or total number of participants. New anticipated total: No change ( 100)  
☐ Change in informed consent document.  
☐ Change in co-investigator(s).      New co-PI name:

Signature of new Co-PI: \_\_\_\_\_

- ☐ Change in funding source/sponsor. Please attach copy of grant proposal sent to new funding agency.  
☐ Other (e.g., change in project title, adding new materials, adding advertisement, etc.)

NOTE: If the change involves a new Principal Investigator, a new Human Subjects Review form must be submitted.

3. Describe the modification(s) indicated above in sufficient detail for evaluation independent of any other documents. When submitting revised documents please submit one clean copy of the new document and a copy with the changes highlighted.

The study will be announced in an additional class TC 372
-----------------------------------------------------------

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

Institutional Review Board  
Office for Responsible Research  
Vice President for Research  
1138 Pearson Hall  
Ames, Iowa 50011-2207  
515 294-4566  
FAX 515 294-4267

**DATE:** December 8, 2009

**TO:** Anupama Pasricha  
4715 Bristol Blvd.  
Eagan, MN 55123

**CC:** Sara J. Kadolph  
1064 LeBaron Hall

**FROM:** Office for Responsible Research

**TITLE:** Understanding of ecological literacy of textiles and clothing students:  
Development of a holistic scale

**IRB ID:** 09-505

**Submission Type:** Modification

**Exemption Date:** 8 December 2009

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as proposed in the IRB application**, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- **Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes**, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to **use only the approved study materials** in your research, including the **recruitment materials and informed consent documents that have the IRB approval stamp.**

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

### SECTION III: PROPOSED MODIFICATIONS OR CHANGES

If this application is to request approval for modification or changes to your project, please complete Section I: Key Personnel and Section III.

The submission of a modification form is required whenever changes are made to an approved project. This includes but is not limited to a title change, changes in investigators, resubmission of a grant proposal involving changes to the original proposal, changes in the funding source, changes of an instrument, advertisements, reports from a data safety and monitoring board, addition of a test instrument, etc. **NOTE: All changes must be submitted and approved by the IRB prior to their implementation, unless the change is necessary to protect the safety of participants.**

1. Does your project require approval from another institution, please attach letters of approval?

☐ Yes ☒ No

2. The following modification(s) are being made (check all that apply):

- ☐ Change in protocol.  
☒ Change in type or total number of participants. New anticipated total: 100  
☐ Change in informed consent document.  
☐ Change in co-investigator(s). New co-PI name:

Signature of new Co-PI: \_\_\_\_\_

- ☐ Change in funding source/sponsor. Please attach copy of grant proposal sent to new funding agency.  
☐ Other (e.g., change in project title, adding new materials, adding advertisement, etc.)

NOTE: If the change involves a new Principal Investigator, a new Human Subjects Review form must be submitted.

3. Describe the modification(s) indicated above in sufficient detail for evaluation independent of any other documents. When submitting revised documents please submit one clean copy of the new document and a copy with the changes highlighted.

The study will have additional individual interviews with textiles and clothing educators and industry professionals who are experts in the field of sustainability. The experts will be identified based on their publications, conference presentation or company websites in addition to snowball sampling. They will be contacted through e-mail (E-mail message draft attached). A modified version of interview protocol will be used (Modified interview protocol attached). I will be interviewing 5-10 experts. An additional verbal and written consent document is attached (The verbal consent can be used before starting the interview).

**Understanding of ecological literacy of textiles and clothing students: Development of a holistic scale**

**E-mail message to experts**

Dear XXXXX,

I am a doctoral candidate at Iowa State University. My committee members include Dr. Sara Kadolph, Dr. Mary Lynn Damhorst, Dr. Elena Karpova, Dr. Larry Ebbers, and Dr. Laurie Nichols. The proposed title of my dissertation is "Understanding of ecological literacy of textiles and clothing students: Development of a holistic scale." For the purpose of data collection I am interviewing textiles and clothing students in focus groups. I would like to have expert input by interviewing textiles and clothing educators and industry professionals. You are accomplished in the field of ecology/social responsibility/sustainability and my study will be greatly benefited by your participation. Would you be willing to participate by a phone or e-mail interview that should not take more than 20 minutes of your valuable time? If a phone interview is preferred, I will send the questions before the interview so you have a chance to read them and think about your response. I wait to hear from you at your earliest convenience.

