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Does Fashion Sustainability Instruction Influence Student Intention to Make Sustainable Apparel Choices?

Amber Swasey Williams
Utah State University

DOES FASHION SUSTAINABILITY INSTRUCTION INFLUENCE STUDENT INTENTION TO MAKE SUSTAINABLE APPAREL CHOICES?

by

Amber Swasey Williams

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Approved:

Brian K. Warnick, Ph.D. Major Professor	Donna M. Brown, Ph.D. Committee Member
Andrew Deceuster, Ph.D. Committee Member	Lucy M. Delgadillo, Ph.D. Committee Member
Tyson J. Sorensen, Ph.D. Committee Member	D. Richard Cutler, Ph.D. Interim Vice Provost of Graduate Studies

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ABSTRACT

Does Fashion Sustainability Instruction Influence Student Intention to Make Sustainable Apparel Choices?

by

Amber Swasey Williams, Doctor of Philosophy

Utah State University, 2021

Major Professor: Brian K. Warnick
Department: Applied Sciences, Technology & Education

For over half a century, linear business models in the fashion industry have created a consumption culture that makes, uses, and disposes of resources and products. The linear model has fueled overconsumption and underutilization of clothing and apparel. This practice, known as fast fashion, utilizes unsustainable business practices and fuels consumer habits that deplete nonrenewable resources, pollute environments, and marginalize those in the value chain. Some brands in the fashion industry have pivoted to circular economy models. Circular models are designed to adopt policy and practices that emphasize the tenets of sustainability; environment, social, and economy. Circular models embrace a culture that makes, consumes, and enriches or returns resources and products to the production chain. All stakeholders play vital roles in achieving sustainability. Essential contributors in the circular model are the consumer. The aim of this study examined the effects that sustainable fashion education had on

college students' subjective norms, attitudes, knowledge, and intention to make sustainable apparel choices. This quantitative study was guided by Ajzen's theory of planned behavior that predicts individual intention to engage in a behavior in which the person can wield self-control.

This study followed a quasi-experimental design with paired *t* test and correlational analysis, collecting from a sample of 97 college students. Pretest and posttest survey data was gathered from students enrolled at Utah State University before and after they completed a series of online learning modules about fast fashion and sustainable fashion. This study provided evidence that educational intervention influences a significant change in subjective norms, attitude, knowledge, and intention. Additionally, this research investigated relationships between the predictors and outcomes. Subjective norms and attitudes had significant relationships with the intention to make sustainable apparel choices.

Results provide evidence that education makes a positive impact. Furthermore, findings from this research support a need for education about the impacts apparel and clothing choices have on our environment. Findings also hold implications for family and consumer science (FCS) professionals exploring topics and approaches for educating others about sustainable apparel production, consumption and care, and a return to production.

(168 pages)

PUBLIC ABSTRACT

Does Fashion Sustainability Instruction Influence Student Intention to Make Sustainable Apparel Choices?

Amber Swasey Williams

This study examined the effects that sustainable fashion education had on college students' attitudes, subjective norms, knowledge, and intention to make sustainable apparel choices. In addition, relationships were analyzed and interpreted between intention and attitudes, subjective norms, and knowledge. The need for this research stems from changes in the fashion industry that required the adoption of new business models. The circular economy model embraces a culture that makes, consumes, enriches, or returns the product to supply chains. For the circular model to be successful, all stakeholders must understand the role one plays in creating a sustainable industry. The consumer is an essential player in the circular model. Overconsumption and underutilization of clothing by the consumer are currently not sustainable.

This quantitative study was guided by Ajzen's theory of planned behavior that predicts individual intention to engage in a behavior in which the person can exert self-control. This study followed a quasi-experimental design with paired *t* test and correlational analysis, collecting from a sample of 97 college students. Pretest and posttest survey data was gathered from college students before and after they completed a series of online learning modules about fast fashion and sustainable fashion.

This study provided evidence that educational intervention influences a significant

change in subjective norms, attitudes, knowledge, and intention. Research findings show that subjective norms and attitudes had significant relationships with intention to make sustainable apparel choices.

The findings from this research support a need for education about the impacts apparel and clothing choices have on our environment. Results also provide evidence that education makes a positive impact. Conclusions from the research provide implications for FCS professionals exploring topics and approaches for educating others about sustainable apparel production, consumption and care, and a return to production.

DEDICATION

To my spouse, friend, and greatest supporter, Darrin R. Williams. Thank you for your support, encouragement, and patience through this doctoral journey—it is "more than a feeling."

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CHAPTER 1

INTRODUCTION

Background

Fast Fashion

Clothing is a necessity and serves a basic human need for individuals. Clothing provides protection and promotes individual well-being as an important aspect of self-expression (Maslow, 1943). The habits of society have embraced a culture of consumption entrenched in the psychology of how clothing meets an individual's needs. As a result of these habits, fast fashion has grown and strongly influences how how the consumer makes apparel choices.

The fast fashion movement has generated easy access to inexpensive products so that individuals can protect and express themselves more readily. Fast fashion has changed the way apparel is consumed, maintained, and disposed of. Close examination of fast fashion habits reveals unintended consequences that are untenable. Apparel consumption has dramatically increased since the beginning of the millennium (Ellen MacArthur Foundation, 2017). Inspection of the consequences associated with increased apparel consumption supports action for creating change in how apparel is consumed, maintained, and disposed of.

Fast fashion is an approach used in the fashion industry that emphasizes a linear system that releases new designs every week. Price points and apparel lifespan are low (Merriam-Webster, Fast Fashion, n.d.). Cobbing and Vicaire (2016) report that the

worldwide consumption of apparel products was $1.8 trillion in 2015 and projecting consumption to climb to $2.1 trillion in products by 2025. Furthermore, the average person is keeping those clothing purchases half as long; clothing utilization is decreasing. Based on recent consumer trends, researchers can predict that the quantities of apparel consumed will continue rising, creating increasingly dangerous levels of carbon dioxide emissions and other toxins into the world's ecosystem (Cobbing & Vicaire, 2016).

Apparel consumers impact how apparel and textile companies practice business and implement environmentally sustainable practices (Cobbing & Vicaire, 2016). Choices consumers make about apparel purchases and clothing utilization not only affect their well-being, but those choices affect the health of the planet and its people (Ellen MacArthur Foundation, 2017). For example, greenhouse gas emissions from the production of textiles and apparel are rising due to fast fashion trends (Ellen MacArthur Foundation, 2017). In addition, the production of apparel and textiles in 2016 created greenhouse gas emissions totaling 1.2 billion tons of carbon dioxide (Ellen MacArthur Foundation, 2017). Therefore, fast fashion trends are harming our environment and ecological systems.

Sustainability

The fundamental concept of sustainability as it applies to the apparel industry and for this research study is "the meeting of the needs of the present without compromising the ability of the future to meet its needs" (Johnson et al., 2016, p. 233). The three tenets of sustainability, identified in McKeown's et al. (2002) report on education for sustainable development, are economics, environment, and social. Protecting the

environment while accommodating economic development is a major ecological trend presently impacting the family and consumer sciences (FCS) profession and curricula (Harden et al., 2014). In this study, the focus will be on the environmental aspects of sustainable apparel.

With fast fashion trends increasing worldwide, the quantities of apparel consumed continue rising, creating an increase of dangerous levels of carbon dioxide emissions and other toxins into the world's ecosystem. Both industry and consumers need to act to decrease carbon dioxide (CO_2) emissions and textile waste (Ellen MacArthur Foundation, 2017). The industry is becoming more cognizant of the issues surrounding sustainability and implementing practices to become more sustainable. As awareness spreads, numerous companies are working to improve and innovate many aspects of their industry to comply with and meet sustainability standards (Cattermole, 2018; Fashion United, 2020; REI Staff, 2018). Consumers have been slower to change behaviors associated with apparel consumption. While customers support companies making changes to be more sustainable, 71% are unwilling to pay more for sustainable apparel (NOSTO, 2019).

Educator Role in Teaching Sustainability

With fast fashion trends increasing worldwide, this phenomenon indicates a need for apparel and textile sustainability education. Armstrong and LeHew (2013) call for those in education to respond to the growing concerns about the world's environmental situation and become change agents. Instructors who teach sustainability concepts using research-based teaching strategies and methods that embrace experiential learning from a holistic approach have opportunities to make a significant impact on sustainable apparel

purchasing behaviors (Armstrong & LeHew, 2013; Armstrong et al., 2016; Harden et al., 2014; Levintova & Mueller, 2015; Rhee & Johnson, 2019; Seatter & Ceulemans, 2017; Walker & Seymour, 2008).

Across the country, FCS educators are working in thousands of classrooms and schools in an ever-increasing society of diverse populations (Nickols et al., 2009). This population of specialists can influence change. FCS professionals in classrooms, community centers, and businesses can inform and educate about issues that impact human ecosystems, including how people in society consume fashion (Nickols et al., 2009). Harden et al. (2014) state that FCS professionals can improve and promote policies and instruct students on managing product life cycle resources.

The stakes are high. The need is great to explore how the fashion industry and FCS educators can implement best practices to change consumer purchasing intent and behaviors for apparel and textile products.

Problem Statement

Current apparel purchasing behaviors are not sustainable. Consumers are buying more apparel items and using them for less time, contributing to increased CO_2 levels during production, use, and disposal of the apparel products. As sustainability becomes the norm in the fashion industry, there is a need for consumers, who play a significant role in the life cycle of an apparel item, to understand their impact on the environment due to their apparel choices. Researchers are calling for additional research on practices and approaches for educating consumers and apparel designers about the effects that

textile and apparel consumption has on the environment (Abner et al., 2019; Armstrong et al., 2016; Connell & Kozar, 2012; Ha-Brookshire & Norum, 2011; Kang & Kim, 2013; McNeill & Moore, 2015). This research aimed to answer how fashion sustainability instruction influences student intention to make sustainable apparel choices.

Purpose

This study aimed to examine the effect of an educational experience on intention to make sustainable apparel choices by college students at Utah State University (USU). This research will help fill the dearth in sustainable apparel education and consumerism fields of study while potentially providing a positive impact on the environment for current and future generations (Armstrong & LeHew, 2013; Connell & Kozar, 2012; Joshi & Rahman, 2017; Lundblad & Davies, 2016; Thompson et al., 2012).

Research Objectives

In order to examine the research objectives guiding this project, Ajzen's (1991) Theory of Planned Behavior (TPB) framework inspired the conceptual framework for this study. This study's conceptual model was utilized to investigate the impact of an educational experience on factors such as knowledge, attitudes, subjective norms, and intentions on college students' sustainable apparel choices.

The following research objectives directed the focus and methods of this study.

1. Identify the effects of fashion sustainability instruction on college students' attitudes towards sustainable apparel choices.
2. Identify the effects of fashion sustainability instruction on college students'

subjective norms related to sustainable apparel choices.

3. Identify the effects of fashion sustainability instruction on college students' knowledge of sustainable apparel choices.
4. Identify the effects of fashion sustainability instruction on college students' intentions to make sustainable apparel choices.
5. Examine if relationships exist between college students' intentions to make sustainable apparel choices and attitudes, subjective norms, and knowledge.

Research Design

This study followed a quantitative, quasi-experimental research design using correlational analysis, collecting repeated measures data from a sample of 39 students enrolled at a Northern Utah university. SONA, an online tool that manages research recruitment and participation, recruited a target population of 250 participants. Online educational modules were housed and accessed from a Google Sites web page. Online survey instruments powered by Qualtrics software enabled data collection.

Descriptive statistics and *t* test analysis were used to explore research objectives one through four. Multiple regression processes and correlations addressed research objective five. In addition, Pearson's correlation were used to identify correlations between variables in research objectives 1, 2, 3, and 4. Statistical significance was assumed at $p < .05$.

Limitations

This study encompassed quasi-experimental methods that allowed the researcher to examine practical options of impact (Price et al., 2015). The choice to use this method

permitted the study to be completed in a timely and logistical manner. The length and time required to complete this study was stated before participatns registered, however, it was up to the participant to set aside the designated time needed to complete each part of the study. Poor time management could have impacted whether a participant finished the study in its entirety. Another limitation in this study included using self-reporting measures to collect the participant's intention to make sustainable apparel choices.

The study population was small and constrained to post-secondary students across a variety of programs enrolled at one university. This study took place during the COVID-19 virus pandemic. COVID-19 impacted instruction and learning during the 2020-2021 school year. There were strict constrainsts placed on instruction during the pandemic. In order to conduct the study, the only option was to offer it as an online study.

Nonresponse rates undermine the rationale for inference (Creswell & Creswell, 2018). Nonresponse bias was tested between completers and noncompleters. A number of factors could have contributed to the high attrition rate: zoom fatigue, time management, internet connectivity issues, and interest in the sustainable fashion.

Delimitations

Participation in this study required participants to engage with the study three separate times. Online learning modules presented information to participants about sustainability and its relation to apparel and textiles. The online modules allowed for easy access to content when social distancing mandates were in place. Gift card incentives, detailed timeline communication with participants, and a recruitment service were

employed to address attrition issues (Foster et al., 2004). Budget constraints ($1,000) restricted the number of incentives provided.

Historicity and maturity are common delimitations associated with pretest, posttest quasi-experimental designs (Creswell & Creswell, 2018). Being unable to control past and current experiences with sustainable fashion is a limitation of this study.

Significance of the Problem

Awareness about the environmental issues associated with increased apparel consumption has influenced how the apparel and textile industry responds. As fashion sustainability issues become more publicized and politicized, companies producing and selling apparel and textile products, such as REI, have developed standards that identify preferred attributes for sustainable products (REI Staff, 2018). REI's company policy states they will not source and sell products that do not meet their sustainability standards (REI Staff, 2018).

Consumer use of products comprises half the life cycle of an apparel product. Clothing utilization, care, and disposal have significant impacts on the environment through energy and water use, and textile waste (Ellen MacArthur Foundation, 2017). Half of the responsibility lies in the hands of consumers. The industry attempts to inform consumers by providing information on their product hangtags, clothing labels, and websites. Despite industry efforts to educate the consumer, textile waste continues to increase in landfills, and CO_2 levels associated with consumer energy use are rising (Energy Information Administration [EIA], n.d.). More efforts are needed to educate

consumers. Researchers are calling for additional research on practices and approaches for informing consumers and apparel designers about the effects that textile and apparel consumption has on the environment (Abner et al., 2019; Armstrong et al., 2016; Connell & Kozar, 2012; Ha-Brookshire & Norum, 2011; Kang & Kim, 2013; McNeill & Moore, 2015). This proposed study will help identify whether sustainable educational experiences influence intention to make sustainable apparel choices. Findings from this study can help educators, extension agents, and industry education specialists alter and adapt curriculum and advertising campaigns to influence a change that will improve the health and well-being of our planet (Armstrong & LeHew, 2013; Connell & Kozar, 2012; Joshi & Rahman, 2017; Lundblad & Davies, 2016; Thompson et al., 2012).

Educational researchers have declared that a holistic, student-centered curriculum will provide the kind of results that society and policymakers are searching for (Armstrong & LeHew, 2013; Ulasewicz & Vouchilas, 2008). Arguments and requests regarding how to approach fashion sustainability education show a lack of evidence for which pedagogical practices and learning activities are best for inspiring the students and consumers to change their environmentally sustainable apparel purchasing behaviors.

This study utilized the theory of planned behavior to investigate college students' intention of making sustainable apparel choices. The findings may help researchers pinpoint exclusive teaching and learning exercises that can influence how consumers approach clothing consumption and use.

Definition of Terms

Attitude: refers to degree which a person has a favorable or unfavorable evaluation of the behavior of interest (Ajzen, 1991).

Behavioral intention: evaluates an individual's relative strength of intention to perform a behavior where the stronger the intention to perform a behavior the more likely the behavior will be performed (Ajzen, 1991).

Clothing utilization: the average number of times a garment is worn before it ceases to be used (Ellen MacArthur Foundation, 2017).

Education for sustainable development (ESD): a set of educational standards outlined in 2005 by United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019) to achieve the three tenets of sustainability; economic, environmental, and social.

Environmentally sustainable apparel products (ESAP): clothing, accessories, and footwear produced, marketed, and increased utilization in the most sustainable means possible.

Fast fashion: inexpensive clothing produced rapidly by mass-market retailers in response to trends and consumer demands (McNeill & Moore, 2015).

Self-efficacy: individuals' belief in their capability to accomplish behaviors necessary to produce specific outcomes (Bandura, 1986).

Subjective norms: a set of beliefs that are important to an individual that is perceived to be important to the social group that person belongs to. Subjective norms motivate and shape behaviors for individuals and groups.

Sustainability: “the meeting of the needs of the present without compromising the ability of the future to meet its needs” (Johnson et al., 2016, p. 233). The tenets of sustainability are environmental, economic, and social.

Theory of planned behavior: a theory developed by Ajzen and Fishbein (1980) that connects an individual’s beliefs and behavior. Attitudes, subjective norms, and perceived behavioral control guide one’s intentions and behaviors.

CHAPTER 2

REVIEW OF THE LITERATURE

Chapter Overview

This chapter provides an overview of sustainability pillars while providing examples of how the apparel and textile industry has grown outside the bounds of sustainability. Identification of potential stakeholders and practices needed to address the critical need to change production and consumption habits in the apparel and textile industry is presented. Education for sustainable development (ESD) standards are identified, and examples are provided of how Ajzen's (1991) TPB can be implemented to examine how holistic educational experiences influence consumer knowledge, attitudes, subjective norms, and intention to make sustainable apparel purchases.

Sustainability

The etymology of the word sustainability originated with the French word, sustinere, meaning to hold (Merriam-Webster, Sustain, n.d.). It was not until the 1970s that the word sustainability became a word used and recognized in policy, industry, and education circles (Environmental Protection Agency [EPA], n.d.; Merriam-Webster, Sustain, n.d.). The fundamental concept of sustainability as applied to the apparel industry and for this research study is "the meeting of the needs of the present without compromising the ability of the future to meet its needs" (Johnson et al., 2016, p. 233).

It is essential to designate which pillar of sustainable development is being

referenced when studying sustainability, as it can take on different approaches (McKeown et al., 2002). The three tenets of sustainability identified in McKeown's et al. report are economy, environment, and society. For this study, the focus will be on the environmental aspects of sustainability.