Thank you!

Anupama Pasricha  
Doctoral Candidate  
Family and Consumer Sciences Education  
Iowa State University, Ames

**Understanding of ecological literacy of textiles and clothing students: Development of a holistic scale**

***Verbal Consent***

Hello, my name is Anupama Pasricha and I am a graduate student at ISU conducting a research study on "Understanding of ecological literacy of textile and clothing college students: Development of a holistic scale." I had sent an e-mail request soliciting your participation and you choose this time for the interview.

As mentioned in the e-mail, this interview has been designed to take approximately 20 minutes of your time, however, please feel free to expand on any question. Your participation is voluntary, and you may answer only those questions you want to answer. You may stop at any time during the course of the interview.

I plan to audio-tape the interview using a digital recorder that can be directly connected to phone. If you are not comfortable with audio recording, please say so and I will not audio-tape the interview. The audiotape will be transcribed. The information will be stored in my password-protected personal computer and only I will have access to this information. Your confidentiality will be maintained throughout the study. The data will be destroyed after the completion of study. The study is scheduled to be completed within 12 months.



**November 5, 2009**

Anupama Pasricha

4715 Bristol Boulevard

Eagan, MN 55123

Re: IRB#09-EXP-33 Understanding the ecological literacy of textiles and clothing students: Development of a holistic scale.

Dear Professor Pasricha:

Thank you for submitting your research proposal to the St. Catherine University Institutional Review Board (IRB) for review. The primary purpose of the IRB is to safeguard and respect the rights and welfare of human subjects in scientific research. In addition, IRB review serves to promote quality research and to protect the researcher, the advisor, and the college.

On behalf of the IRB, I am responding to your request for approval to use human subjects in your research. Two members of the St. Kate's IRB have read and commented on your application as an expedited review. As a result, the project will be approved when the following stipulations are met:

- The extra credit should be available to anyone who is not eligible or does not choose to participate. This is clear in your email text and consent form. In the class announcement, please change the 2<sup>nd</sup> bullet to read, "If you are below the age of 18, *choose not to participate*, or cannot get into..."
- The following edits relate to your consent form.
  - In the introduction, please verify that you will use a different consent form with the correct course number for Iowa State vs. the University of Minnesota.

- Under procedures, the reviewers felt the instructions would be more clear as follows: “If you decide to participate, you will be asked *to sign* the consent form, complete a background information sheet...” The 2<sup>nd</sup> sentence needs an additional word: “*Each* focus group will have 6-8 participants.”
- In the paragraph under benefits, it is usually advisable to list direct benefits only. The reviewers felt the 3<sup>rd</sup> and 4<sup>th</sup> sentence (“We hope that this research...in the fore front.”) should be moved to the background information section as they are more reflective of the purpose of the study. The final sentence under benefits needs an additional word, “However, if *you* decide...”
- Under voluntary nature of the study, please delete the 1<sup>st</sup> sentence in the 2<sup>nd</sup> paragraph, “By participating you will...” The purpose and benefits of the study are covered elsewhere in the consent document.

Please respond to the above stipulations with a copy of the revised consent document and class announcement. Send your response to Lynne Linder, IRB Assistant, Mendel 112 (mail stop 4068) at St. Catherine University, with an electronic copy to me. When we have received and reviewed your reply, I will respond to you by e-mail. You should not initiate your data collection until you receive written IRB approval. **Please use the reference number listed above in any contact with the IRB.**

If you have questions or concerns about these stipulations, please feel free to contact me by phone (X 7739), email ([jsschmitt@stkate.edu](mailto:jsschmitt@stkate.edu)), or campus mail (mail stop MPLS).

We appreciate your work ensuring appropriate treatment of your research subjects. Thank you for working cooperatively with the IRB; we will be waiting to hear from you.

Sincerely,



John Schmitt, PT, PhD

Chair, Institutional Review Board





## ST. CATHERINE UNIVERSITY

November 6, 2009

Anupama Pasricha  
4715 Bristol Boulevard  
Eagan, MN 55123

Re: IRB#09-EXP-33 Understanding the ecological literacy of textiles and clothing students:  
Development of a holistic scale.

Dear Professor Pasricha:

Thank you for your prompt reply to the St. Catherine University Institutional Review Board (IRB) letter of 11-5-09 outlining the stipulations required for approval of the research project listed above. You have addressed all concerns and clarifications as requested. As a result, your project has been approved.

Please note that all research projects are subject to continuing review and approval. You must notify the IRB of any research changes that will affect your subjects. You should not initiate these changes until you receive written IRB approval. Also, you should report any adverse events to the IRB. Please use the reference number listed above in any contact with the IRB. This approval is effective for one year from this date. If the research will continue beyond one year, you must submit a request for IRB renewal. At the end of the project, please complete a project completion form. These forms are available on the St. Catherine University IRB website.

If you have questions or concerns about these stipulations, please feel free to contact me by phone (X 7739), email (jsschmitt@skate.edu), or campus mail (mail stop MPLS). We appreciate your work ensuring appropriate treatment of your research subjects. Good luck with your research.

Sincerely,

John Schmitt, PT, PhD  
Chair, Institutional Review Board

## **APPENDIX B: Class Announcement**

### **Research Participants Needed**

#### **Ecology and Sustainability Focus Group Interviews**

A research study on knowledge, attitudes and behaviors related to ecology and sustainability

#### **Eligibility requirements:**

Older than 18 years old

- If you are interested in the focus group interview, sign-up on the sheets provided in class
- If you are below the age of 18 or cannot get into limited spaces available, an alternative extra credit activity-Summarizing an article about sustainability and textiles, is available for FASH 2050.

Your participation in this study is completely voluntary. Your responses will be kept in strict confidence. Results will be published in summary form only. You can discontinue if you don't feel comfortable. The focus group interview will last from one hour to one hour 15 minutes.

### APPENDIX C: E-mail Message

Title: Focus group interview: Study on ecology and sustainability

Dear interviewees:

This is a reminder e-mail concerning the focus group interview that you have signed up for.

The focus group interview will be held,

**When: Sunday December 6, 2009 1-3 PM**

**Where: 29 MacKay**

As announced in class, the purpose of the focus group to explore the knowledge, attitudes, and behavior related to ecology and sustainability in the field of textiles and clothing. For your participation in the focus group, you will be given 10 extra credit points. However, if you are below the age of 18 or do not want to participate in the focus group interview, an alternative extra credit activity is available for TC 372

Your participation in this study is completely voluntary. Your responses will be kept in strict confidence. Results will be published in summary form only. You can discontinue if you don't feel comfortable. The focus group interview will last for one hour to one hour 15 minutes.

If you have any questions about this study, please feel free to contact Anupama Pasricha at [anupama@iastate.edu](mailto:anupama@iastate.edu). If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, [IRB@iastate.edu](mailto:IRB@iastate.edu), or Director, (515) 294-3115, Office for Responsible Research, 1138 Pearson Hall, Iowa State University, Ames, Iowa 50011.

We thank you for your willingness to participate in this study.

*Anupama Pasricha, Student, Iowa State University, Department of Apparel, Educational Studies and Hospitality Management, 31 MacKay Hall, Ames, IA 50011*

*Sara J. Kadolph, Professor, Iowa State University, Department of Apparel, Educational Studies and Hospitality Management, 1064 LeBaron Hall, Ames, IA 50011*

## **APPENDIX D: MODERATOR'S GUIDE (*from Vaughn et al, 1996*)**

### ***Moderator training***

I will participate in a moderator training program to be well prepared to perform the role effectively.

### ***Welcome***

“Welcome and thank you for coming to this focus group. Each of you has been requested to participate because your point of view is important to this study. I know that you are very busy and I greatly appreciate your contribution to this project. This group interview is not a test, nor should it in any way be viewed as a series of questions with right or wrong answers. I value your input and opinion on this matter.”

### ***Purpose***

“The purpose of this focus group interview is to understand your ideas and opinions and engagement in the topic of ecological sustainability.”

### ***Guidelines***

“There are a few guidelines I would like to ask you to follow during the focus group interview. First, you do not need to speak in a particular order. When you have something to say, please do so. Second, please do not speak while someone else is talking. Third, remember that there are many people in group and that I want to obtain a point of view from each one of you. Fourth, you do not need to agree with what everyone or anyone in the group says, but, you do need to state your point of view without making any negative comments. Fifth, please say your name before speaking. Finally, we have limited time together; I may need to stop you and to redirect our discussion. Do you have any questions?... Let us begin.”