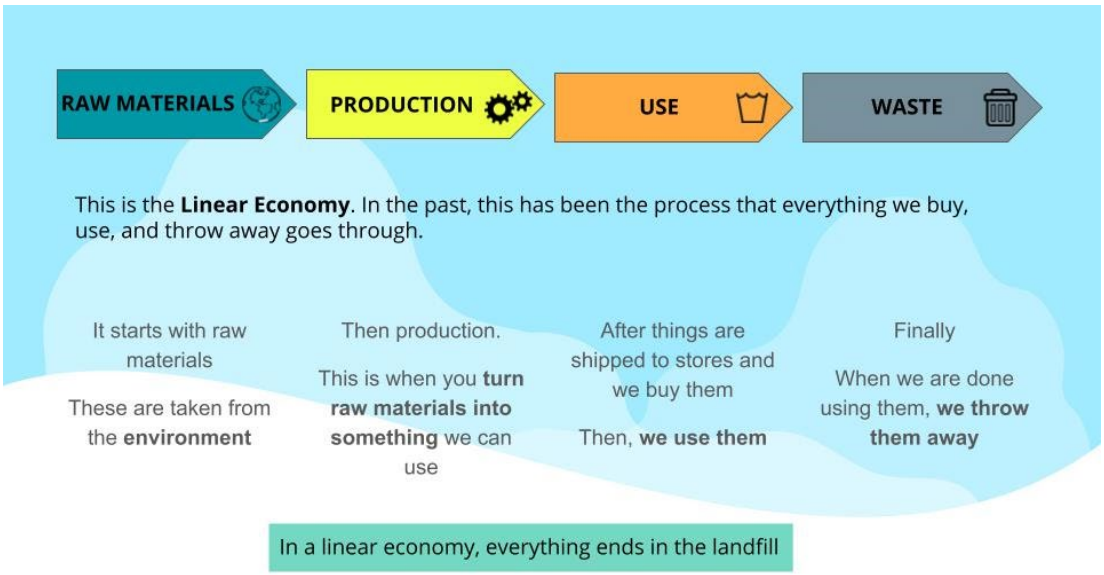
Sustainability Pillar - Economy

In the fashion industry, the linear economy model is described as making, using, and disposing of clothing (Fashion Revolution, 2019). The linear model starts with taking raw materials from the environment. Sourcing of materials allows for production of textiles. Raw materials are produced into a product that is shipped and sold to the consumer. Finally, when there is no use for the product, most of it is discarded in landfills (Ellen MacArthur Foundation, 2017). The linear economy model shown in Figure 2.1 has created the fast fashion conundrum. Overconsumption and underutilization of apparel and textile products is the by-product of the fast fashion industry.

The circular economy model, shown in Figure 2.2, is one solution to combat the pollution and waste problems associated with the linear model (Ellen MacArthur Foundation, 2017). Make, consume, enrich or return describe the circular economy model (Environmental Audit Committee, 2019). A circular economy focuses on three principles: design out waste and pollution; keep products and materials in use; and regenerate natural systems to demonstrate a new approach to achieve growth (Ellen MacArthur Foundation, 2017). A circular economy benefits citizens and society while regenerating the environment (Ellen MacArthur Foundation, 2017).

Figure 2.1

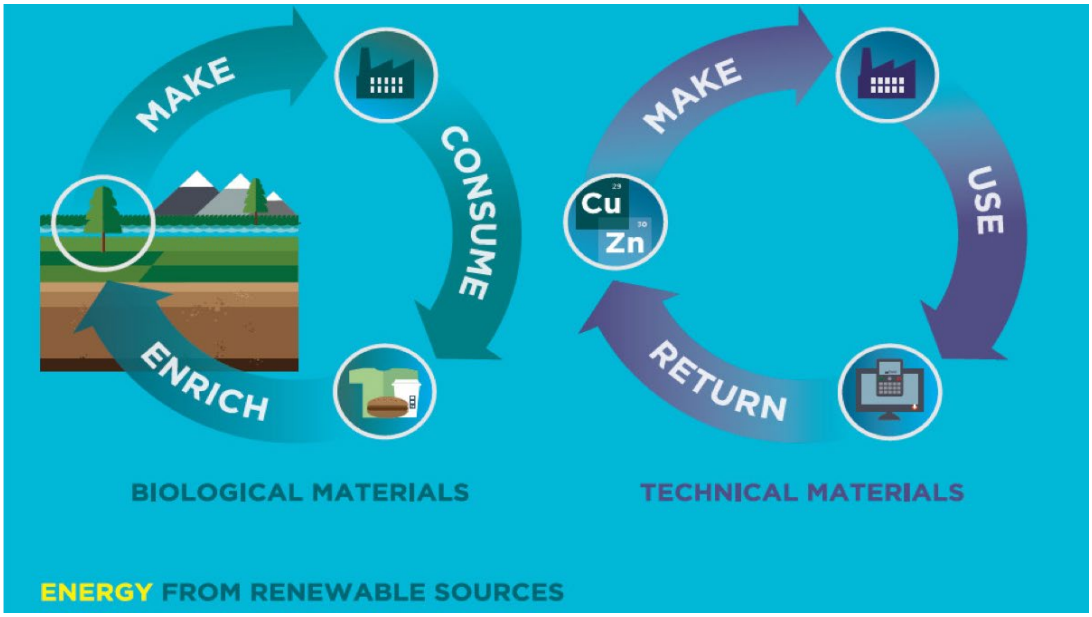
Linear Economy Model



Note. Taken from Williams (2021) Part 2 Sustainable Fasion Learning Module.

Figure 2.2

Circular Economy Model



Note. Taken from Williams (2021) Part 2 Sustainable Fasion Learning Module.

Sustainability Pillar - Environmental

The environmental impacts of the apparel and textile industry are alarming and substantial. Increases in water use, chemical pollution, CO_2 emissions, and textile waste are manifest in both production and consumption behaviors (Niinimäki et al., 2020). While the environmental impacts are global, the impacts are disproportionately distributed with developing countries withstanding the encumbrance placed on them by developed countries (McKeown et al., 2002).

Approximately 8-10% of global CO_2 emissions are produced by the apparel and textile industry (Quantis, 2018). Global per-capita textile production has increased 120% over 43 years from 1975-2018 (Niinimäki et al., 2020). During this period, the resources used in production have changed. There has been a significant increase in synthetic materials sourced from petrochemicals. Globally, polyester is used more than any other fiber. The annual production of polyester sits at approximately 52% of the global fiber production (Textile Exchange, 2020). The use of recycled polyester has increased, however as of 2019, only 14% of the polyester produced is sourced from recycled products (Textile Exchange, 2020). Cobbing and Vicaire (2016) cite that CO_2 emissions from polyester production are three times higher than emissions for producing cotton.

While the fashion industry assumes the bulk of responsibility for producing an environmentally sustainable product, we must not exclude consumers when having this conversation. Clothing care practices and disposal of apparel products can be harmful to the environment. As consumers care for their apparel, washing and drying of clothing generate CO_2 emissions. During wash cycles, synthetic fibers shed microfibers that

pollute waterways. Moreover, excessive apparel washing has the potential to deplete water resources. More clothing and textile items than ever before are making their way to landfills (Cobbing & Vicaire, 2016; Elllen MacArthur Foundation, 2017; Niinimäki et al., 2020). An average of 66 pounds of textiles is thrown away per capita for both the U.S. and the United Kingdom (Niinimäki et al., 2020).

Global apparel and textile consumption has increased every year for the past two decades. There has been an 80% increase in per capita consumption from 2002-2015, with a projected 110% increase in per capita consumption from 2002-2025 (Cobbing & Vicaire, 2016; Ellen MacArthur Foundation, 2017; Textile Exchange, 2020). Jacobs (2020) cites that approximately 10-15% of greenhouse gas emissions produced by the apparel and textile industry are associated with clothing care behaviors such as washing, drying, and detergent and transportation and disposal of textiles into landfills.

During textile production, large amounts of water are used. Approximately 200 tons of water are used to produce one ton of textiles (Niinimäki et al., 2020). Most of the water usage is associated with cotton production and the wet processes of textile manufacturing, including bleaching, dyeing, printing, and finishing (Fashion Revolution, 2019; Ellen MacArthur Foundation, 2017; & Niinimäki et al., 2020). When wastewater is not properly purified, chemical pollution becomes a significant concern (Fashion Revolution, 2019; Niinimäki et al., 2020). Untreated wastewater entering local groundwater has the potential to degrade an entire ecosystem. Consideration of these environemental impacts directs industry professionals to define and establish guidelines for environmentally sustainable apparel products.

Environmentally Sustainable Apparel Products

Environmentally sustainable apparel products (ESAP) possess specific characteristics. Sustainable raw materials, reduced use of energy from fossil fuels, reduced use of toxic chemicals, and reduced water usage are common traits associated with ESAP's (Kang & Kim, 2013).

There is an increase in the availability of sustainable apparel products. Patagonia was one of the first companies to use fleece made from recycled plastics (Stories, n.d.). Nike has adopted waterless dying techniques on some product lines and uses more organic and recycled materials (Nike News, 2014). In 2011, Levi Strauss & Co. started using water <Less® technologies to reduce the amount of water used to create that lived-in look (Off the Cuff, n.d.). Wrangler jeans launched a foam-dye technology that eliminates water from the denim dyeing process (Textile World, 2019). Businesses in the apparel industry are taking steps to improve how apparel production impacts the environment.

Kang and Kim (2013) and Kang et al. (2013) studied risk factors associated with significantly influencing consumers making sustainable apparel purchases. These researchers used the same perceived risk categories identified by Bauer (1960), Cox (1963), and Stone and Gronehaug (1993).

Kang and Kim's (2013) study assessed young consumers' perception of risk toward ESAPs. The risks examined were: financial, performance, psychological, and social. Characteristics of financial risks include high-priced apparel that also incorporates low use and care costs (Kang & Kim, 2013). Performance risks associated with ESAPs

are color and design lines, poor fit, and limited inventory (Kang & Kim, 2013). Psychological risks are strongly correlated with performance risks; nevertheless, these risks connect to negative perceptions of self-image (Kang & Kim, 2013). ESAP items considered fashionable or trendy by friends and family define the social risks (Kang & Kim, 2013).

In Kang and Kim's (2013) study, they found that financial risks posed the most significant barrier to purchasing ESAPs. Psychological risks directly shaped attitudes toward ESAP consumption (Kang & Kim, 2013). Social risk had a low effect on ESAP purchases due to observations that it was difficult to identify whether an ESAP is a sustainable product without a label or logo (Kang & Kim, 2013). Performance risks were not significant in Kang and Kim's study.

Generally speaking, risk is a significant barrier for consumers deciding whether to purchase ESAP (Kang & Kim, 2013). These perceived risks easily align with the factors in Ajzen's (1991) Theory of Planned Behavior, the theoretical framework used to guide this research.

While economic and environmental sustainability factors comprise two of the three tenets of sustainabilty, social issues should also be examined. Social issues surrounding workplace safety, child labor, slave labor, harassment, and livable wages are important matters facing the production and use of sustainable apparel products.

Sustainability Pillar - Society

An essential part of everyday life includes the clothing and textile products that individuals wear and use. The industry that produces these essential items is an important

sector of the global economy. Moreover, clothing is a "USD 1.3 trillion global industry that employs more than 300 million people along the value chain" (Ellen MacArthur Foundation, 2017, p. 36).

Fast fashion, as it currently stands, threatens human rights. Many garment workers in India and Eastern Asia do not share the same rights or protections that many people in the West do. Eighty percent of the individuals who produce clothing are women, ages 18-24, working in developing countries (Morgan, 2016). Common issues garment workers face are long work hours, averaging 14 hours a day, with low-wage compensation, while dealing with sexual harassment and gender violence (CARE International, 2017). In the fashion supply value chain, the "wages of most garment workers are no higher than the level of the minimum wage in their country, which in many cases is well below the level of subsistence" (Environmental Audit Committee, 2019, p. 12).

In 2013, a building located in Dhaka, Bangladesh, which housed five garment factories, collapsed, killed at least 1,132 people, and injured another 2,500 (Morgan, 2016). The deadliest event in the garment industry set in motion a call to action for brands and consumers worldwide to become conscious producers and consumers (Fashion Revolution, 2019). The Bangladesh Accord on Fire and Building Safety was established after the Rana Plaza disaster to develop and enforce safer factories (Environmental Audit Committee, 2019; Morgan, 2016). The Accord faces challenges associated with factories implementing safety measures. The majority of factories inspected by the Accord are behind schedule in making corrections to improve workplace safety (Bangladesh Accord Secretariat, 2021).

In addition to the Accord, other measures are being implemented to raise awareness about garment factories' working conditions and environmental issues. Social media influencers use the hashtag #WhoMadeMyClothes (813K posts on Instagram, May 21, 2021) and #WhatsInMyClothes (18.7K posts on Instagram, May 21, 2021) to spark global conversations about the social justice and environmental issues woven through the apparel and textile industry (Morgan, 2016).

Thus far, the findings about sustainability are sobering and postulate a case for continued action and education to promote sustainability in the apparel and textile industry. Sustainability awareness is increasing; however, implementation of sustainability practice is slow (Bangladesh Accord Secretariat, 2021; Environmental Audit Committee, 2019; Ellen MacArthur Foundation, 2017; Morgan, 2016). One of the key findings in McNeill and Moore's (2015) study on sustainable fashion consumption found that most participants surveyed were aware of fast fashion impacts on the environment and social issues. However, they did not consider that knowledge when making apparel purchases (McNeill & Moore, 2015).

What will it take to kick fast fashion habits? Addressing concerns associated with fashion production and consumption will contribute to the health of our planet. Apparel design that focuses on quality and durability while meeting customer needs is fundamental (Cobbing & Vicaire, 2016). Design process innovations that include alterable, repairable, and re-usable designs at the end of the lifecycle or are recyclable are needed to close the gap between knowledge and action (DeLong et al., 2016; McNeill & Moore, 2015). DeLong et al. encourage education that addresses consumer impact on

sustainability issues concurrently with industry impact. Delong et al.'s research also confirms the benefits that both consumers and designers have a mutual influence on sustainable strategies in the industry.

Sustainability Education Approaches

Family and Consumer Sciences Education

Fast fashion trends paired with increasing textile waste reinforce a need for thoughtfully planned sustainability education. Armstrong and LeHew (2013) call for a response from educators to address the growing concerns about the world's environmental situation. Teaching about sustainability and using teaching strategies and methods that impact sustainable behavior is one way to combat overconsumption (Harden et al., 2014).

The mission of the American Association of Family and Consumer Sciences (AAFCS) is to "provide leadership and support for professionals whose work assists individuals, families, and communities in making informed decisions about their well-being, relationships, and resources to achieve optimal quality of life" (AAFCS, n.d.). Researchers have declared that family and consumer sciences (FCS) professionals are essential in promoting and educating about sustainability (Nickols et al., 2009; Harden et al., 2014). The FCS body of knowledge provides direction for research and practice among four core concepts: basic human needs, individual well-being, family strengths, and community vitality (Nickols et al., 2009). Sustainability issues are present in each of the four areas.

Nickols et al. (2009) claim that resource development and sustainability are cross-cutting themes in FCS. As FCS scholars and educators contribute to capacity building through education about sustainable practices in the fashion industry, there are captive audiences across the nation in FCS classrooms and extension programs. A diverse population of learners in those areas stand to benefit from and make positive adjustments in consumer behavior to improve environmental and societal conditions imparted by the fashion industry (Nickols et al., 2009). Harden et al. (2014) state that FCS professionals can aid in sustainable consumption practices by promoting sustainable practices, informing and promoting policies, and instructing learners on managing product life cycle resources better.

Some areas in FCS have done a better job teaching sustainability issues. For example, Ulasewicz and Vouchilas (2008) examined curriculum at a university in California and found there was been a big difference in implementing sustainability topics between apparel design courses and interior design courses. Interior design has sustainability in most aspects of the curriculum, where the apparel design curriculum has addressed sustainability in one course during the degree program (Ulasewicz & Vouchilas, 2008). The curriculum presented with a strong sustainability overtone will influence student knowledge, which leads to students considering sustainable choice more often than students who do not have the sustainability knowledge set (Ulasewicz & Vouchilas, 2008). Before instructors can develop a curriculum and select teaching methods for disseminating information on how to be a better steward of the earth, FCS professionals need a better understanding of the influential factors that guide how

individuals and families make apparel choices, as well as best practices for teaching sustainability.

Education for Sustainable Development

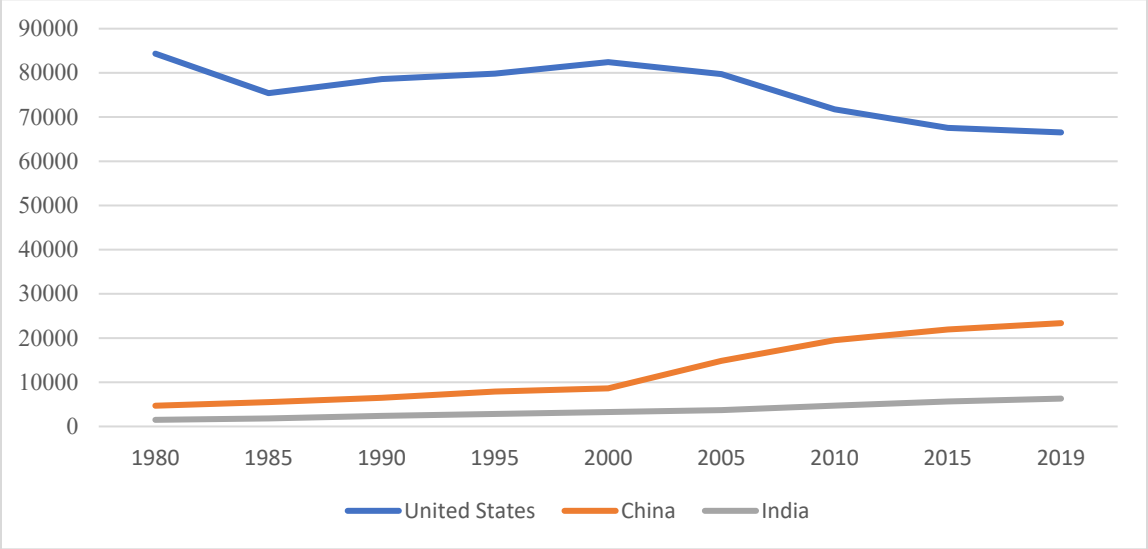
Sustainable development is a broad topic addressing three pillars; economy, society, and the environment (EPA Sustainability, n.d.; McKeown et al., 2002). The National Environmental Policy Act of 1969 initiated policy in the U.S. government to become involved and committed to sustainable development (EPA Sustainability, n.d.). The EPA collects annual data on numerous indicators to help regulate and enforce sustainable practices in industry and government in economics, social, and environmental areas (EPA Facts, n.d.). In 2005, UNESCO, short for United Nations Educational, Scientific and Cultural Organization, established standards and practices to guide education and policy about education for sustainable development (ESD). The objective and outcomes outlined by UNESCO in their ESD approach encourage change in behavior in all sustainability tenets. The embodiment of sustainability as a holistic, transformational approach manifests in learning content, outcomes, pedagogy, and learning environments in ESD (McKeown et al., 2002).

A paradox identified in studies about sustainability has found that nations with high education levels deplete ecological resources faster than poorly educated nations (McKeown et al., 2002). In the U.S., 47% of the population has completed a post-secondary degree, making it one of the world's highest educated populations (National Center for Educational Statistics [NCES], n.d.). Consumers in the U.S. spend approximately 3% of their income on apparel products (Fashion United, 2020).

The U.S. per-capita fossil fuel energy use has decreased since 1980 (83,346 MWh) to (66,525 MWh in 2019) (EIA, n.d.). Countries like China, a significant source for clothing manufacturing, have increased their fossil fuel energy use significantly since the 1980s (see Figure 2. 3; EIA, n.d.). When UNESCO presented ESD objectives in 2005, the U.S. had higher energy consumption numbers than they do now. There has been a continual decrease in energy consumption every year since 2005 (EIA, n.d.). On the flip side, waste generation in the U.S. has increased and remains the highest generator of municipal solid waste in the world (EPA Facts, n.d.).

Figure 2.3

Fossil Fuel Consumption Per Capita 1980-2019



Note. EIA, n.d.

One of the missions of UNESCO (2019) is to improve the quality of life for lower-performing countries by providing better educational opportunities. The real task at hand for those implementing ESD learning outcomes is to identify ways to slow the

demand for products that currently contribute to the production of pollutants and increases in solid waste around the globe (McKeown et al., 2002). Carefully prepared ESD learning activities and pedagogy can potentially influence a change in sustainable practices and behaviors. Joshi and Rahman (2017) and Phipps et al. (2013) have explored sustainable consumption from the social cognitive theory (SCT) lens while utilizing the concept of reciprocal determinism. Joshi and Rahman's approach is unique because they use consumer behavior as a determinant and an outcome. While SCT does not predict behavior, understanding the factors that influence behavior is essential for determining a holistic approach. The main components of ESD are: match the needs of the local environment, economic and societal settings; increase sustainability knowledge (identify goals that align with number one); and identify and address the local issues concerning sustainability from each tenet.

The framework for teaching or analyzing environmental issues represented in Table 2.1 is a resource that educators can reference for providing structure and guidance in curriculum development (McKeown et al., 2002).

Application of ESD Framework

Armstrong and LeHew (2013) conducted a study incorporating ESD constructs into a fashion course at a Midwestern university in the U.S. The Armstrong and LeHew study findings support a holistic approach to sustainability education set forth by ESD constructs. Observations made in this study included: improved attitude towards sustainability, increased capacity to resolve conflict, improved aptitudes for communication, improved capacity for leading and following, and increased ability to

Table 2.1

Framework for Teaching or Analyzing Environmental Issues

Constructs of sustainability curriculum	Definition of components	Examples
Knowledge	Working knowledge of world systems and social interactions enable individuals to understand the principles of sustainability	Addresses humanities, natural and social sciences content that is relevant to local sustainability issues
Issues	Issues that threaten the sustainability of the planet and are locally relevant	Poverty, human health, conservation (water, land, air), roles of people (women, children, indigenous), implementation (education, financing, policy)
Skills	Practices implemented in daily experiences	Communication, systems thinking, time management, critical thinking, categorization, action-oriented capacities, teamwork, care, and act on environmental aesthetics
Perspective	Demonstration of the interconnectedness of individuals to society and business across history and into the future	Identify points of interconnectedness, human nature, community values necessitate a holistic approach (cannot rely on science and technology to solve the problems)
Values	Using values clarification and values analysis to focus on the larger values of society to achieve goals of social justice approach to ensuring that "basic human needs and concerns for rights, dignity, and welfare of all people" are met (McKeown et al., 2002, p. 24)	Personal values, local society values, global society values

resolve the conflict. Armstrong and LeHew's study also reported positive findings for altering attitudes or beliefs about sustainability because of reflection. Reflection is an important component of ESD. Participants noted improvement in one's ability to reflect on behavior and attitudes towards sustainability.

Another noteworthy observation from Armstrong and LeHew's (2013) study was

identifying pedagogical theories and practices that were positively associated with students' attitudes and behaviors towards sustainability. Reality modeling, problems-based projects, educators as partners, and authentic assessments allow students to relate and interact with the content in a way that significantly increased knowledge and improved attitudes and beliefs towards sustainability.

Lawless and Medvedev (2016) assessed designers' practices in the fashion industry and found that designers lacked a source of sustainable resources. Designer knowledge about sustainable fashion materials is critical to helping make a positive impact on producing sustainable goods.

The circular economy includes all stakeholders in the apparel supply chain (Cattermole, 2018). "Consumer action is a very important factor of sustainability because it is estimated that 50% of the environmental impact of a garment occurs during consumer use" (Lawless & Medvedev, 2016, p. 46). Lawless and Medvedev claim that "a truly sustainable fashion industry requires the combined efforts of all participants, not only designers" (p. 49). Sustainability education has not been emphasized as much for consumers as it has for other stakeholder populations. There is a need to help educate in ways that do more than just inform. Education that provides experiences and resources that influence attitudes, social norms, and environmentally sustainable behaviors will positively impact sustainability measures (Harden et al., 2014; Thompson et al., 2012).

Thompson et al. (2012) examined several programs across the U.S. whose focus was educating and informing industry and business about environmental sustainability concerns. Thompson et al. found a gap between environmental sustainability programs

for industry and programs for teaching the same concept to consumers. Researchers identified six key concepts of environmental sustainability that FCS educators should incorporate into their existing curriculums. These key concepts identified below align well with the ESD framework:

- Systems thinking
- Air, land, water, climate, and ecosystems
- Carbon, solid waste, and water footprints
- Renewable and nonrenewable resources
- Life cycles of materials and energy
- Growth, regeneration, population, and balance (Thompson et al., 2012)

Thompson et al. (2012) recommended using the same pedagogical approaches proposed in the ESD framework. They suggested implementing carefully planned activities that incorporate critical thinking, decision making, reflection, and authentic assessments to support positive attitudes and behaviors towards sustainability issues where consumers are concerned. Thompson et al. identified concerns about the time needed to address sustainability topics in already packed curriculum guides. In response to this concern, Thompson et al. advocated for instructors to use a more reflective process in their teaching and activity. They proposed embedding questions in lectures or assignments that require students to make choices about particular products that would encourage students to think critically about their actions and their impact on the environment. Some example questions that could be applied are: “How can I enjoy a good quality of life, without transferring problems to people in other parts of the world?” and “How can I become an active global citizen and help look after the planet for future generations?” (Thompson et al., 2012).

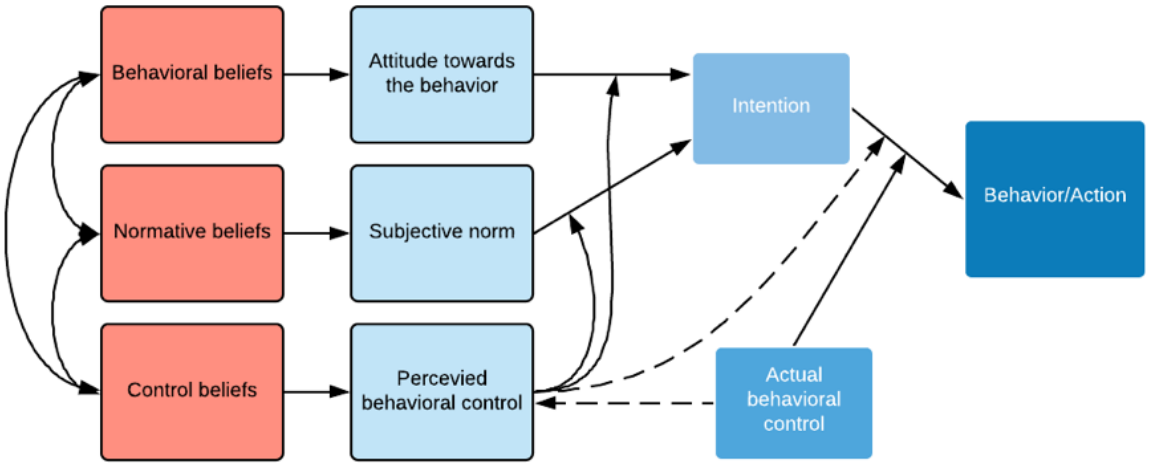
Theoretical Frameworks

Theory of Planned Behavior

The theory of planned behavior (TPB) presented by Ajzen (1991) presents a framework of beliefs, attitudes, behavioral intention, subjective norms, and perceived behavioral control, designed to "predict and explain human behavior in specific contexts" (p. 181; see Figure 2.4). Ajzen and Fishbein (1980) defined the intention as one's plan to execute or not execute a specific action. The more determined one's intention is toward action, the more substantial the likelihood of the action to be achieved (Ajzen & Fishbein, 1980). Ajzen and Fishbein presented the theory of reasoned action to predict social behavior using preexisting attitudes and behavioral intentions. The theory of reasoned action examines behavioral intention and normative beliefs and how those influence one's action to comply with the intended behavior. Ajzen transformed the theory of reasoned action to include a claim that accounts for volitional control to improve

Figure 2.4

Theory of Planned Behavior Framework



predictability. This adaptation is how the theory of reasoned action evolved into the TPB.

The addition of perceived behavioral control to the TPB framework differentiates this model from the theory of reasoned action (Ajzen, 1991). An individual's awareness of whether or not they foresee accomplishing a task or behavior is known as perceived behavioral control (Ajzen, 1991). Perceived behavioral control can fluctuate depending on context and confidence in their power to follow through with an action. Locus of control references an individual's belief that their power resides to control events, internal or external. Individuals who possess an internal locus of control have high self-efficacy. Accurate perceptions of behavioral control paired with behavioral intention predict behavior more accurately (Ajzen 1991).

Ajzen and Fishbein (1980) identify attitudes and social norms as determinants of intention. For example, a person who decides whether an action is good or bad demonstrates an attitude toward the behavior. Attitude and subjective norms are antecedents of intention. Ajzen and Fishbein define subjective norms as the social pressures that influence an individual's behavior.

In the TPB construct, external variables such as sex, age, social class, race, social roles, status, and socialization affect action or behavior only if the external variable impacts the determinants of intention (Ajzen & Fishbein, 1980). An individual's beliefs regarding attitudes, subjective norms, and perceived behavioral control associated with behavior will influence whether an action will happen. The more positive assumptions surrounding the antecedents are associated with the behavior, the more likely it is to occur.

The TPB framework is the right choice for this study on sustainable apparel choices because sustainability as it relates to apparel choices is one of those topics that necessitates control; thus, without a focus on control, it would be difficult to predict behavior with intentions only (Ajzen & Fishbein, 1980). Several studies conducted on purchasing and designing sustainable apparel have used TPB as the framework to design their studies to better predict behaviors toward purchases of ESAP's (Abdullah et al., 2014; Abner et al., 2019; Connell & Kozar, 2012; Kang et al., 2013; Song & Ko, 2017; Zheng & Chi, 2015).

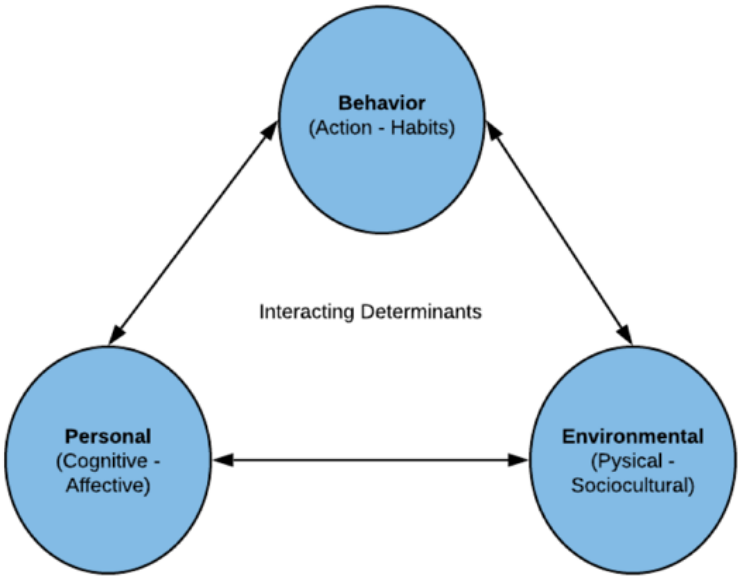
Social Cognitive Theory

Social cognitive theory (SCT) provides a platform for understanding human behavior through personal, behavioral, and environmental influences (Bandura, 2001). Agentic perspectives, including personal, proxy, and collective modes, provide a foundation for examining "triadic reciprocal causation" (Bandura, 2001, p. 14) between personal, behavioral, and environmental factors, as depicted in Figure 2.5. Characteristics of each factor affect how individuals intend to select or choose one action over another. "To be an agent is to intentionally make things happen by one's actions" (Bandura, 2001, p. 2). The reciprocal interaction between each factor establishes socio-structural interconnectivity and demonstrates how determinants influence behavior. Bandura explains this reciprocation using sociostructural factors to illustrate the process in that

> …economic conditions, socioeconomic status, and educational and family structures affect behavior largely through their impact on people's aspirations, sense of efficacy, personal standards, affective states, and other self-regulatory influences… (p. 15)

Figure 2.5

Social Cognitive Theory Framework



A determinant of TPB is a social norm. The role of social norms in SCT embraces the notion that personal agency functions within a network of systems that determine social expectations that guide action within the social group (Bandura, 2001). The current study examined subjective norms and their influence on the intention of making sustainable apparel choices.

Self-efficacy, a function of doing, is defined as a belief one has in their abilities to confront challenges associated with behaviors (Akhtar, 2008). Ajzen's definition of perceived behavioral control aligns nicely with Bandura's concept of self-efficacy embedded within the social cognitive theory. Ajzen (1991) points out that opportunity and resources such as "time, money, skills, and cooperation of others" (p. 182), when collectively combined, impact a person's self-efficacy and intention to perform the

behavioral outcome (Bandura, 2001). Each time a consumer can make an environmentally sustainable apparel product purchase, they weigh the risks of such a purchase. Individuals who possess beliefs that their actions impact others tend to make decisions that reflect those attitudes and beliefs (Akhtar, 2008; Joshi & Rahman, 2017; Kang & Kim, 2013).

Bandura's (2001) SCT claims that an individual who can explore, manipulate, and influence one's environment when presented with a decision is how a behavior change happens. The agentic perspective proposed by Bandura makes the application of SCT probable. Sustainable apparel purchases put the agentic outlook to work. SCT's agentic perspective drives the process when one thinks about past sustainable behaviors, then cogitates on purchasing a sustainable product, and decides whether to purchase the sustainable item based on intention, social norms, and beliefs.

Influential Constructs on Sustainable Apparel Choices

Knowledge

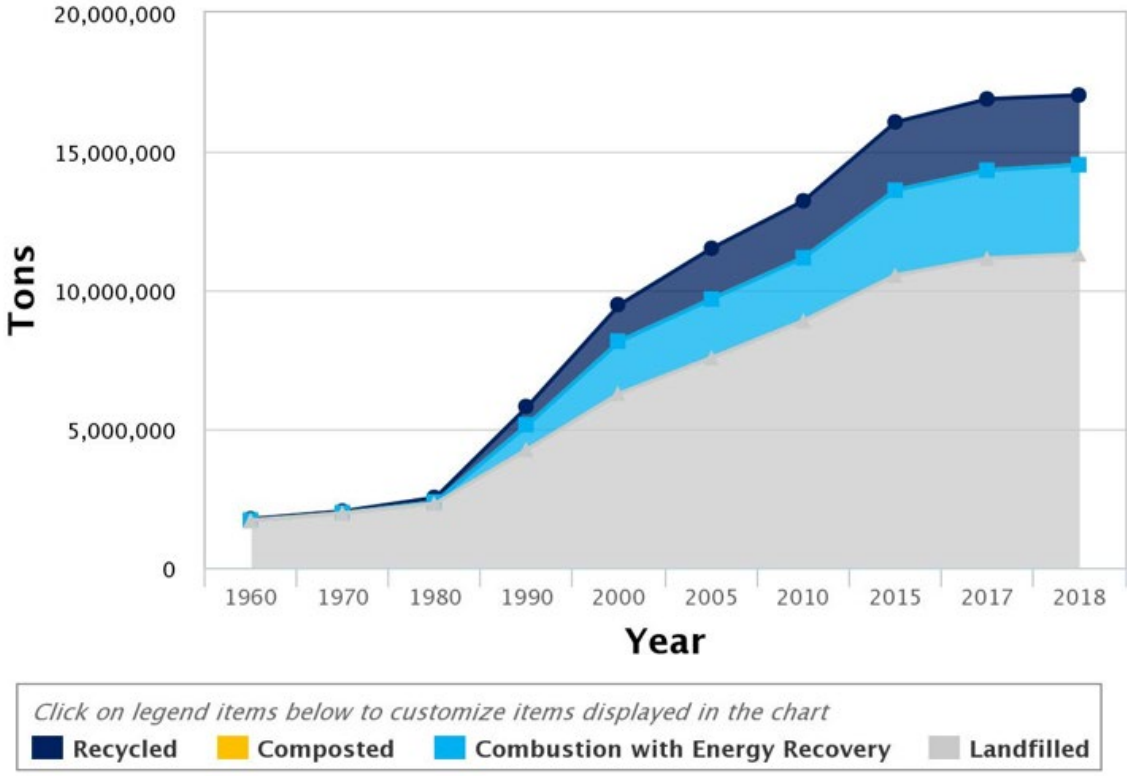
Increasing student knowledge (an ESD construct) about social and environmental issues surrounding apparel is a way to impact or influence consumer sustainability behaviors (Connell & Kozar, 2012). The concepts identified by Thompson et al. (2012) when addressing environmental issues should be utilized when introducing topics to increase knowledge. One of Thompson et al.'s concepts involves exploring carbon, solid waste, and water footprints.