***Warm-up***

“During the initial part of this session you had an opportunity to meet and mingle with the others in this group and ask each other questions. You probably have seen each other somewhere in the college or department or may be as a peer in your own classroom.”

Some of you may already have experience of interacting in a group for class discussions.

Clarification of terms? Or simple questions. Tie up with the first element?. Many of you may be familiar with the term going green/ecological sustainability/social responsibility/environmental responsibility/corporate responsibility/carbon footprint? In your own words, what do you say going green means? Difficult questions will follow.

***Wrap-up***

“Unfortunately we are close to being out of time. Let me attempt to summarize the key ideas I have heard. I will list the key ideas. What would you like to add to my summary?”

***Member Check***

I will check with each member on key issues so as to gauge if each member feels the same way by asking about the issue and noting each member’s reactions.

***Closing statements***

“As we come to a close, I need to remind each of you that the audiotape will be transcribed, you will be assigned false names for the purpose of transcript and data analysis so that you will remain anonymous. Are there any questions I can answer?”

“Thank you for your contribution to this project. This was a very successful interview and your honest and forthright responses will be an enormous asset to my work. I very much appreciate your involvement.”

### **APPENDIX E: *Focus group background information***

Please answer the following questions

1. Are you male? \_\_\_\_ Female? \_\_\_\_
2. What is your age? \_\_\_\_
3. What is your school major? \_\_\_\_\_
4. What year are you in?
  - Freshman \_\_\_\_\_
  - Sophomore \_\_\_\_\_
  - Junior \_\_\_\_\_
  - Senior \_\_\_\_\_
5. What is your ethnic background? Please check all that apply.
  - Black or African American \_\_\_\_\_
  - Caucasian or European American \_\_\_\_\_
  - Latina/o or Hispanic American \_\_\_\_\_
  - Native American \_\_\_\_\_
  - Asian American \_\_\_\_\_
  - Other (Please specify) \_\_\_\_\_
6. In what kind of environment did you spend the majority of your childhood?
  - Rural farm \_\_\_\_\_
  - Rural non-farm \_\_\_\_\_
  - Suburban \_\_\_\_\_
  - Small town( less than 2,500 people) \_\_\_\_\_
  - Small city (2,500-50,000 people) \_\_\_\_\_
  - Large city \_\_\_\_\_
  - Other (Please specify) \_\_\_\_\_

## **APPENDIX F: *Focus group interview protocol***

Date:

Venue:

Moderator:

Focus group participants:

Opening question: Will you briefly introduce yourself.

Keep your introduction to less than three minutes so that we have time for all to share. Start by giving your name and maybe sharing about the ecological concerns that are important challenges and why you do think so?

Other questions:

1. How do you personally understand the word/term “sustainability”? How can you define it?
2. What are ecological challenges we face these days? How do you feel about these challenges?
3. What issues does sustainability include? (Probing prompts: Can you think of sustainability beyond environmental issues? How about sustainable business and communities? Sustainable industry or business practices? Sustainable planet?)
4. What product comes to your mind when you think of sustainability? Why do they come to your mind? Please describe it.
5. Are there any fibers that you will not buy and why?
6. Are there any apparel materials/fabrics that you will not buy and why?
7. Provide the focus group with two shirts – one made with conventional cotton and one made with a more sustainable fiber such as organic cotton, recycled cotton, recycled polyester, rayon made from bamboo, or hemp. Ask the question: which one is more sustainable and why?
8. What specific actions in your personal life you see as sustainable efforts?
9. Is it easy to choose sustainable practices over traditional practices? What are easy and what are hard?
10. What do you see as hindrance to sustainability?
11. What specific actions being taken by fashion and apparel industry do you see as being sustainable or contributing to sustainability?
12. What would you like to learn in your courses about sustainability or what do you think is important to include in curriculum about sustainability? Please give specific examples with courses?

Prompt for additional information (Applicable to all questions):

What do you mean by that? Can you elaborate on that or explain it in a little more detail? Can you give me an example? Can you say more about that?

13. Winding down:

- Do you have any further suggestions or contributions? Is there anything that we have left out?
- Thank you for your time and opinions. You have made an important contribution to my research.

## **APPENDIX G: Interview Protocol for expert interviews**

1. How would you personally define the term “sustainability”?
2. What issues does sustainability include? Please explain.
3. What ecological challenges do we face these days? What is your opinion about these challenges?
4. What product(s) come(s) to your mind when you think of sustainability? Please describe it/them. What makes it/them sustainable?
5. Based on sustainability, are there any fibers/fabrics that you will not buy? Please explain your reasoning.
6. Based on sustainability, are there any apparel materials that you will not buy? Please explain your reasoning.
7. What information on apparel labels is important to you and how do you use it?
8. If you have three t-shirts, one made of 50% Recycled polyester +50% recycled cotton (Made in USA), another one made of 70% viscose from bamboo +30% Organic Cotton (Made in China), and a third one made of 100% cotton (made in Haiti) which one is the most sustainable? Please explain your reasoning.
9. What specific actions in your personal day-to-day life do you see as sustainable efforts?
10. What do you see as a challenge to sustainability? Any thoughts on how it can be changed?
11. What specific actions are being taken by fashion and apparel industry do you see as being sustainable or contributing to sustainability?
12. What more would you like to learn about sustainability?
13. What do you think is important to include in the textiles and clothing curriculum about sustainability? If possible, please give specific examples with courses.
14. Are there issues or concerns you have about sustainability and preparing new professionals for the field that have not been addressed in the questions above and your responses? If yes, please describe them.

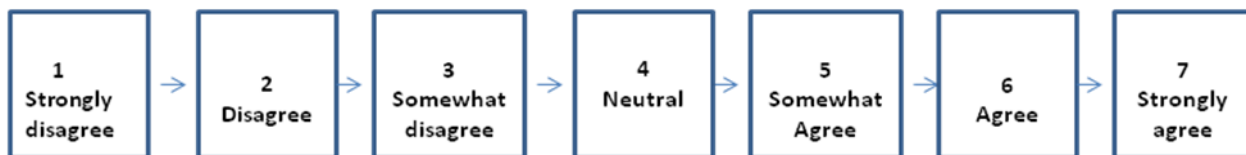


**APPENDIX H: *Question examples from literature*****Ecological literacy and meaning of sustainability**

(Examples of questions that may be included in the final survey instrument)

### Section I: Ecological knowledge (Participant perception)

To what extent do you agree or disagree with the following statements? Please circle one number that best represents your opinion on the 7-point scale below.



1. I know a lot about current environment problems.	1	2	3	4	5	6	7
2. I know a lot about air pollution.	1	2	3	4	5	6	7
3. I know a lot about water quality.	1	2	3	4	5	6	7
4. I know a lot about energy issues.	1	2	3	4	5	6	7
5. I know a lot about global warming.	1	2	3	4	5	6	7
6. I know a lot about sweatshops.	1	2	3	4	5	6	7
7. I know a lot about child labor.	1	2	3	4	5	6	7
8. I know a lot about fair trade.	1	2	3	4	5	6	7
9. I know a lot about corporate social responsibility.	1	2	3	4	5	6	7
10. I am very familiar with laws and regulations concerning air pollution.	1	2	3	4	5	6	7
11. I am very familiar with laws and regulations concerning water pollution.	1	2	3	4	5	6	7
12. I am very familiar with laws and regulations concerning chemicals in my food.	1	2	3	4	5	6	7
I am very familiar with laws and regulations concerning chemicals in detergents and house cleaners.	1	2	3	4	5	6	7
13. I am very familiar with laws and regulations concerning energy conservation and energy efficiency.	1	2	3	4	5	6	7
14. I am very familiar with laws and regulations concerning global warming.	1	2	3	4	5	6	7
15. I am very familiar with laws and regulations concerning land development.	1	2	3	4	5	6	7
16. I am very familiar with conditions in developing countries.	1	2	3	4	5	6	7
<i>Note: More items may be added after the focus groups have been analyzed</i>							

### Ecological Knowledge

Please answer the following questions 1 through 5 by marking the best possible answer from the provided choices

**Q1. What is the most common cause of pollution of streams, rivers and oceans?**

(Source: O, Brien, 2007)

1. Sewage from treatment plant
2. Surface water running of yards, city streets, paved lots, and farm fields
3. Waste from factories
4. Oil from boats
5. Other
6. Don't know

**Q2. Which of the following do you think energy experts say is the fastest and most cost-effective way to address our overall energy needs?** (Source: Murphy & Olson, 2008; O'Brien, 2007)