The U.S. Environmental Protection Agency (EPA Facts, n.d.) reports annually on

textile waste on their facts and figures about materials, waste and recycling webpage. Textile waste generation in 2018 was approximately 17 million tons. Landfills generated 11.3 million tons of municipal solid waste textiles in 2018. Two and half million tons of textiles were recycled in 2018 (see Figure 2.6).

Figure 2.6

Textile Waste Management: 1960-2018



Note. (EPA Facts, n.d.) This image was downloaded by permission from the EPA webpage.

In 2010 about 13.2 million tons of textile waste was generated, sending 8.9 million tons of textile waste to the landfill, and recycling approximately 2 million tons. Since the UNESCO sustainability standards originated in 2005, nondurable goods waste

(product with a life span of three or fewer years) has decreased, but textile and footwear waste has increased. Facts and figures reported by the EPA illustrate further the great need to address the impacts that consumer apparel habits have on the environment.

Sharing knowledge about textile waste has the potential to decrease waste generation (Thompson et al., 2012). Abner et al. (2019) found that formal education methods about sustainability significantly influence behavior changes more than informal education approaches. Nevertheless, increasing knowledge should not be the only focus of sustainability education. Using Thompson et al. concepts to address environmental sustainability while implementing Bandura's (1986) SCT interacting determinants has the potential to influence attitudes and social norms towards ESAP's (Abner et al., 2019; Ajzen, 1991; Joshi & Rahman, 2017; McNeill & Moore, 2015).

Environmental Concern

Yeung's (2004) definition of environmental concern is "an affective attribute that presents a person's worries, compassion, likes, and dislikes about the environment" (p. 113). Environmental concerns translate easily into action because of emotional connections. Joshi and Rahman (2017) cite some organic food studies that illustrate strong evidence of positive relationships between the purchase of organic food and an individual's concern for the environment. Joshi and Rahman saw the same parallels when examining a consumer's awareness of environmental issues regarding the production and consumption of apparel products. Lundblad and Davies (2016) found significant motivational patterns among study participants to address environmental concerns, which encompass responsibility and a desire to protect the planet. Those who feel a

responsibility to address environmental concerns do so by taking responsibility for how they consume, and they want to educate others to practice similar habits. Such habits involve purchasing apparel made from natural materials, being aware of environmentally friendly production techniques, and purchasing recycled clothing (Lundblad & Davies 2016). Post-purchase habits or activities positively associated with environmental concern involve increased apparel utilization (e.g., appropriate clothing care, mending, and upcycling). Mindful actions associated with laundry and mending will extend the life of the apparel garment (Lawless & Medvedev, 2016). A qualitative study out of New Zealand, conducted by McNeill and Moore (2015), claims that consumers, particularly younger consumers, who associate their fashion with their self-identity have the least concern for the environmental and ethical factors. McNeill and Moore concluded that efforts implemented to promote subjective norms and attitudes towards sustainable apparel consumption through education might have the most influence in changing perceived behavioral control and purchase intentions.

Attitude

An individual's feeling of "favorableness or unfavorableness for that concept" (Ajzen & Fishbein, 1980, p. 54) is the definition of attitude used for this research. Ajzen and Fishbein advise using a bipolar evaluative scale when assessing attitudes. The more positive one's attitude is toward the intended behavior, the more likely the individual will intend to perform the behavior (Azjen & Fishbein, 1980).

When assessing attitude towards ESAP, determinants of attitude should be identified. McNeill and Moore (2015) identify several studies that cite a lack of consumer

knowledge, product availability, economic resources, retail environments, and societal norms as reasons why individuals have a poor attitude about ESAPs. Color and style are powerful influences when selecting apparel items. Aesthetic design, quality, and personal style influence apparel consumption (Kang & Kim, 2013; Song & Ko, 2017). These performance factors have more weight placed on them than ethical factors associated with apparel items. Survey questions addressing performance characteristics (i.e., color, style, quality) using bipolar evaluative scales will produce evidence to predict intention towards ESAP (Ajzen & Fishbein, 1980).

The study conducted by McNeill and Moore (2015) identified themes attached to attitudes about sustainable consumption as the role of self, the importance of fashion to an individual, concern for the environment and society, barriers to ethical fashion consumption, and motivation to change fashion consumption behaviors. These themes appear to counter one another when the intended action is making sustainable apparel purchases. Negative attitudes towards the quality and aesthetics of sustainable apparel do not support the role of self and the importance of fashion for identity (Lundblad & Davies, 2016; McNeill & Moore, 2015). Song and Ko (2017) call attention to the attitudes that individual consumers have towards sustainable goods. An individual's perception of sustainable apparel consumption is dependent on the products "perceived relevance and value, perceived effectiveness for impacting the environment or society, and perceived losses and gains" (Song & Ko, 2017, p. 266). These perceptions influence one's attitudes towards sustainable apparel consumption.

Subjective Norms

Subjective norms related to this research address an individual's perception of significant others' desires for them to purchase or not purchase sustainable apparel. According to Ajzen and Fishbein (1980), the "more a person perceives that others who are important to them think they should perform a behavior, the more they will intend to do it" (p. 57). When assessing subjective norms, Ajzen and Fishbein recommend a measure that aligns the intent and action. For example, asking, "Most people who are important to me think I should buy sustainable apparel products," would align with the recommendations for accurate assessment provided by Ajzen and Fishbein and Ajzen (2013). The more focused a measure is on the important group or individual, the more accurate the subjective norms assessment will be (Ajzen & Fishbein, 1980). Identification of the correct influencing group is critical in accurately assessing how influential subjective norms are towards the intention to purchase sustainable apparel, as demonstrated in research conducted by Kang et al. (2013).

Kang et al. (2013) identified a negative relationship between consumer knowledge and subjective norms regarding sustainable apparel products (Kang et al., 2013). Although increased knowledge about ESAP has a negative relationship with subjective norms, this finding suggests consumers with knowledge are less swayed by subjective norms that do not support ESAP purchases (Kang et al., 2013). Increasing exposure to positive subjective norms associated with sustainable apparel helps students increase their perceived personal relevance towards sustainable apparel (Kang et al., 2013). This finding, embedded with SCT ideas, supports the idea that education can help

influence social norms. Therefore, the findings support the need for FCS educators to guide young students and consumers to realize they can make an essential difference in the environment by how they consume fashion.

Additionally, Kang et al. (2013) asserted that emphasizing positive, sustainable "lifestyles, values and self-images" (p. 450) will increase individual perceived personal relevance. Learning activities could quickly help students to focus on these elements. A study conducted by Abdullah et al. (2014) on the role of subjective norms in organic food consumption found that subjective norms significantly moderate relationships between attitudes and intentional behaviors for purchasing organic food and between perceived behavioral control and purchase intention. De Lenne and Vandenbosch (2017) studied social media's influences on sustainable apparel buying intention. This study's findings indicate the slight importance of social media in affecting 18-26 year old consumers' buying intention for sustainable apparel products. Individuals who value the environment and other people have significant positive personal norms for sustainable apparel purchases (Kim & Seock, 2019). Surprisingly, Kim and Soeck found that individuals with strong egoistic values favored sustainable apparel purchases because the product indicated their financial status and discloses their caring concerns towards the environment. For these individuals, the sustainable purchase becomes a symbolic element of their social status. For educators and marketers alike, helping individuals internalize social norms surrounding sustainable apparel purchases will positively contribute to more sustainable apparel purchases.

Another interesting finding that negatively impacts intention comes from a

qualitative study in New Zealand conducted by McNeill and Moore (2015). They claim that consumers, particularly younger consumers, who associate their fashion with their self-identity have the least concern for the environmental and ethical factors connected with their consumption of apparel products. McNeill and Moore (2015) concluded that efforts implemented to promote subjective norms and attitudes towards sustainable apparel consumption might have the most influence in changing perceived behavioral control and purchase intentions.

Educational Approach to Influencing Intention

Teaching Strategies for Change

Several studies provide evidence that suggests knowledge acquisition alone will not change an individual's behavior or behavioral intention towards sustainable apparel consumption (Abner et al., 2019; Bong Ko & Jin, 2017; Connell & Kozar, 2012; Heeren et al., 2016; Seatter & Ceulemans, 2017). Thus, a holistic approach entrenched with strategies that fully engage the learner can potentially transform student learning by influencing attitudes, subjective norms, and perceived behavioral control.

Traditionally, textile and apparel education has followed a business model focusing on creativity, market analysis, profit margins, trend analysis, and production. While the curriculum approach needs to change to include global citizenship proficiencies, the delivery also needs to change to encompass various teaching strategies that will engage the learner through transformational processes (Seatter & Ceulemans, 2017). Researchers are calling for holistic and transformational approaches to curriculum

that utilize strategies that encourage interaction and engagement with ideas, exercises, and experiences that embrace components of sustainability in apparel and textile courses during the learning process (Abner et al., 2019; Geng et al., 2017; Pasricha, 2010; Pasricha & Kadolph, 2009). Experiential learning activities provide depth and richness for apparel and textile students that increase consciousness of social and environmental issues that have detrimental effects around the globe (Armstrong et al., 2016). Case studies (Abner et al., 2019; Kang et al., 2013; Seatter & Ceulemans, 2017), video diaries (Roberts, 2011), role-playing (Levintova & Mueller, 2015), solving real-world problems also known as reality modeling, student-centric learning, and authentic assessments (Abner et al., 2019) have proven to increase knowledge, attitudes and behavioral intent towards sustainable apparel consumption (Abner et al., 2019; Levintova & Mueller, 2015; Roberts, 2011; Seatter & Ceulemans, 2017).

Abner et al. (2019) reported significant increases in knowledge and attitudes towards purchasing sustainable apparel. There was an increase in behavior related to sustainable apparel purchases; however, it was not significant (Abner et al., 2019). Cost, availability of the product, and aesthetics are factors that most likely influenced non-significant changes in behavior. It could be possible that measuring behavioral intent may produce different results than measuring actual behavior.

Another finding from Abner et al. (2019) supports the holistic instructional approach embedded in the ESD Framework. Student participants reported that instructional strategies that required reflection, critical thinking, and research efforts had the most impact on their learning and satisfaction with the class (Abner et al., 2019).

Conceptual Framework

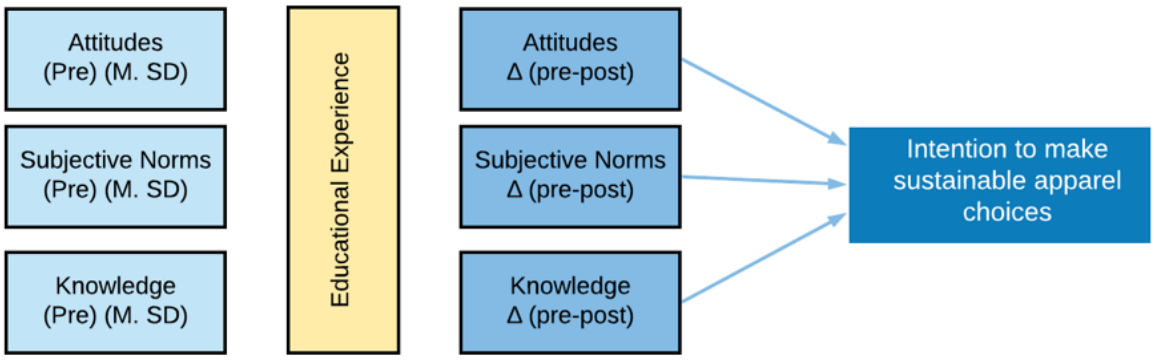
Consumption patterns in energy use, apparel purchases, and industry textile sales compel the need for more interventions regarding consumer apparel choices. Bong Ko and Jin (2017) and Lundblad and Davies (2016) indicate a shortage of research that focuses on consumer apparel purchasing intentions. Previously there has been a focus on production practices and choices in the textiles and apparel industry. Industry stakeholders have made efforts to change their practices (EPA Facts, n.d.; Nike News, 2014; Off the Cuff, n.d.; Stories n.d.; Textile World, 2019). However, with a continued increase in apparel consumption and textile waste, it appears that consumers are not aware of the environmental impact of their apparel purchases (EPA Facts, n.d.; Fashion United, 2020). The decrease observed in fossil fuel energy consumption in developed countries since 2005, when UNESCO introduced the ESD standards, seems to have positively impacted the environment in the developed countries, while negatively impacting underdeveloped countries. Following the ESD approach in updating the fashion and apparel curriculum will positively influence consumers awareness of their apparel consumption choices enough to change intentions and habits associated with apparel. Data collected by the Ellen McArthur Foundation (2017) identifies a critical need for changing consumer habits. The Ellen McArthur Foundation promotes a circular economy which keeps resources in use as long as possible in order to get the maximum value from those resources while in use, “and then products and materials are recovered and regenerated at the end of each service life” (Cattermole, 2018). Consumers are a critical component of the circular economy. To set a change in motion, stakeholders

responsible for informing the consumer have a vital role in reversing the detrimental effects of fast fashion and underuse of clothing utilization.

The proposed study's conceptual framework will guide the investigation of the impact of an educational experience on factors such as knowledge, attitudes, subjective norms, and intentions on college students' sustainable apparel choices. In order to examine the research objectives guiding this project, the conceptual framework proposed for this study (see Figure 2.7) was created from Ajzen's (1991) Theory of Planed Behavior framework. Adaptations to the TPB model allow for observation on whether attitude, subjective norms, and knowledge affect an individual's intention to make sustainable apparel choices when they have an educational experience related to fashion sustainability. This conceptual model also allows for the assessment of the relationships between the independent and dependent variables.

Figure 2.7

Conceptual Framework



Note. Conceptual framework adapted from Ajzen's (2001) TPB framework and Bandura's (2001) SCT framework.

Chapter Summary

Unsustainable apparel consumption patterns verified by apparel and textiles sales and textile waste generation construct an argument favoring interventions to ease the social and environmental burdens that textile industry practices and consumer apparel habits have created. The introduction of ESD standards by UNESCO in 2005 has had positive effects in some industries (i.e. energy industry). Implementation of ESD standards in the textile and apparel industry could foster similar results. Consumers play a critical role in the circular economy and the impacts that the textile industry imposes economically, environmentally, and socially. In order to set a change in motion, stakeholders responsible for educating the consumer have a vital role to play in reversing the detrimental effects of fast fashion. Holistic approaches to education that address knowledge, attitudes, subjective norms, and intention towards sustainable apparel provide promising outcomes to addressing overproduction, overconsumption, and excessive waste. Guided by Ajzen's (1991) TPB, I attempted to examine the effects of an educational experience on intention to purchase sustainable apparel products.

CHAPTER 3

METHODOLOGY

Purpose and Objectives

This study analyzes the effects of an educational experience on intention to make sustainable apparel choices. Objectives of the study were to identify the effects of fashion sustainability instruction on (1) attitudes towards sustainable apparel choice, (2) subjective norms related to sustainable apparel choices, (3) knowledge of sustainable apparel choices, (4) intentions to make sustainable apparel choices, and (5) examine if relationships exist between intentions to make sustainable apparel choices and attitudes, subjective norms, and knowledge.

Descriptive statistics and paired *t* tests were used to address research objectives one through four. A multiple regression model was generated to examine pretest data, and correlations were conducted between variables on posttest data to examine research objective five. Objective five permitted exploration of relationships between dependent variable intention to make sustainable apparel choices and the independent variables; knowledge, attitudes, and subjective norms.

Methods

Research Design

This study's general scope was to examine the effect of an educational experience on making sustainable apparel choices by college students. Pr-test, posttest quasi-

experimental methodology allowed for a rigorous approach to collecting evidence while meeting time and budget restraints (Gopalan et al., 2020). To implement this approach, the pretest was administered before participants interacted with two online learning modules. Following the intervention, participants were asked to complete the posttest.

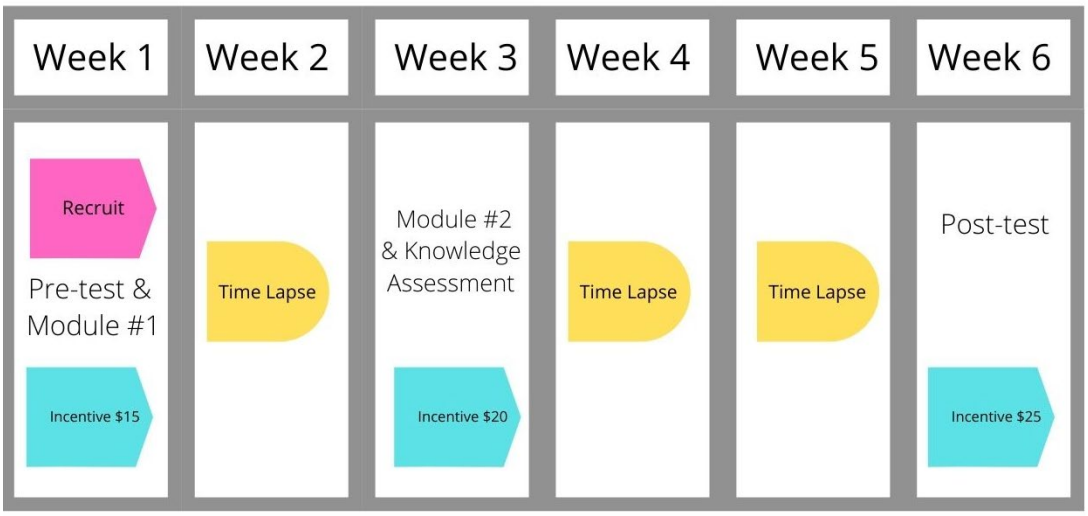
Population and Sampling

The target population identified for this study included college students enrolled at Utah State University. Surveying students across campus rather than students in one discipline increased the opportunity for a larger sample size, which results in better accuracy of the inferences made (Creswell & Creswell, 2018). A random sampling target of 250 participants from the population was determined from a power analysis conducted for paired *t* test and simple regression. The G-Power 3.1 software suggested a minimum sample size of 90 participants for paired *t* test and a sample size of 29 for regression, with the following sampling parameters; $r = .3$, $\alpha < .05$, $\beta = .80$, 3 predictors. Changing the the effect size to $r = .5$, decreased the suggested minimum sample to 34 for a paired *t* test and 19 for a regression (Cohen, 1988).

Recruitment of participants was utilized through SONA, a student research participation platform. When students signed up to participate in the sustainable apparel choices study, they were prompted to sign up for three separate sessions, a pretest session, a knowledge session, and a posttest. The study's contact points occurred across six weeks and three sessions (e.g., pretest survey and module 1, module 2 and knowledge assessment, and posttest survey). The timeline is illustrated in Figure 3.1 and the Intervention Lesson Plans in Appendix A.