1. Develop all possible domestic sources of oil and gas
2. Build more nuclear power plants
3. Build more hydroelectric power plants
4. Become more energy efficient
5. Not sure

**Q3. In the past ten years, has the fuel efficiency of vehicles in the U.S..** (Source: Murphy & Olson, 2008)

1. Increased
2. Remained the same
3. Decreased
4. Not been tracked
5. Don't know

**Q4. Where does most of the garbage in your state go?** (Source: Murphy & Olson, 2008)

1. Landfills
2. Waste to energy incinerators
3. Burn barrels
4. Recycling centers
5. Compost facilities
6. Don't know

**Q5. Global climate change is the warming of our planet Earth, a process also known as global warming. Would you say it is caused by...** (Source: O'Brien, 2007)

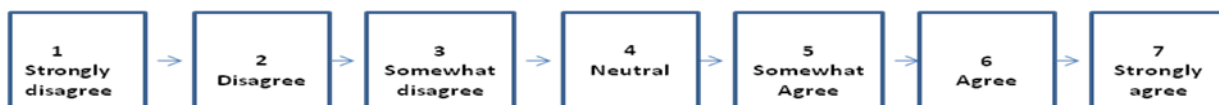
1. Ozone layer depletion
2. Fossil fuel consumption
3. Carbon Dioxide emission
4. All of the above
5. Don't know

Q6. *To be developed on social responsibility knowledge*



### Section III: Ecological attitudes

To what extent do you agree or disagree with the following statements? Please circle one number that best represents your opinion on the 7-point scale below. (Source: Item 1 to 15, Dunlap & Van Liere, 1978; Dunlap et al., 2000; Items 16 to 19, Corral Verdugo et al., 2008; Items 20 to 24, Rudell, 2006)



1. We are approaching the limit of the number of people that the earth can support.	1	2	3	4	5	6	7
2. Humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5	6	7
3. When humans interfere with nature, it often produces disastrous consequences.	1	2	3	4	5	6	7
4. Human ingenuity will ensure that we do not make the earth unlivable.	1	2	3	4	5	6	7
5. Humans are severely abusing the environment.	1	2	3	4	5	6	7
6. The earth has plenty of natural resources if we just learn how to use them.	1	2	3	4	5	6	7
7. Plants and animals have as much right as humans to exist.	1	2	3	4	5	6	7
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	1	2	3	4	5	6	7
9. Despite our special abilities, humans are still subject to the laws of nature.	1	2	3	4	5	6	7
10. The earth is like a spaceship with very limited room and resources.	1	2	3	4	5	6	7
11. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	1	2	3	4	5	6	7
12. Humans were meant to rule over the rest of nature.	1	2	3	4	5	6	7
13. The balance of nature is very delicate and easily upset.	1	2	3	4	5	6	7
14. Humans will eventually learn enough about how nature works to be able to control it.	1	2	3	4	5	6	7

15. If things continue on their present course, we will soon experience a major ecological catastrophe.	1 2 3 4 5 6 7
16. Human beings can progress only by conserving nature's resources.	1 2 3 4 5 6 7
17. Human beings can enjoy nature only if they make wise use of its resources.	1 2 3 4 5 6 7
18. Human progress can be achieved only by maintaining ecological balance.	1 2 3 4 5 6 7
19. Preserving nature now means ensuring the future of human beings.	1 2 3 4 5 6 7
20. We must reduce our consumption levels to ensure the well-being of present and future generations.	1 2 3 4 5 6 7
21. Sale of products made by child labor should be banned.	1 2 3 4 5 6 7
22. I wish there was label on jeans telling consumers if they were made by a socially responsible manufacturer.	1 2 3 4 5 6 7
23. There should be more international regulations protecting workers in the clothing manufacturing industry.	1 2 3 4 5 6 7
24. I would boycott buying materials and clothing from businesses that do not act responsibly toward their employees.	1 2 3 4 5 6 7
<i>Note: More items may be added after the focus groups have been analyzed</i>	

Please answer the following questions 1 and 2 by marking the best possible answer from the provided choices

**Q1. Which of the following should have responsibility for preventing sweatshops?** (Rudell, 2006)

1. Manufacturers
2. Retailers
3. Both
4. Neither
5. Don't know

**Q2. What would help you to avoid buying clothes made in sweatshops?** (Rudell, 2006)

1. A label that says the garment was made under fair labor conditions
2. A published list of stores and companies that have been identified as using or tolerating sweatshops
3. Both will help
4. Neither would help

5. Don't know

#### Section IV: Ecological action

To what extent do you agree or disagree with the following statements? Please circle one number that best represents your opinion on the 7-point scale below. (Source: Items 1 to 6 & 26 to 30, Kim & Damhorst, 1998; Items 7 to 19, 21, Murphy & Olson, 2008; Items 23 7 24, O'Brien, 2007; Items 20, 22,25, and 26 New)



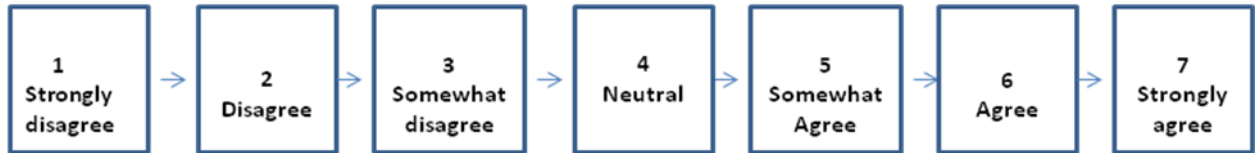
1. I segregate trash and recyclable it in designated containers; bottles, cans, paper, etc.	1	2	3	4	5	6	7
2. I read labels to see if the contents are environment safe.	1	2	3	4	5	6	7
3. I read labels to see where garments are made.	1	2	3	4	5	6	7
4. I read labels on apparel products to determine if they are considered fair trade and are made from environment friendly materials.	1	2	3	4	5	6	7
5. I use biodegradable plastic garbage bags or brown paper bags.	1	2	3	4	5	6	7
6. I use reusable bags when shopping for groceries and other home supplies.	1	2	3	4	5	6	7
7. I turn off lights and electric appliances when not in use or when I leave the room.	1	2	3	4	5	6	7
8 I bike or walk to school.	1	2	3	4	5	6	7
9. I take the bus to go to school.	1	2	3	4	5	6	7
10. I carpool to go to school.	1	2	3	4	5	6	7
11. I purchase lamps, light-bulbs and appliances that are energy efficient.	1	2	3	4	5	6	7
12. I turn off my iron if it is not in use.	1	2	3	4	5	6	7
13. I turn off the sewing machine if it is not in use.	1	2	3	4	5	6	7
14. I run the air conditioner less often in summer than I used	1	2	3	4	5	6	7

to run it.	
15. I lower the thermostat in the winter.	1 2 3 4 5 6 7
16. I accelerate slowly when driving.	1 2 3 4 5 6 7
17. I donate money annually to an environmental group or organization.	1 2 3 4 5 6 7
18. I donate money annually to a group or organization focusing on sustainability.	1 2 3 4 5 6 7
19. I buy organic food on a regular basis.	1 2 3 4 5 6 7
20. I buy organic clothing on a regular basis.	1 2 3 4 5 6 7
21. I buy locally grown food on a regular basis.	1 2 3 4 5 6 7
22. I buy from local designers on a regular basis.	1 2 3 4 5 6 7
23. I will do my best to protect our environment as long as I don't have to change my lifestyle.	1 2 3 4 5 6 7
24. I will be willing to pay up to \$50 more per year to promote the sustainable use of our natural resources.	1 2 3 4 5 6 7
25. Sustainability education should be part of every college curriculum.	1 2 3 4 5 6 7
26. Sustainability education should be part of textiles and clothing curriculum.	1 2 3 4 5 6 7
27. I buy apparel from recycled materials.	1 2 3 4 5 6 7
28. I to buy second hand apparel.	1 2 3 4 5 6 7
29. I purposely select fabrics that require cooler washing temperature, shorter drying time, or less ironing.	1 2 3 4 5 6 7
30. I select apparel that you can wear over a longer term compared to trendy apparel that goes out of style quickly.	1 2 3 4 5 6 7
<i>Note: More items may be added after the focus groups have been analyzed</i>	