Figure 3.1

Study Timeline



Incentives were utilized in an attempt to combat survey fatigue and attrition. SONA points were available for participants who completed each section of the research study. In addition, for each session the participant completed, they were eligible to enter a drawing to receive one of ten Amazon gift cards. As the study progressed, the gift card incentive amount increased from $15 to $20 to $25. In total, $600 in Amazon gift cards were distributed to participants.

Data Collection

After the study was approved by the Utah State University (USU) Institutional Review Board (IRB), study administration was facilitated online. Learning modules were shared on a Google Sites webpage, and data was collected using a Qualtrics survey instrument (see Appendices A and B). The study followed the conceptual framework guided by the theory of planned behavior, social cognitive theory, and context-specific elements for sustainable development from the literature review.

Timeline and Reminders

The length of the study took place over 6 weeks (see Figure 3.1). One week went by between the fast fashion and the sustainable fashion learning modules. Two weeks transpired between the sustainability learning module and the posttest, with a total of 5 weeks between the pretest and posttest survey.

Before participants could participate in the intervention, they were prompted to take the pretest survey. After the pretest, participants were directed to participate in a learning module about fast fashion. One week following module one, an email reminder was sent with a link to participate in the second learning module, sustainable fashion. At the end of the second module, an assessment on fast fashion and sustainability was given. Two weeks after completing the second module, participants were contacted through email and prompted to take the posttest survey.

Email reminders were sent to participants each week by SONA. An additional email was sent by the lead researcher if the participant indicated they wanted a reminder in the incentive form. Hyperlinked text in the emails directed participants to the survey or learning module. The Tailored Design Method present by Dillman et al. (2014) states that timely reminders encourage response. This practice has been shown to help decrease attrition (Foster et al., 2004).

Learning Modules Intervention

Two online learning modules functioned as the intervention for this study (see Appendix A). Participants were directed to interact with the modules after taking the pretest. Content in the fast fashion module addressed knowledge about behaviors

associated with the purchase, use, and disposal of apparel products. One week after the pretest and module one was completed, participants were directed to participate in module two, sustainable fashion. Information about the attributes of production and use related to sustainable apparel was addressed. Participants watched videos, read articles, and participated in reflection exercises. Upon completing the learning activities in module two, participants were assessed on their knowledge of fast fashion and sustainability.

Teaching assistants familiar with sustainability topics were asked to preview the modules and provide feedback to ensure quality and ease of use. Curriculum experts were asked to provide feedback and suggestion for the learning modules.

Survey

The pretest, posttest survey method is a relatively inexpensive approach to gathering data. Additionally, using a survey is an excellent way to collect data systematically from variables that are not easily observed, such as attitudes, subjective norms, and intentions (DeVellis, 2003). Some survey respondents' bias is plausible, such as nonresponse, overstatement of intentions, or offering a socially desirable response (DeVellis, 2003). When biases are controlled for using careful instrument design and response metrics, surveys are an acceptable and popular method of collecting descriptive data (Dillman et al., 2014). Response bias, affected by history, could impact the certainty of results if a study participant experiences an event related to fashion sustainability (Price et al., 2015). Maturity is also a cause of response bias. This study cannot control whether or not participants would have learned about fashion sustainability. However,

due to the shorter period involved in collecting data, maturation response bias should be limited (Creswell & Creswell, 2018).

For this study, the survey instrument in Appendix B was adapted from existing survey instruments used in studies exploring attitude, knowledge, subjective norms, and intention related to sustainable apparel studies. A compilation of the studies referenced in completing the survey are listed in Table 3.1.

Ajzen's (2013) instructions for adapting a survey instrument were followed to develop the survey instrument. To prevent survey fatigue, more than one Likert scale was used on the survey instrument (Dillman et al.,2014). Categorical, 5-point, and 7-point scales were used. Both positive and negative statements were used (DeVellis, 2003).

Table 3.1

Summary of Measures used to Develop the Survey Instrument for this Research

Instrument measure or survey study	Survey construct (author)
Determinants of consumer sustainable purchase behavior	Past environmental behaviors, attitudes towards sustainable purchasing, perceived knowledge about sustainability issues, perceived marketplace influence, environmental concern, subjective norms (Joshi & Rahman, 2017)
Ecologically conscious consumer behavior (ECCB) scale	Environmental concern and attitudes (Roberts, 2006)
Perceived risk towards ESAP	Perceived risk, subjective norms, Cronbach's alpha on this survey instruments was .80 to .86 (Kang & Kim, 2013)
Predictors of purchase intention towards green apparel products	Purchase intentions towards green apparel products (Bong Ko & Jin, 2017)
Organic cotton and the apparel consumer	Sustainability knowledge, perceived behavioral control, subjective norms, attitudes towards organic cotton, attitudes towards sustainability issues (Hustvedt, 2006)
Knowledge, attitudes, and behaviors of college students in FCS towards environmentally friendly apparel	Sustainability knowledge, attitudes towards sustainability, behaviors towards sustainability (Bostic, 2008)
Change in proximity of clothing to self-research study	Apparel purchase importance (Nielson, 2009)

Content experts were consulted during the survey's adaptation to address and control for content validity measures. After review, the survey was administered as a pilot to students enrolled in Family and Consumer Sciences Education (FCSE) courses fall 2020. Ninety-three students (n = 93) participated in the pilot survey.

The constructs surveyed in the pilot included, intent, attitudes, and subjective norms. Pilot survey items for each variable were evaluated for post-hoc reliability using Cronbach's alpha. Cronbach's alphas for the nine intent, 15 attitude, and four subjective norms items were .916, .828, and .649, respectively. Statistical analysis using Cronbach's alpha was conducted to identify internal consistency of the instrument. Reliable data was achieved through internal consistency demonstrated by the similarity of responses to each survey item as they related to the study variables.

Survey items from the pilot that did not align with the research objectives of this study were removed. Under the direction of the dissertation committee (two whom were content experts), nine additional binary intent construct questions were added to capture data that better aligned with the conceptual framework. In order to decrease the amount of time needed to take the survey, I decreased the number of attitude survey items from fifteen to six. I removed attitude items that addressed social or economic factors because this study was focused on the environmental factors of sustainability.

Three additional subjective norm survey items were added. In addition, wording on the remaining subjective norm items were adjusted to better align with Ajzen's (2013) survey formatting. I included the subjective norm questions from Kang and Kim's (2013) study on perceived risks towards the consumption of environmentally sustainable

apparel. The Cronbach's alpha for three subjective norms from Kang and Kim's study was found highly reliable ($\alpha = .86$). The addition of the subjective norms questions was included to attempt to raise the reliability score from ($\alpha = .649$). There was a total of eight subjective norms items used in the adapted survey.

After the pilot survey was administered, questions that assessed knowledge of fast fashion and sustainable fashion were generated and added to the survey. I created a total of eight knowledge questions. Knowledge questions were not piloted. During the creation of the knowledge items I gathered feedback from committee members and textile science teaching assistants to adjust and align knowledge questions with the content associated with this study.

Study Progression and Data Collection

Individuals enrolled to participate in the sustainable apparel choices study were recruited through SONA. Individuals were required to sign up for all three sessions, the pretest, intervention and knowledge assessment, and the posttest. Information about the nature of the study was provided in the study description on SONA and in the Letter of Intent provided at the beginning of the pretest survey (see Appendix C). Furthermore, two clarifying measures were utilized before individuals were allowed to begin the online study. The population was filtered based on two responses at the beginning of the pretest, (1) agreement to participate in the study, and (2) age requirement of 18 years or older.

The total time needed to complete the study was estimated to be approximately 1 hour and 15 minutes. It was estimated that session one would take about 30 minutes to complete and involved taking the pretest and participating in the fast fashion intervention

module. It was estimated that session two would take approximately 35 minutes and engaged the participant in the sustainable fashion intervention module followed by the knowledge assessment survey. The final component of the study was the 12-minute posttest survey.

Participants could choose to submit their names in a separate incentive survey at the end of each session. Entering their name and email in the incentive survey qualified them to be entered into a drawing for 1 of 10 Amazon gift cards. Ten gift cards were awarded for participation in each session.

Constructs of Theory of Planned Behavior Variables in the Study

The survey items addressed the constructs identified in the literature review. These included intention, attitudes, subjective norms, and knowledge towards making sustainable apparel choices. The demographic section collected information related to apparel purchasing behaviors, age, gender, major, and years in education.

Knowledge Items

To assess fast fashion and sustainable fashion knowledge, a series of eight questions were asked (see Table 3.2). Items were categorical, and correct answers received one point. Responses were summated to reflect a total knowledge score. A total of 19 points were possible in the knowledge section.

Attitude Items

The attitude items included in the pre- and posttest survey were designed to

Table 3.2

Items Used to Measure Knowledge

Item	Scale
Current fashion industry practices by brands and consumers are contributing to:	categorical
The textile industry is the second largest polluter behind the ____ industry	categorical
Large amounts of pesticides and chemicals are used to produce _____	categorical
A common practice for many fashion brands is to replace their clothing line options _____	categorical
The majority of discarded textiles end up _____	categorical
Characteristics of fast fashion: (choose all that apply)	categorical
Characteristics of sustainable fashion: (choose all that apply)	categorical
Which image represents a circular economy	categorical

examine how the participant perceives sustainable apparel. The six items, measured with a 7-point Likert scale (7 = Strongly Agree, 6 = Agree, 5 = Somewhat Agree, 4 = Neither Agree nor Disagree, 3 = Somewhat Disagree, 2 = Disagree, and 1 = Strongly Disagree), assessed attitudes towards sustainable product characteristics and purchase habits (see Table 3.3). The first item, "The clothing purchases I make as an individual have no impact on the environment" was reverse coded. Attitude scores were summated to reflect one total attitude score.

Subjective Norms Items

Subjective norms are measured by asking the participant to reflect on how others perceive sustainable apparel behaviors. A 5-point Likert scale (5 = Always, 4 = Almost Always, 3 = Undecided, 2 = Sometimes, and 1 = Never) was used to examine the influence others have on the participants' likelihood of their intent to make sustainable

apparel choices (see Table 3.4). Subjective norms scores were summated to reflect one total score.

Table 3.3

Items Used to Measure Attitude

Item	Scale
The clothing purchases I make as an individual have no impact on the environment[a]	7 pt Likert
I feel that I have an ethical obligation to purchase eco-friendly apparel	7 pt Likert
The dyes and chemicals used in apparel production can be harmful to the environment	7 pt Likert
Major retailers should carry environmentally friendly products	7 pt Likert
It is important for the fashion industry to practice business in a sustainable manner	7 pt Likert
It is important for consumers to make sustainable apparel choices	7 pt Likert

[a] = reverse coded.

Table 3.4

Items Used to Measure Subjective Norms

Item	Scale
I depend upon my friend's opinion when purchasing clothing	5 pt Likert
My parents think that I should purchase apparel products that are environmentally sustainable	5 pt Likert
The students enrolled in my program think I should purchase apparel products that are environmentally sustainable.	5 pt Likert
Most people that are important to me wear environmentally sustainable apparel	5 pt Likert
Most people whose opinions I value would approve of my apparel purchases that are environmentally sustainable	5 pt Likert
When I purchase clothing, I am more concerned about the look and feel of the garment versus if its' environmentally friendly	5 pt Likert
I am a conscious environmental consumer	5 pt Likert
Purchasing environmentally friendly clothing increases my peace of mind	5 pt Likert

Intent and Ability Items

The dependent variable for this study is represented as the participant's intentions towards making sustainable apparel choices. Intention and ability items shown in Table 3.5 were measured using a binary scale (1 = Yes, and 0 = No), and a seven-point Likert scale (1 = Strongly Agree, 2 = Agree, 3 = Somewhat Agree, 4 = Neither Agree nor Disagree, 5 = Somewhat Disagree, 6 = Disagree, and 7 = Strongly Disagree). Intention and ability responses were summated to represent one total intention score.

Table 3.5

Items Used to Measure Intent and Ability

Item	Scale
I would buy a sustainable apparel item	Binary
I would buy a sustainable apparel item for a friend, family member, or significant other	Binary
I would repair a damaged apparel item	Binary
I would launder my apparel in cold water	Binary
I would recycle textile and apparel items	Binary
I intend to buy sustainable apparel items	Binary
I have the ability to buy sustainable apparel items	Binary
I DON'T intend to buy sustainable apparel items	Binary
I DON'T have the ability to buy sustainable apparel items	Binary
When I purchase apparel products, I always make a conscious effort to buy those products that are low in environmental pollutants	7 pt Likert
I make every effort to buy apparel products made from recycled materials	7 pt Likert
When I have a choice between two equal apparel products, I always purchase the one which is less harmful to the environment	7 pt Likert
Whenever possible, I buy products packaged in reusable packaging	7 pt Likert
I have convinced my family/friends NOT to buy some apparel products which are harmful to the environment	7 pt Likert
To reduce our reliance on oil, I select apparel products that do not use petro-chemicals	7 pt Likert
I normally make a conscious effort to limit my use of products that are made from scarce resources (i.e., water)	7 pt Likert
When I purchase apparel products I purchase the item because it is durable and long lasting	7 pt Likert

Informational and Demographics Items

Informational and demographic items were selected to gain a clearer picture of behaviors associated with apparel consumption (see Table 3.6). Age was a filtering item as individuals had to be 18 years or older to participate in this study. One item examined the importance of being fashionable. Participants were asked to rate the importance of being fashionable using a scale from zero to ten (0 = not important). Another item asked participants to identify from a list how they disposed of unwanted apparel. Three items had participants identify the frequency and dollar amounts associated with apparel purchases. One item utilized a categorical scale (0-3 times, 4-6 times, 7-10 times, 11-12 times, and more than 12 times) to identify purchasing frequency. Two items asked

Table 3.6

Items Used to Measure Informational and Demographics Items

Item	Variable
What is your age	Demographic/ participation filter
To you, how important is being fashionable	Fashionable
When I dispose of unwanted clothing (choose all that apply), donate to charity, throw away, store in a box, hand down to family, give to friends, sell online, re-purpose, other	Disposal
How often in the past year have you acquired new clothing (apparel, accessories, shoes, etc.)	Purchasing
In the past 30 days, how much money (round to the nearest dollar amount) have you spent on personal clothing items (apparel, accessories, shoes, etc.)	Purchasing
In the past year how much money (round to the nearest dollar amount) have you spent on personal clothing items (apparel, accessories, shoes, etc.)	Purchasing
Gender	Demographic
How many years have you been a student at this school?	Demographic
What is/was your Major/Program of Study? (please fill in the blank)	Demographic

participants to provide a dollar amount spent on apparel purchases for the past 30 days and annually. Three additional demographic items, gender, years at school, and major/ program of study, were utilized to describe the sample.

Data Analysis

This study presented descriptive statistics and paired sample *t* tests to explore and examine research objectives 1, 2, 3, and 4 to illuminate the effects of fashion sustainability instruction on attitudes, subjective norms, knowledge, and intention to make sustainable apparel choices. Linear regression and correlational analysis was used to address research objective 5, exploring if relationships exist between intention to make sustainable apparel choices and attitudes, subjective norms, and knowledge. Statistical significance was assumed at $p < .05$. All data organization and statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) Statistic 27 software.

Research Objectives

Research Objective 1 for this study was, "*Identify the effects of fashion sustainability instruction on college students' attitudes towards sustainable apparel choices."* Descriptive statistics were used to describe the attitudes participants had about sustainable fashion. Frequency was reported for each attitude item. Attitude item scores were summated for pre- and posttest responses. Pre- and posttest attitude median score differences were compared using a Wilcoxon signed rank paired sample *t* test (Field, 2013). Assumptions for a *t* test include normal distribution, which includes assessing the data for outliers and normality. Homogeneity of variance was not needed because the

samples being compared were the same size (Field, 2013). The Kolmogorov-Smirnov (K-S) and Shapiro-Wilk test were used to test normality. K-S tests with a significant *p*-value indicate deviation from normality (Field, 2013).

A K-S test indicated that the attitude pretest, $D(96) = .089$, $p = .056$, was barely beyond significance. The Shapiro-Wilk test for attitude pretest, $W(96) = .945$, $p < .001$, indicated significance. The K-S test for posttest attitude scores was not significant, $D(35) = .124$, $p = .195$. The Shapiro-Wilk test for posttest attitude was, $W(35) = .971$, $p = .468$, was not significant. A nonparametric Wilcoxon signed rank paired *t* test was conducted because of the discrepancies in significance between the pre and posttest scores.

Research Objective 2 for this study was, "*Identify the effects of fashion sustainability instruction on college students' subjective norms related to sustainable apparel choices."* Descriptive statistics were used to describe how subjective norms influenced participants' ideas about sustainable fashion. Frequency was reported for each subjective norm item. Subjective norm item scores were summated for pre- and posttest responses. Pre- and posttest subjective norm mean score differences were compared using a paired sample *t* test. Assumptions for normality were tested. A K-S test indicated that the subjective norm pretest, $D(97) = .089$, $p = .057$, was barely not significant. The Shapiro-Wilk test for subjective norms pretest, $W(97) = .982$, $p = .216$, was not significant. A K-S test found that posttest subjective norms scores were not significant, $D(34) = .093$, $p = .20$. The Shapiro-Wilk test for posttest subjective norms $W(34) = .975$, $p = .622$, was not significant.

A Cohen's *d* effect size is regularly reported for *t* tests and was used to report the

effect size for this obejctive.

$$Cohen's\ d = \frac{\bar{x}}{SD}$$

A Cohen's *d* at 0.2 is a small effect, at 0.5 is a medium effect, and at 0.8 is a large effect (Field, 2013). A Cohen's *d* effect size was reported for subjective norms.

Research Objective 3 for this study was, "Identify the effects of fashion sustainability instruction on college students' knowledge of sustainable apparel choices." Descriptive statistics were used to describe participant knowledge level of fast fashion and sustainable fashion. Frequency was reported for each knowledge item. Knowledge item scores were summated for pre- and posttest responses. Pre- and posttest knowledge median score differences were compared using a Wilcoxon signed rank paired sample *t* test because normality assumptions were not met for K-S and Shapiro-Wilk analysis. The K-S for pretest knowledge scores was $D(97) = .141$, $p < .001$; the Shapiro-Wilk was $W(97) = .950$, $p = .001$. Posttest knowledge scores for K-S was $D(41) = .276$, $p < .001$; and Shapiro-Wilk was $W(41) = .827$, $p < .001$. An *r* effect was reported.

Research Objective 4 for this study was, *"Identify the effect of fashion sustainability instruction on college student's intention to make sustainable apparel choices."* Descriptive statistics were used to describe how participant intentions and ability to make sustainable apparel choices were reported. Frequency was reported for each intention and ability item. Intention and ability item scores were summated for pre- and posttest responses. Pre- and posttest intention and ability mean score differences were compared using a paired sample *t* test. The paired sample *t* test was regarded as appropriate because the same participants took part in the entire study (Field, 2013).

Assumptions for normality were tested, and a Cohen's *d* effect size was reported. A K-S test indicated that intent pretest scores, D(97) = .052, p = .200, were not significant. The Shapiro-Wilk test for the intent pretest, W(97) = .987, p = .456, was not significant. A K-S test found that posttest intent scores were not significant, D(35) = .100, p = .20. The Shapiro-Wilk test for posttest intent scores W(35) = .978, p = .678, were not significant.

Research Objective 5 for this study was, *"Examine if relationships exist between college students' intentions to make sustainable apparel choices and attitudes, subjective norms, and knowledge."* A multiple linear regression model was used on the pretest data to explore whether relationships existed between intention to make sustainable choices (i.e., dependent variable) and attitudes, subjective norms, and knowledge (i.e., independent variables). Regression models provide a reliable method for identifying variables that have an impact. A bootstrapped simple regression model was used to analyze summated posttest scores for intention, attitude, subjective norm, and knowledge.

The informational demographic variable associated with how fashionable one perceives themselves to be is an item that affects attitude. This item was added to the regression to identify the type of relationship a sense of being fashionable has on one's intention to make sustainable choices.

Due to small posttest sample size, correlations were conducted on pre- and posttest constructs. Separate correlations were analyzed between intention and subjective norms, intention and attitudes, intention and knowledge, and intention and sense of being fashionable. Differences between the pre- and posttest data were analyzed and reported.

Research Ethics

This study was approved by IRB as an expedited review, meaning that sample data is collected in a way that is not anonymous and involves no more than minimal risk to subjects. Participants were informed of the details of the research and allowed to withdraw at any point in time. IRB guidelines associated with human subjects were followed. Participants 18 years or older participated in the survey (see Appendix C).

Assumptions

For this study, the first assumption is that participants make their own choices regarding purchasing or obtaining apparel. The second assumption is that participants answered all the questions honestly and truthfully. Each participant must participate in all three sessions and answer all of the questions for data to be analyzed. The third assumption is that each participant has access to the internet and has a basic knowledge of using digital technology and navigating web pages.

Limitations

This study was limited to individuals who are registered with and use the SONA recruitment system within the USU community. The majority of study participants were in the young adult age range (i.e., 18-24 years), so results may not generalize to older or younger age groups.

Self-reporting and self-guiding methods were used throughout the research design. Participants were asked to truthfully respond to each item on three surveys (i.e., pretest, knowledge, and posttest). Progression through each stage of the research study

requested that participants engage with informational content on fast fashion and sustainable fashion on two separate online modules. COVID-19 impacted how research and learning were conducted during the 2020-2021 school year. It is assumed that many participants participated in many online interactions and learning during this time. This fact, as mentioned above, may have impacted how diligent and conscientious participants were when they participated in this study.

Participants were able to choose whether they finished each survey and/or progressed consecutively through the study. The collected data may not accurately reflect the population due to a loss of data through dropout or nonresponse bias.

CHAPTER 4

RESULTS

The purpose of this research study was to examine the effects that an educational experience has on one's attitudes, subjective norms, knowledge, and intention to make sustainable apparel choices. The first four research objectives were designed to identify the effects of fashion sustainability instruction on college students' attitudes, subjective norms, knowledge, and intention. The results reveal significant differences between pre- and posttest variables. The fifth research objective examined if relationships existed between college students' intentions to make sustainable apparel choices and their attitudes, subjective norms, and knowledge. Of the variables assessed and analyzed for this objective, only the subjective norms variable indicated a significant relationship with one's intention to make sustainable apparel choices.

Response Rate

A total of 116 participants registered with SONA to participate in this study. There were 102 individuals who started the study by taking the pretest and participating in the fast fashion module. There were 56 individuals who continued with part two of the study which involved participating in the sustainability module and knowledge quiz. Part three of the study had 39 individuals participate in the posttest survey. The average time participants spent engaged with the study was approximately an hour and twenty minutes. Once the data was paired using the alpha numeric code generated by the study participants, the sample size for this study consisted of 35 individuals (n = 35).

Since the sample size was small after the data sets were paired, a Levene's homogeneity of varience test was conducted to see if responses between study completers and noncompleters were different. Homogeneity of varience results showed that no significant bias was present between completers and noncompleters for each variable tested (see Table 4.1).

Table 4. 1

Test of Homogeneity of Variance between Completers and Noncompleters

Variables	Levene Stat	*df*1	*df*2	*p*
Pre Intent	0.02	1	95	0.88
Pre Attitude	0.19	1	94	0.67
Pre Sub Norm	0.13	1	95	0.72
Pre Know	0.29	1	95	0.59
Post Intent	2.23	1	33	0.15
Post Attitude	0.15	1	33	0.70
Post Sub Norm	0.09	1	32	0.76
Post Know	0.15	1	39	0.70

Sample Characteristics

The research study sample included 35 participants. There were 14 males (40%), 20 females (57.14%), and one nonbinary (2.86%) (see Table 4.2). The study sample closely reflected the gender population at USU. USU male enrollment for fall 2020 was 44.5% and female enrollment was 55.5%. The majority of study participants were between ages 18-24. The average age of undergraduate students at USU at the time of the study was 22 years of age.

Table 4.2

Gender and Age of Study Participants

Demographic	*n*	%
Gender		
Male	14	40.00
Female	20	57.14
Other - Non-binary	1	2.86
Age		
18-24	79	81.40
25-34	9	9.30
35-44	5	5.20
45-54	2	2.10
65-74	2	2.10

Note. Age was only collected during the pretest.

Participants indicated they acquired new clothing during the past year. Sixty-two percent of participants acquired new clothing up to six times per year. Approximately 37% of participants indicated they acquired from 7 to over 12 new clothing items during the past year (see Table 4.3). Participants indicated they made clothing purchases within the past month. Approximately 65% spent up to $50.00 on clothing items within the past month. Annually, roughly 83% of participants spent $600.00 or less on clothing items.

Study participants were asked to rate how important being fashionable is. A rating of zero was not important. The majority of participants, 78.8%, gave a rating of six or higher (see Table 4.4).

Participants were asked to select from a list the ways they disposed of unwanted clothing items (see Table 4.5). One hundred percent of participants indicated they donate unwanted items to charity. Handing clothing down to family members and giving

clothing to friends were popular choices with 80% or more of participants indicating they use these methods to dispose of unwanted clothing. Forty-three percent of participants indicated they have stored clothing in a box, while 45% sell their unwanted clothing online. Forty percent of the participants indicate they throw away unwanted clothing items.

Table 4.3

Clothing Acquisition and Estimated Dollar Amount Spent

Demographic	*n*	*%*
How often in the past year have you acquired new clothing?		
0-3 times	9	25.71
4-6 times	13	37.14
7-10 times	3	8.57
11-12 times	3	8.57
More than 12 times	7	20.00
In the past 30 days how much money have you spent on personal clothing items?		
$0-$29	20	57.14
$30-59	3	8.57
$60-$89	2	5.71
$90-119	5	14.29
$120-149	0	0.00
$150-199	2	5.71
$200-299	1	2.86
$300-399	2	5.71
In the past year how much money have you spent on personal clothing items?		
$0-$199	13	37.14
$200-$399	10	28.57
$400-$599	6	17.14
$600-$799	3	8.57
$800-$999	0	0.00
$1000-$1199	3	8.57

Table 4.4

Importance of Being Fashionable

How important is being fashionable? (0 = not important)	*n*	%
1	1	3.30
2	1	3.30
3	2	6.70
4	2	6.70
5	0	0.00
6	5	16.70
7	8	26.70
8	5	16.70
9	2	6.70
10	2	6.70
Missing	2	6.70

Table 4.5

Disposal of Unwanted Clothing

Disposal option	*n*	*%*
Donate to charity	35	100.00
Throw it away	14	40.00
Store in a box	19	54.29
Hand down to family members	30	85.71
Give to friends	28	80.00
Sell online	16	45.71
Repurpose	22	62.86

Reliability of the Data

According to Field (2013), the Cronbach's alpha reliability test evaluates the internal consistency of the survey items to ensure that items used for a topic can achieve an appropriate correlation. Cronbach's Alpha coefficient lies between 0 and 1. A score between 0.70 and .90 is regarded acceptable (Field, 2013). The Cronbach alpha scores for

the variables measured were above 0.70, these results indicate consistency among the items use to measure each construct.

For this study, a Cronbach's alpha test for the attitude items was applied to ensure internal consistency and confirm the reliability of the statistical assumptions of the data, as presented in Table 4.6. The test received a value of 0.746, which was considered reliable. A Cronbach's alpha test for all eight subjective norms items was conducted and received a value of 0.726, which was considered reliable. A Cronbach's alpha for all nineteen knowledge items was employed and received a value of 0.738, which was considered reliable. A Cronbach's alpha test for all seventeen intention questions was also used and received a value of 0.745, which was considered reliable.

Table 4.6

Cronbach's Alpha for Attitude, Subjective Norms, Knowledge, and Intention

Constructs	*n*	Cronbach's α	Standardized Cronbach's α
Attitude	6	0.708	0.746
Subjective norms	8	0.729	0.726
Knowledge	19	0.702	0.738
Intention	17	0.805	0.745

Descriptive and Inferential Results

Research objective 1 stated, *"Identify the effects of fashion sustainability instruction on college students' attitudes towards sustainable apparel choice."* Attitudes of participants were measured using a Likert scale (7 = Strongly Agree, 6 = Agree, 5 = Somewhat Agree, 4 = Neither Agree nor Disagree, 3 = Somewhat Disagree, 2 =

Disagree, and 1 = Strongly Disagree). There were six attitude items, as presented in Table 4.7. The summated mean attitude score for pretest was 18.78, and 31.77 for the posttest. A bootstrap analysis was conducted using SPSS 27. An online learning module was the intervention applied between the pretest and posttest.

Table 4.7

Attitude Item Descriptive Statistics

	Pretest		Posttest	
Attitude survey item	*M*	*SD*	*M*	*SD*
The clothing purchases I make as an individual have no impact on the environment.[a]	3.23	1.70	5.3	1.69
I feel that I have an ethical obligation to purchase eco-friendly apparel.	3.73	1.55	4.93	1.39
The dyes and chemicals used in apparel production can be harmful to the environment.	2.67	1.18	6.00	0.983
Major retailers should carry environmentally friendly products.	2.50	1.31	6.13	0.973
It is important for the fashion industry to practice business in a sustainable manner.	2.47	1.01	6.17	1.05
It is important for consumers to make sustainable apparel choices.	2.90	1.06	5.83	0.986
Summated Mean	18.78	4.91	31.77	4.43

[a] Item was recoded.

Scores were compared for attitude towards sustainable apparel of participants before and after the intervention (see Table 4. 8). On average, pretest scores were less (Mdn = 18) than posttest scores (Mdn = 33). A Wilcoxon signed-rank test indicated that this difference was statistically significant, $T = 276$, $Z = -4.20$, $p < .001$, with a large effect ($r = .61$). On average, posttest attitude scores ($M = 31.77$, $SD = 4.43$) were 12.99 points higher than pretest attitude scores ($M = 18.78$, $SD = 4.91$).

Table 4. 8

Wilcoxon-Signed Rank Paired t *Test for Attitude and Knowledge*

	Pretest			Posttest						
Variables	*M*	*SD*	Mdn	*M*	*SD*	Mdn	*n*	*Z*	*p*	*r*
Attitude	18.78	4.91	18	31.77	4.43	33	24	-4.20	< .001	-0.61
Knowledge	13.54	3.05	14	16.122	1.71	16	26	-4.01	< .001	-0.56

Research Objective 2 stated, *"Identify the effects of fashion sustainability instruction on college students' subjective norms related to sustainable apparel choices."* Subjective norms of the participants were measured using a Likert scale (5 = Always, 4 = Almost Always, 3 = Undecided, 2 = Sometimes, and 1 = Never). There were eight subjective norm items, shown in Table 4.10. The summated mean subjective norm score for pretest was 16.65, and 19.18 for the posttest. A bootstrap analysis was utilized.

On average, pretest subjective norm scores (M = 16.65, SD = 5.05) were lower than posttest subjective norm scores (M = 19.18, SD = 4.57), shown in Table 4.9. This difference, 2.53, (95% CI [-4.764, -0.353]) was significant $t(16) = 2.156$, $p = 0.050$, and represented a very large effect, $d = 4.95$.

Research Objective 3 stated, *"Identify the effects of fashion sustainability instruction on college students' knowledge of sustainable apparel choices."* Knowledge was measured using a nominal scale. Participants were prompted to select the correct answer for each item. Eight knowledge items, presented in Table 4.11, were used to assess knowledge on sustainable apparel. One point was assigned to each correct answer, and then a score was produced by summing the items. A perfect knowledge score is 19.

There was an increase in scores between pretest and posttest for all items, except the low-tech characteristic for sustainable apparel characteristics. The largest percent increase on the number of responses answered correctly occurred on the question, 'A common practice for many fashion brands is to replace their clothing lines options _____.' The percent increase was 63%. The next largest percent increase was 39% for question, 'Large amounts of pesticides and chemicals are used to produce _____,'

Table 4.9

Paired t *Tests Statistics for Intent and Subjective Norms*

	Pretest		Posttest							
Variables	*M*	*SD*	*M*	*SD*	*n*	Bootstrap 95% CI Mean Difference	*t*	*p*	*df*	Cohen's D with Hedges correction
Intent	31.04	9.60	39.28	11.08	25	-11.32, -5.44	5.472	< .001	24	7.65
Subjective norms	16.65	5.05	19.18	4.57	17	-4.764, -0.353	2.156	0.050	16	4.95

Note. Bootstrap results are based on 1,000 bootstrap samples.

Table 4.8

Subjective Norm Item Statistics

	Pretest		Posttest	
Subjective Norms Survey Items	*M*	*SD*	*M*	*SD*
I depend upon my friend's opinion when purchasing clothing	2.07	0.87	2.37	1.13
My parents think that I should purchase apparel products that are environmentally sustainable	1.43	0.82	1.7	0.92
The students enrolled in my program think I should purchase apparel products that are environmentally sustainable.	2.00	1.05	2.37	0.89
Most people that are important to me wear environmentally sustainable apparel	1.77	0.82	2.07	0.74
Most people whose opinions I value would approve of my apparel purchases that are environmentally sustainable	3.20	1.40	3.30	1.21
When I purchase clothing, I am more concerned about the look and feel of the garment versus if its' environmentally friendly	2.03	1.10	2.33	1.21
I am a conscious environmental consumer	1.73	0.69	2.33	0.96
Purchasing environmentally friendly clothing increases my peace of mind	2.07	1.23	2.80	1.30
Summated mean	16.65	5.05	19.18	4.57

followed by a 31% increase for question, 'The textile industry is the second largest polluter behind the _____ industry.'

Knowledge scores were compared before and after the interventions using a pretest and posttest, see Table 4. 8. On average, pretest scores were less (Mdn = 14) than posttest scores (Mdn = 16). A Wilcoxon signed-rank test indicated that this difference was statistically significant, $T = 249$, $Z = -4.01$, $p < .001$, with a large effect ($r = .56$). On average, posttest knowledge scores ($M = 16.12$, $SD = 1.71$) were 2.58 points higher than pretest knowledge scores ($M = 13.54$, $SD = 3.05$).

Research Objective 4 stated: *Identify the effects of fashion sustainability instruction on college students' intentions to make sustainable apparel choices.* Intent

Table 4.9

Knowledge Item Frequency Statistics

	% answered correctly	
Knowledge survey items	Pretest *n* = 97	Posttest *n* = 41
Current fashion industry practices by brands and consumers are contributing to:		
Increased greenhouse gas emission	80.4	95.1
The textile industry is the second largest polluter behind the ____ industry		
Oil	53.6	78
Large amounts of pesticides and chemicals are used to produce _____		
Cotton	46.4	75.6
A common practice for many fashion brands is to replace their clothing line options _____		
Weekly	22.7	61
The majority of discarded textiles end up _____		
In the landfill	74.2	92.7
Characteristics of fast fashion: (choose all that apply)		
Low cost	90.7	92.7
Disposable	51.5	65.9
Quick turn around	77.3	85.4
Increased number of fashion collections	43.3	70.7
Low-tech production	41.2	39
Unsustainable materials	76.3	95.1
Characteristics of sustainable fashion: (choose all that apply)		
Environmentally friendly	94.8	97.6
Non-toxic chemicals	87.6	92.7
Responsibly sourced	87.6	97.6
Organic cotton	80.4	87.8
Safe supply chain	77.3	87.8
Eco-friendly	91.8	100.0
Recycled materials	90.7	100.0
Which image represents a circular economy		
Picture B	85.6	97.6

was measured using two scales. Ten items were measured using a binary scale (no = 0, yes = 1; see Table 4.12). Eight items were measured using a 7-point Likert scale (1 = Strongly Agree, 2 = Agree, 3 = Somewhat Agree, 4 = Neither Agree nor Disagree, 5 = Somewhat Disagree, 6 = Disagree, and 7 = Strongly Disagree; see Table 4.13). A decrease in the mean between the pretest (M = .20) and posttest (M = .14) for the binary item 'I DON'T have the ability to buy sustainable apparel items' is positive. Mean scores increased for each of the Likert scale items.