### Section V: Meaning of sustainability

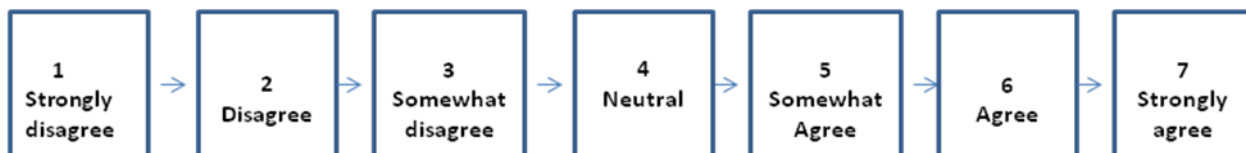
To what extent do you agree or disagree with the following statements? Please circle one number that best represents your opinion on the 7-point scale below. (New items-definitions from literature)



1. The principles of sustainability integrate three closely interlinked elements—the environment, the economy, and the social system—into a system that can be maintained in a healthy state indefinitely.	1 2 3 4 5 6 7
2. Sustainable development means meeting the needs of the present without compromising the ability of future generations to meet their own needs.	1 2 3 4 5 6 7
3. Sustainability is integrating human well-being with natural integrity.	1 2 3 4 5 6 7
4. Social responsibility encompasses sustainability with specific issues like resource consumption, pollution, consumer well-being, human rights, health and safety, product affordability and quality.	1 2 3 4 5 6 7
5. Sustainability in the fashion industry means that during product development, production, shipping, selling, use and cleaning the garment, no harm was done to the people who use it and the environment in which it was developed and used.	1 2 3 4 5 6 7
<i>Note: More definitions will be added after the focus groups have been analyzed (IN CONCLUSION CHAPTER)</i>	

## Section VI: Your Expectations

To what extent do you agree or disagree with the following statements? Please circle one number that best represents your opinion on the 7-point scale below. (New items based on synthesized literature)



1. Every course should have a big unit on sustainability as relates to that course.	1	2	3	4	5	6	7
2. One special course on sustainability as relates to fashion and apparel should be included as part of program of study.	1	2	3	4	5	6	7
3. There is enough information available in media and other sources that inform an individual on sustainability; there is no need to include it in curriculum.	1	2	3	4	5	6	7
4. Sustainability information should be made available through on-campus student organizations.	1	2	3	4	5	6	7
5. I can learn about sustainability at my work place.	1	2	3	4	5	6	7
<i>Note: More items may be added after the focus groups have been analyzed</i>							

**APPENDIX I: Components of ecological literacy and their relationship to the research and interview protocol Questions**

	<b>Research question</b>	<b>Interview Protocol question</b>
Awareness and knowledge	<p>What is the meaning of the word sustainability in the discipline of textiles and apparel?</p> <p>How do individuals in the discipline of textiles and clothing define sustainability? How do they feel about sustainability and its multiple dimensions (social responsibility, environmental issues, etc.)?</p> <p>What are the expectations among these individuals for textiles and apparel education relative to sustainability?</p>	<ul style="list-style-type: none"> <li>• How do you personally define sustainability?</li> <li>• What issues does sustainability include?</li> <li>• What ecological challenges we face these days? What is your opinion about these challenges?</li> <li>• What product(s) come(s) to your mind when you think of sustainability? Please describe it. What makes it/them sustainable?</li> <li>• What information on apparel labels is important to you and how do you use it?</li> <li>• Based on sustainability, are there any fibers/fabrics that you will not buy? Please explain your reasoning.</li> <li>• Based on sustainability, are there any apparel materials that you will not buy? Please explain your reasoning.</li> <li>• If you have three t-shirts, one made of 50% Recycled polyester and 50% recycled cotton (Made in USA), another one made of 70% viscose from bamboo and 30% Organic Cotton (Made in China), and a third one made of 100% cotton (made in Haiti) which one is the most sustainable? Please explain your reasoning.</li> <li>• What do you see as a challenge to sustainability? Any thoughts on how it can be changed?</li> <li>• What would you like to learn in your courses about sustainability or what do you think is important to include in curriculum about sustainability? Please give specific examples with courses?</li> </ul>
Attitudes		Although no specific questions directly addressed this research question, many responses incorporated elements related to knowledge, attitudes, and behaviors/actions.
Actions	Do textiles and apparel students take actions related to sustainability?	<ul style="list-style-type: none"> <li>• What specific actions being taken by fashion and apparel industry do you see as sustainable?</li> <li>• What specific actions in your personal day-to-day life do you see as sustainable efforts?</li> </ul>