Table 4.10

Intention Binary Items Statistics

	Pretest (n = 97)				Posttest (n = 35)			
Item	% No	% Yes	*M*	*SD*	% No	% Yes	*M*	*SD*
I would buy a sustainable apparel item	3.1	96.9	0.97	0.17	--	100.0	1.00	0.00
I would buy a sustainable apparel item for a friend, family member, or significant other	6.2	93.8	0.94	0.24	--	100.0	1.00	0.00
I would repair a damaged apparel item	25.8	74.2	0.74	0.44	17.1	82.9	0.83	0.38
I would launder my apparel in cold water	18.6	81.4	0.81	0.39	--	100.0	1.00	0.00
I would recycle textile and apparel items	26.8	70.1	0.79	0.59	17.1	82.9	0.83	0.38
I intend to buy sustainable apparel items	36.1	63.9	0.64	0.48	31.4	68.6	0.69	4.71
I have the ability to buy sustainable apparel items	19.6	80.4	0.80	0.40	17.1	82.9	0.83	0.38
I DON'T intend to buy sustainable apparel items	81.4	18.6	0.19	0.39	80.0	20.0	0.20	0.41
I DON'T have the ability to buy sustainable apparel items	80.4	19.6	0.20	0.40	85.7	14.3	0.14	0.36

Table 4.11

Intention Likert Items Statistics

	Pretest			Posttest		
Item	*n*	*M*	*SD*	*n*	*M*	*SD*
When I purchase apparel products, I always make a conscious effort to buy those products that are low in environmental pollutants	97	3.03	1.60	35	3.77	1.59
I make every effort to buy apparel products made from recycled materials	97	2.73	1.48	35	3.46	1.65
When I have a choice between two equal apparel products, I always purchase the one which is less harmful to the environment	97	3.99	1.82	35	4.54	1.77
Whenever possible, I buy products packaged in reusable packaging	97	3.92	1.82	35	4.49	1.77
I have convinced my family/friends NOT to buy some apparel products which are harmful to the environment	97	2.52	1.54	35	3.37	1.75
To reduce our reliance on oil, I select apparel products that do not use petro-chemicals	97	2.41	1.35	35	3.49	1.38
I normally make a conscious effort to limit my use of products that are made from scarce resources (i.e., water)	97	3.19	1.78	35	3.83	1.56
When I purchase apparel products I purchase the item because it is durable and long lasting	97	5.34	1.64	35	5.40	1.29

Scores from both scales were summed to create a total intention score. The difference in scores between pretest and posttest demonstrates that intention did change, see Table 4.9. Pretest intention average was 31.04, while the posttest average was 39.28. The paired samples *t*-test results for intention, indicated that on average, posttest intention scores ($M = 39.28$, $SD = 11.08$) were 8.24 points higher than pretest intention scores ($M = 31.04$, $SD = 9.60$), 95% CI [-11.32, -5.44]. There was a significant difference between pre and post intention scores $t(25) = 5.472$, $p < .001$, with a very large-sized effect, $d = 7.65$.

Research Objective 5 stated: *Examine if relationships exist between college students' intentions to make sustainable apparel choices and attitudes, subjective norms, and knowledge.* A multiple regression was used to assess relationships on the pretest data (n = 94) rather than the post test data (n = 15). Field (2013) recommends that for each predictor 10 participants should be included in the analysis. For this study a sample greater than 40 participants would be more appropriate for a regression analysis. For this reason, a regression analysis was not conducted on the posttest data.

Joshi and Rahman's (2017) research findings directed the order of the predictors used in the regression model conducted for this study. Subjective norms were listed first, followed by attitudes, and knowledge. The variable that assessed the importance of being fashionable was added as it was a demographic that was shown to have an effect on attitude (Ajzen, 1991; Kang & Kim, 2013; McNeill & Moore, 2015; Song & Ko, 2017). Bootstrap analysis using 1,000 samples was utilized because of the smaller sample size (Field, 2013). An excluded listwise analysis was conducted using n = 94 for the sample size. The VIF levels were below 2 and tolerance statistics were above 0.2; therefore, the assumption is made that there was no multicollinearity (Field, 2013). The Durbin-Watson statistic (2.021) provides a tenable assumption of independent errors.

The multiple linear regression model shown in Table 4.14 was calculated to assess and predict the relationships between an individuals' purchase intention for making sustainable apparel choices and subjective norms, attitude, knowledge, and one's perception of the importance of being fashionable. Results show that 54.3% of the variance in intention can be accounted for by the four predictors, collectively, (F (4, 90) =

28.963, $p < .001$).

Looking at the unique individual contributions of the predictors, the result shows that subjective norms ($\beta = .59$, $t = 6.819$, $p < .001$) and knowledge ($\beta = .062$, $t = .818$, $p = .362$) positively predict intention. Furthermore, results also reveal that attitude ($\beta = -.219$, $t = 2.312$, $p = .078$) and importance of being fashionable ($\beta = -.082$, $t = 1.151$, $p = .197$) negatively predict intention. Subjective norms were the only significant predictor.

Table 4.12

Summary of Multiple Regression Analysis for Variables Predicting Intention to Make Sustainable Apparel Choices (n = 94)

Variable	*B*	*95% CI*	*β*	*t*	*p*
Constant (intention)	19.823	.717, 38.662		2.37	0.042
Subjective norms	1.173**	.848, 1.506	0.59	6.819	< .001
Attitude	-.443	-.914, .065	-0.219	-2.312	0.078
Knowledge	.194	-.234, .651	0.062	0.818	0.362
Importance of being fashionable	-.374	-.976, .186	-0.082	-1.151	0.197
R		0.750			
R Square		0.563			
F (4, 90)		28.963**, $p < .001$			

Note. R^2 adjusted is .543. Bootstrap results are based on 1,000 bootstrap samples.

** $p < .001$.

The original research plan intended to use multiple linear regression to assess relationships after the educational intervention, however, due to low sample size after pairing responses, correlations were used to more accurately examine the relationships between the study variables before and after the educational intervention. Pretest

correlations and posttest correlations were assessed between intention, subjective norms, attitudes, knowledge, and sense of being fashionable. Sample size varied for the pretest and posttest correlation tests due to the study's attrition rate (see Table 4.15). It was hypothesized that relationships would exist between the variables. Furthermore, it was also hypothesized that relationships between variables would become stronger after the educational intervention.

Table 4.13

Correlations Among Intention and Independent Variables

	Pretest			Posttest		
Variables	Intent	*p*	*n*	Intent	*p*	*n*
Norms	.723**	< .001	97	.473**	0.005	34
Attitude	-.566**	< .001	96	.446**	0.007	35
Knowledge	.219*	0.031	97	-.282	0.258	18
Fashion	.008	0.937	95	-.437*	0.011	33

Note. Bootstrap results are based on 1,000 bootstrap samples.

* $p < .05$.

** $p < .001$.

The data were analyzed using the Pearson *r* correlation. Pretest results reveal that subjective norms ($r = .723$, $p < .001$) have significant and strong positive associations with intention. The correlation between attitudes ($r = -.566$. $p < .001$) and intention were strongly negative. The association between knowledge and intention was ($r = .219$. $p = .031$) positive and weak, while the correlation between being fashionable ($r = .008$, $p = .937$) and intention was mostly nonexistent.

Posttest results reveal some different results using the Pearson *r* correlation. After

the educational intervention, subjective norms (r = .473, p = .005), and attitudes (r = .446, p = .007) have a moderately positive correlation with intention. The association between being fashionable (r = -.437, p = .011) and intention was moderately negative. Additionally, the correlation between knowledge (r = -.282, p = .258) and intention was negative, however it was not significant.

Chapter Summary

Participant responses to surveys inquiring about attitudes, subjective norms, and knowledge as they relate to intention to purchase sustainable apparel items were analyzed. Participant demographics closely represent the proportions of gender and age present at Utah State University. Participants purchase clothing and they mostly participate in sustainable behaviors when disposing of clothing.

Statistically significant effects were observed between the pretests and posttests, indicating a relationship exists between the predictors and the outcome after participating in an educational experience. Attitude, subjective norms, and knowledge scores produced significant coefficients with high effect sizes.

Analysis of the relationships between pretest predictors and outcomes demonstrated mixed results. Subjective norms were the only significant predictor, furthermore, they can be used to predict intention to make sustainable apparel choices.

Correlations were conducted for both pretest and posttest variables. Subjective norms had a positive relationship with intention on both analyses. The educational intervention appears to have had an influence on the relationships with intention for the

other variables; attitudes, knowledge, and being fashionable. The results between the pretest and posttest correlations differ in the type of relationship, as well as the significance.

CHAPTER 5

DISCUSSION

Examination of sustainability practices in the fashion industry illuminates that many fashion industry sectors are taking note and implementing sustainability practices (Cattermole, 2018; Fashion United, 2020; Fashion Revolution, 2019; Jacobs, 2020; Nike News, 2014; Off the Cuff, n.d.; Quantis, 2018; Staff, 2018; Stories, n.d.; Textile World, 2019). Activists, researchers, and organizations, like the Ellen MacArthur Foundation, are calling for the industry to adopt circular economy business models. The circular economy model embraces the tenets of sustainability and involves all parties, beginning with those who produce the fibers and materials needed to produce apparel, to the consumers of apparel products, to those who process the apparel waste. The Ellen MacArthur Foundation (2017) identified a critical need to inform consumers about their purchasing habits on the environment. The study conducted by McNeill and Moore (2015) acknowledges that consumers are becoming more aware of sustainable products; however, that knowledge does not significantly impact consumers' decision to purchase sustainable goods. There is a gap in the literature on research conducted on sustainability education focused on practices of consumer consumption in the fashion industry (Harden et al., 2014; Thompson et al., 2012). Thus, the purpose of this study was to examine the effects of an educational experience on a person's intention to make sustainable apparel choices.

Using Azjen's (1991) TPB, this research study was designed as a quantitative pretest-posttest study aimed to assess the effects that an educational experience has on a

college student's intention to purchase sustainable apparel. The survey instrument used in this study was generated from survey items used in previous studies conducted on sustainable apparel that used theory of planned behavior or theory of reasoned action constructs. The survey gathered data on the participant's knowledge, attitudes, subjective norms, and intention before and after participating in online modules. The online modules had information about fast fashion and sustainable fashion and learning activities that asked participants to reflect on their apparel purchase and apparel care behaviors. During the reflection portion of the learning modules, participants were asked to set goals for making sustainable choices regarding purchases and care of apparel products (Abner et al., 2019; Geng et al., 2017; Pasricha, 2010; Pasricha & Kadolph, 2009).

The following research objectives were used to conduct the study:

1. Identify the effects of fashion sustainability instruction on college students' attitudes towards sustainable apparel choice.
2. Identify the effects of fashion sustainability instruction on college students' subjective norms related to sustainable apparel choices.
3. Identify the effects of fashion sustainability instruction on college students' knowledge of sustainable apparel choices.
4. Identify the effects of fashion sustainability instruction on college students' intentions to make sustainable apparel choices.
5. Examine if relationships exist between college students' intentions to make sustainable apparel choices and attitudes, subjective norms, and knowledge.

While many studies have explored the attitudes, subjective norms, behavioral intent, and knowledge about sustainable apparel products, few have examined the effect of education on these same constructs (Abner et al., 2019; Joshi & Rahman, 2017; Kang & Kim, 2013; Lawless & Medvedev, 2016). This study aims to fill a gap and provide

additional insight for educators in both the industry and in education to guide the implementation of sustainability topics to positively influence consumers to make apparel choices that will ensure healthy environments, economies, and individual well-being.

Demographic Discussion

Young adults, ages 18-24, were the majority demographic for this study. This population will play a significant role in the circular economy as emerging consumers; for themselves, family members, community, and workplace needs. Individuals who participated in this study make clothing and apparel purchases and dispose of unwanted clothing items.

Participant responses for disposing of unwanted apparel generally supported sustainable behaviors. Donating, storing, giving to family and friends, selling online, and repurposing increases clothing utilization, thus keeping clothing out of landfills. Though throwing away unwanted items is not sustainable, 40% of participants reported they throw away unwanted clothing items. While several sustainable behaviors were identified as being implemented, there is still a need to decrease the number of clothing and apparel items that go to the landfill. This study's results support findings from other reports and studies that show how clothing items continue to pile up in landfills (Cobbing & Vicaire, 2016; Ellen MacArthur Foundation, 2017; Niinimäki et al., 2020).

A high percentage of this study's participants perceive themselves as fashionable with approximately 79% providing a rating of six or higher on a scale of 1-10. On this scale, zero indicated that being fashionable was not important. The high fashionable

rating for this study may have had a large impact on the attitude gains between pre- and posttest scores. Moreover, this is an important demographic to consider. McNeill and Moore (2015) and Lundblad and Davies (2016) identified that the more one's attitudes and values are aligned with sustainable values, the less impact social norms to be fashionable have on being sustainable. Therefore, individuals who perceive themselves as fashionable and do not know much about the negative impacts fashion is making, paired with attitudes that do not support sustainability, will be less likely to purchase items based on sustainability factors. Furthermore, individuals with less positive attitudes towards sustainable apparel could have more to gain after an instructional experience. In this study, the rating for being fashionable indicated an inverse association with making sustainable choices (i.e., a lower fashionable score indicates higher sustainable intentions).

Objectives Discussion

Objective 1 of this study was, *"Identify the effects of fashion sustainability instruction on college students' attitudes towards sustainable apparel choice."* This study indicated that there was a significant difference between pretest and posttest summated attitudes scores. The effect was large at $r = 0.61$. An assumption can be made that the educational experience significantly affected individual attitudes towards fashion sustainability.

Closer inspection of the individual attitude items revealed an increase in the mean of all six survey item responses between the pretest and posttest. These are worth noting.

Questions on the survey addressed attitudes related to both industry and consumer sustainability behaviors (see Table 4.7). Increases were greater for the questions addressing attitudes related to industry behaviors. In this study, attitude increases for consumer behavior were less than the attitude increases for industry behaviors. This observation supports outcomes from McNeill and Moore's (2015) study that participants do not consider their apparel choices as factors that impact environmental sustainability. Learning module content directly addressed the topics presented in the following attitude items: (1) an individual's apparel purchases impact the environment, (2) the impact dyes and chemicals used in apparel production are harmful to the environment, (3) the importance of the fashion industry to practice business using sustainable principles, and (4) the importance for the consumer to make sustainable apparel choices.

McNeill and Moore (2015) found that attitudes towards sustainability were determined by one's general concern for environmental and social well-being as well as one's preconceptions towards sustainable fashion. There were three attitude survey items in this study that addressed issues of environmental concern. They were: (1) The clothing purchases I made as an individual have no impact on the environment, (2) I feel that I have an ethical obligation to purchase eco-friendly apparel, and (3) The dyes and chemicals used in apparel production can be harmful to the environment. Positive gains were made on each of these items after the educational intervention.

Based on McNeill and Moore's results, the educational intervention needs to utilize learning activities that allow an individual to have first-hand experience with issues of sustainability that would change one's feelings towards favorableness regarding

consuming sustainable apparel products. McNeill and Moore's findings are confirmed by Ajzen and Fishbein's (1980) Theory of Reasoned Action. The theory of reasoned action states that the more positive an attitude is towards the intended behavior, the more likely one is to perform the behavior. In order to influence positive behaviors towards sustainable apparel, one needs experiences with the issues to form an attitude. McKeown et al. (2002) state that utlization of education for sustainable development (ESD) learning activity constructs can influence changes in sustainability practices by providing opportunities to form attitudes as one engages in the learning environment (see Table 2.1). For this study, participants engaged in learning through two online modules. The online modules utilized videos, digital presentations, charts, and questions to direct learning. While interacting with an online module does not necessarily provide one with hands-on real-life experiences, the use of video and images to tell a story can provide convincing information to impact how one feels about an issue (Abner et al., 2019; Armstrong et al., 2016). The modules used in this study were designed to engage participants with knowledge, issues, skills, perspective, and values associated with sustainability. Multiple times throughout the modules, participants were asked to question and reflect on their fashion choices, as well as how those choices impact the environment.

Objective 2 of this study was, *"Identify the effects of fashion sustainability instruction on college students' subjective norms towards sustainable apparel choices."* The subjective norms summated scores were analyzed using a paired *t* test. The results indicated a significant difference between the pretest and posttest results. Subjective norms are formed from the perceptions of an individual's significant other's desires to

perform a behavior. Knowledge has a negative relationship with subjective norms as they relate to sustainable apparel (Kang et al., 2013). When more knowledge is gained about sustainability, the less negative subjective norms influence one's intent to make sustainable apparel choices. For example, suppose an individual's significant other disagreed with making sustainable apparel purchases. In that case, their negativity will not significantly impact that person who has acquired knowledge about the importance of making sustainable apparel choices.

McNeill and Moore's (2015) findings show that young adult consumers value being fashionable more than making an apparel choice that aligns with sustainability values. Norms surrounding fashion are complex. Social and subjective norms are important factors that influence an individual's intent to purchase sustainable apparel. One of the demographic survey items in this study asked participants how important being fashionable was to them. This item did not assess subjective norms but is closely tied to social norms. The average mean for each subjective norm item in this study tells an interesting story for this sample group. This study sample ranks subjective norms in the one to three range on the Likert scale. One is never, two is sometimes, and three is undecided. Pretest data results indicate that this population is influenced somewhat by subjective norms. The amount of change trended in the same direction that other studies have reported (Ajzen, 1991; Kang et al., 2013; McNeill & Moore, 2015). The summated subjective norms posttest items increase from the pretest; a significant increase with large effect size. The results of this study reflect some of the same findings by Kang et al. and Abdullah et al. (2014) that support the role of subjective norms on intention.

Respondents indicated that the look and feel of a garment was sometimes important (2-rating) rather than always important (5-rating). The rating increased on the posttest, however not enough to move it from the sometimes rating. This rating seems to mimic the responses from the demographic question that asked participants to identify how they dispose of clothing. This sample group utilizes sustainable practices to increase clothing utilization. These study results show that individuals who have pre-existing behaviors that support sustainability are also impacted by the beliefs and actions of significant others who show support for sustainable apparel choices.

Objective 3 of this study was, "*Identify the effects of fashion sustainability instruction on college students' knowledge towards sustainable apparel choices*." Knowledge scores showed a significant change from pretest to posttest. This outcome was expected. Formal education settings using ESD constructs and experiential learning activities have more of an impact on individuals making choices that support sustainable apparel consumption (Abner et al., 2019). This study engaged participants in learning using two online learning modules. It is important to note that the time participants engaged with learning was comparatively short in relation to the time spent in a class over a semester. The learning was presented in a semiformal format. Participants were asked to reflect on their knowledge and behavior related to apparel as they watched videos, read content, and made goals for becoming more sustainably minded. In a world that is fast paced and constantly changing, it is promising to see significant changes in knowledge made when shorter, less formal educational approaches are being utilized.

This data revealed that participants did not score well on pretest items that

required detailed knowledge of sustainable apparel. The greatest gains in knowledge were made on questions that asked specifically about the industry. For example, when asking about which fibers are produced with large amounts of toxins, how much pollution is produced from textile generation, how often fast fashion products are released, and where most unused textile products end up, are items that must be answered specifically. These survey items were explicitly addressed in the learning modules.

Responses on the pretest and posttest for the two items that asked participants to identify fast fashion and sustainable fashion characteristics illustrate that this young adult sample had a general idea of what fast fashion is and what sustainable fashion is. These responses could be attributed to social media campaigns that have become more prevalent during the COVID-19 pandemic. For instance, Netflix has a popular documentary called The True Cost, which is popular, and news stories on fast fashion and sustainability have increased during the pandemic (Bastos & Devine, 2021).

Objective 4 of this study was, *"Identify the effects of fashion sustainability instruction on college students' intention towards sustainable apparel choices."* Results of this study indicated that there was a significant difference between pretest and posttest intention scores. Ajzen and Fishbein (1980) have determined that subjective norms and attitudes are determinants of intention. This study has shown significant changes in attitudes and subjective norms after the intervention. Therefore, the change in intention scores would be expected. After close inspection of the intention scale items, the change in scores does not support making sustainable choices. This finding is not supported in the literature. The literature findings reported that the more positive attitudes and

subjective norms are towards a behavior, the higher the likelihood of the behavior happening (Abner et al., 2019; Ajzen, 1991; Bandura, 2001).

The binary intention items show results that support making sustainable apparel choices. However, the difference between pre- and posttest scores for the Likert Scale intention items tell a different story. The results for this study show a significant increase in scores from pretest intention to posttest intention.

The mean score for the Likert intent scale items increased on the posttest. For this study, because of how the items were scaled (1 = Strongly Agree and 7 = Strongly Disagree), it was expected that the intention scores assessed would decrease on the posttest since attitude and subjective norm scores increased on the posttest. This study's results increased, meaning that intent to make sustainable apparel choices decreased after the intervention. For this study, a summated intention score that supports sustainable fashion would be 15. A score of 58 does not support an intention to make sustainable apparel choices. The midpoint between 15 and 58 is 35.5. The pretest (M = 31.04) and posttest (M = 39.28) summated mean scores present evidence that there is a need for education about sustainable clothing apparel.

Further explanation for the decrease in intention to make sustainable apparel choices could be associated with the educational experience. It is possible that when participants took the pretest, they did not have an accurate understanding of sustainability as it relates to clothing and apparel. This study's knowledge scores show support for this premise. The increased knowledge on the sustainability topics may have permitted participants to answer the posttest survey items on intent more accurately. For example,

the survey question, ‘To reduce our reliance on oil, I select apparel products that do not use petrochemicals’, requires the participant to understand what properties of the apparel item they need to be aware of to know if it has been produced with petrochemicals. A learning activity in the learning modules addressed fiber content, followed by another learning activity that talked about the type of fibers produced using petroleum products. These activities would have aided participants in answering that particular survey item more accurately.

Another possible explanation for the surprising results could be attributed to readability. Some of the wording had double negatives, which is confusing and takes extra effort to answer correctly. Changing the wording on those items may have produced different results.

Objective 5 of this study was, *“Examine if relationships exist between college students’ intentions to make sustainable apparel choices and attitudes, subjective norms, and knowledge.”* Regression analysis was conducted using pretest data to examine if relationships exist between variables. Subjective norms had a significant relationship with intent to make sustainable apparel choices. This result suggests that individuals are more likely to make sustainable apparel choices if they have significant others in their lives that support those choices. Research presented by (Abdullah et al., 2014; Ajzen & Fishbein, 1980; Kang et al., 2013; Kim & Seock, 2019) in the literature review support this finding.

Correlations conducted using Pearson’s *r* reveal significant relationships between intention and subjective norms, attitude, knowledge, and being fashionable. The

relationship between subjective norms and intention is positive. The pretest correlation was strong, and the posttest correlation was moderate. The intervention had a minimal effect on this relationship. As intention scores increase, meaning the individual is less likely to make sustainable choices, subjective norms play a larger role in influencing someone to make sustainable choices.

The educational intervention appears to have had a large impact on the relationship between attitude and intention. The direction of the relationship changed after the intervention. Pretest attitudes had a moderate negative relationship with intention, while posttest attitudes had a moderate positive relationship. Pretest correlation data between intention and attitude showed that individuals with little or no intentions to make sustainable apparel choices are more likely to have negative attitudes about sustainability. After the intervention, the relationship changed. When a person is less likely to make sustainable apparel choices, a positive attitude becomes more critical in influencing sustainable intentions.

As stated previously in chapter two, the correlation between knowledge and intention was not expected to be significant. Pretest data showed a significant weak positive relationship between knowledge and intention; meaning that the less likely a person is to make sustainable apparel choices; the more knowledge is likely to have a positive impact. Summated knowledge scores increased after the intervention, and as they did, the relationship between knowledge and intention changed. Posttest correlations were weak and negative but not significant. This finding aligns with previous research (Abner et al., 2019; Ajzen, 1991; Joshi & Rahman, 2017; McNeill & Moore, 2015).

Before the intervention, there was no relationship between intention and being fashionable. However, after the intervention, a significant negative relationship was present. A higher fashionable rating indicates that fashion is very important. Research conducted by McNeill and Moore (2015), Kang et al. (2013), and Lundblad and Davies (2016) has identified that individuals who perceive themselves as fashionable are less likely to make sustainable apparel choices, especially if they feel that the apparel item is not aesthetically pleasing. Posttest data from this study supports these findings. The findings show that an individual who is less likely to make sustainable apparel choices will have a higher sense of being fashionable.

Post Hoc Limitations

This study was implemented during the 2020-2021 school year, the year of the COVID-19 pandemic. During this time, most courses offered at the university were either online or a hybrid version of online. During the pandemic, work, school, and social interactions took place online, causing "Zoom fatigue" or online fatigue for many individuals (Ramachandran, 2021). This research study was designed as an online study that required approximately one and half hours spread over three sessions. This study required individuals to participate online, thus adding additional online time for the participants. Therefore, it is highly likely that the study's low participation numbers and the high attrition rate for this study were impacted by COVID-19.

While the reliability scores for intention were found to be acceptable ($\alpha = .745$), the intention survey items used in this study should be reevaluated and possibly changed.

More research and refining of this construct could make it more robust. The survey items should have the double negative statements removed. Additionally, survey items should avoid vocabulary associated with a deep understanding of content ideas (e.g., petro-chemical fibers). For this study, the wording appears to have played a role in how accurately study participants could answer the intention questions before and after the intervention.

Recommendations

Results from this study support the critical need for teaching sustainability in clothing and textile education. In order to slow down fashion, influencing more individuals to make sustainable choices is essential, especially as more fashion brands adopt a circular economy. FCS professionals can successfully impact how individuals consume clothing and apparel by sharing ideas and knowledge about sustainability. Effective implementation includes utilizing affective learning activities such as critical questioning, role-playing, simulations, and reflections. These methods are recognized by researchers as ways to improve attitudes and positively influence subjective norms towards making sustainable apparel choices (Armstrong & LeHew, 2013; DeLong et al., 2016; Harden et al., 2014; McNeill & Moore, 2015; Thompson et al., 2012).

While one and a half hours is a significant amount of time to engage in a survey study, it is relatively short compared to the time needed to complete a semester-long course. One concern Thompson et al. (2012) had was about the amount of time needed to implement sustainability education into the curriculum. Not only does this study support

the need for more education to influence intention, but this study also provided evidence that shorter time learning about the topics allows for significant changes in attitudes, subjective norms, and knowledge.

There are several options an FCS professional can use to educate students, industry, and community about sustainability and making better apparel choices. The findings in this research show that education does make a positive impact. While this study was designed using online learning, research studies cited in chapter two provide additional support that face-to-face education also impacts attitudes, subjective norms, and knowledge. Online learning modules that affectively engage the learners should be used in FCS courses, webinars, or Zoom sessions. Social media campaigns that highlight facts and call for action should be implemented by educators, extension, and industry (De Lenne & Vandenbosch, 2017). For formal education settings, short lessons using affective and experiential learning activities embedded with the ESD constructs will impact individual attitudes, subjective norms, and knowledge (McNeill & Moore, 2015; Thompson et al., 2012).

Subjective norms were found to have a significant impact on intention for this study. While subjective norms are mainly influenced by people who are close to the individual, the way media is utilized today, particularly social media, has widened that circle of influence (De Lenne & Vandenbosch, 2017). It is an opportunistic time for FCS professionals to embrace social media as a tool to promote sustainable content to more people. FCS has been poised to reach thousands of individuals through formal education and industry (Nickols et al., 2009). Findings from this study provide evidence of how

vital subjective norms are to influence intention and potential behavior. Because of the COVID-19 pandemic, many sustainability issues in the textile industry were exposed to the public (Bastos & Devine, 2021), thus creating a grand opportunity for the FCS profession to further influence and help improve overall well-being. Sharing digital content while advocating action from individuals to change clothing and apparel consumption, care, and disposal behaviors has promising potential for closing the gap in the circular economy.

Recommendations for Future Research

As more brands in the fashion industry adopt circular economy business models, consumption and care habits associated with apparel and clothing will need to change for the model to be successful. Whether formal or informal, education should encompass the ESD constructs of knowledge, issues, skills, perspectives, and values associated with sustainability (see Table 2.1). A thoughtful approach to planning educational campaigns will impact positive changes to habits and behaviors related to apparel and clothing consumption, utilization, and disposal.

Subjective norms are essential for influencing intention in young adults ages (18-24). Does that hold true for other populations? Future research should include further exploration among younger (e.g., 12-18 years old) populations and the general public. Further research among these populations would allow for the generalization of the findings. As social media continues to gain presence and influence in society, further research exploring the role of social media “influencers” on one’s intention to make

sustainable choices may raise more awareness on making sustainable apparel choices.

As the research design for this study was quantitative, qualitative research may reveal a more profound understanding of why sustainable behaviors and intentions are practiced or not practiced. Additionally, a qualitative study could gather additional perspectives on the perceived effectiveness of learning strategies used in an intervention to influence attitude, subjective norms, and knowledge.

Narrowing the scope of future research to focus on specific behaviors, specifically sustainably caring for clothing and apparel, and how those behaviors are influenced by education would be valuable. For those in the industry (i.e., fashion, appliances, cleaning, utilities) and education, knowing which attitudes or what subjective norms have the greatest impact on intention and behaviors can play a significant role in an apparel item's life cycle. Behaviors associated with a need as great as clothing have an immense potential to impact well-being in the smallest of ways. Ellen S. Richards, the founder of Family and Consumer Sciences profession, wrote that the environment that people live in is the environment that they learn to live in, respond to, and perpetuate. If the environment is good, so be it. But if it is poor, so is the quality of life within it (Richards & Goodman, 1904).

The results are in; there is evidence that proves that the production and consumption of apparel products are not sustainable. Furthermore, there is limited information and campaigning that bring awareness to the public on this issue. Everyone in the world wears clothes, which means individuals contribute to overconsumption and underutilization, or they are sustainably consuming, caring for, and disposing properly of

apparel and clothing items. This research study proves that more education about making sustainable choices is needed, but more importantly, education has a significant impact on intent to make sustainable apparel choices.

Any further research on this topic has the potential to generate more awareness, which can influence and change habits and behaviors. Exploration of all educational methods, formal and informal, promise more opportunities to influence attitudes, subjective norms, and knowledge.

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APPENDICES

Appendix A

Intervention Lesson Plans

Intervention Lesson Plans

An infographic will be distributed to participants. The infographic will explain the nature of the study and visually represent the time and incentives associated with participation in the study.

SONA Link to access the study:
https://usu.sona-systems.com/default.aspx?p_return_experiment_id=360

The length needed to complete the intervention with pre- and posttests will take six weeks.

Pretest Survey: https://usu.co1.qualtrics.com/jfe/form/SV_a3MTUvbZ68PM44Z **SONA Link:** https://usu.co1.qualtrics.com/jfe/form/SV_a3MTUvbZ68PM44Z?id=%SURVEY_CODE% Participants will take the pretest survey. After they complete the survey a webpage link to the intervention page will be provided.	12 min

Modules will be created online using Google Sites (USU account amber.williams1@aggiemail.usu.edu)

Sustainable Apparel Choices Study Learning Modules
Module 1 – Fast Fashion

Introduction to Study and PreTest Link
https://sites.google.com/aggiemail.usu.edu/usu-irb11680-sustainable-fashi/home-pretest-survey?authuser=0

Learning Module after the pretest
https://sites.google.com/aggiemail.usu.edu/usu-irb11680-sustainable-fashi/part-1-fast-fashion-module?authuser=0

Objectives:
The participants will:
- define fast fashion;
- identify practices associated with fast fashion;
- explore and examine how to slow down fast fashion

Activity	Description	Time
What are you wearing?	Inquiry: What are you wearing today? How long have you have it, Do you know the fiber content of your clothing (demo on how to find it)? How often do you launder what you are wearing today? What will you do with your clothing when you no longer want it?	2 min
What is fast fashion?	Define Fast Fashion: Fast fashion is an approach used in the fashion industry that emphasizes a linear system that releases new designs every week. Price points and apparel lifespan are low (Fast fashion, n.d.) 'Fast fashion' is a term used to describe a new accelerated fashion business model that has evolved since the 1980s. It involves increased numbers of new fashion collections every year, quick turnarounds and often lower prices. Reacting rapidly to offer new products to meet consumer demand is crucial to this business model. The fast fashion movement has generated easy access to inexpensive products so that individuals can protect and express themselves. Fast fashion has changed the	1 min

	way apparel is consumed, maintained, and disposed of. Close examination of fast fashion habits reveals unintended consequences that are untenable.	
	Video: What is Fast Fashion https://www.youtube.com/watch?v=OmP8ZxrXbf4	3:55 min
Slowing fashion down	Text and pictures for students to read **Reduce** 1-Buy less and wear more *Consumption rate in America: 64 garments per person in America in 2013. In order to slow down fashion we need to reduce our consumption.* *"The most sustainable garment is the one we already own" (Fixing Fashion Report)* *2- Read the label (choose bio-based polymer fibers or recycled fibers)-Shop Smarter ReMake Brand Directory* *3- Buy from brands who support sustainability* *4-Choose Organic Cotton* *5- Rent, Borrow clothing* *6- Watch your washing to increase the life of your clothing, decrease use of energy and water, pollutants* Source 1 **Reuse- End of the Line** *In the U.S., 85% of discarded textiles are doomed for the landfill or incineration. Only 15% are actually reused or recycled. (EPA, n.d.)* Source 1 ReMake Infographic Source 2 Sell, Donate, Swap, Mend **Recycle-** *Forward-thinking clothing and footwear retailers and brands are advocating donation and/or recycling options to consumers. An increasing number are making donation / recycling of the apparel and footwear they sell an important piece of their green initiatives. Some green brands are providing sewn-in labels with reuse and recycling instructions and in-store receptacles to recycle used clothing and footwear. Familiar names such as Patagonia, GAP, and Levis are all great examples of brands leading the way.* Source 1 The Lifecycle of Secondhand Clothing - Infographic	8 min

	Companies the offer Recycling: Patagonia Worn Wear Terracycle Levis works with Blue Jeans Go Green	
Incentive Survey	Participants will link to the "Pretest, Fast Fashion Module Inventive Survey" This allows participants to be entered into the Random Drawing for the incentive gift cards **Module 1 Incentive: 10 - $15 Amazon Gift Card** https://usu.co1.qualtrics.com/jfe/form/SV_7NEraFlMJkezTvf SONA Credit Link https://usu.co1.qualtrics.com/jfe/form/SV_7NEraFlMJkezTvf?id=%SURVEY_CODE%	1 min

Module 2 – Sustainable Fashion

Sustainable Fashion
https://sites.google.com/aggiemail.usu.edu/usu-irb11680-sustainable-fashi/sustainable-fashion-module

SONA LINK
https://sites.google.com/aggiemail.usu.edu/usu-irb11680-sustainable-fashi/sustainable-fashion-module?id=%SURVEY_CODE%

Objectives:
The participants will:

- define environmental sustainability;
- compare a linear economy model to a circular economy model;
- compare 5-6 fashion companies and their approach to sustainability;
- explore and examine sustainability influencers (identify what they are doing to promote sustainable fashion);
- identify practices/habits for making sustainable apparel choices;

make a plan to participate in actions that support sustainable apparel choices

Time	Description	Time
What is sustainable apparel?	Define sustainability as it applies to apparel and textiles: *Sustainable fashion is thus partly about producing clothes, shoes and accessories in environmentally and socio-economically sustainable manners, but also about more sustainable patterns of consumption and use, which necessitate shifts in individual attitudes and behavior.* REI Standards of Sustainability -Source	1 min
	Video: A Beginner's Guide to Sustainable Fashion	2:56 min
Circular Economy	The Circular Economy PPT Video Lecture format	2:30 min
Woke Apparel Companies	Sustainable Brand Search https://directory.remake.world/ Identify four companies listed on the website - one from each category (rockstars, up & comers, wannabees, and offenders). Look at Overall Rating Scale and the written summary to compare difference between companies. This exercise is designed to help the participant examine how different companies attempt	8 min

	sustainability.	
Do Something Challenge	Video: Not a Good Look The Video offers three suggestions for making a sustainable apparel choice; get more out of your clothes, use second hand clothes, watch your washing	2:39 min
	Choose a practice: Participants will read a list of practices and be prompted to choose one to practice. *Less is more, buy vintage or swap, choose quality not quantity, buy organic natural fibers, shop recycled textiles and yarns, choose Fairtrade or ethically made, buy handmade, make it yourself, choose natural and low impact dyes, shop your own wardrobe, try new color combination, borrow from friends, invest in a good washer and dryer, use a steamer for certain fabrics, try a rental subscription, purchase only if you know you'll wear it a minimum of 30 times, research the company before purchasing, recycle unwanted clothing, donate unwanted clothing, improve washing and care practices, make repairs to damaged clothing, wash clothes less, hang clothes to dry (avoid the dryer), organize your wardrobe, ask the brands you shop about their impact on the environment, alter clothing you already own, inspect quality of clothing construction before purchase, read the labels when you shop,*	1:30 min
Knowledge Survey	Qualtrics survey (10 Questions) https://usu.co1.qualtrics.com/jfe/form/SV_0pL27upiNO2iFbn **SONA Credit** https://usu.co1.qualtrics.com/jfe/form/SV_0pL27upiNO2iFbn?id=%SURVEY_CODE% After participants take the knowledge survey they will be directed to Incentive Survey Form	2 min
Module 2 Incentive	**Module 2 Incentive: 10 - $20 Amazon Gift Card** https://usu.co1.qualtrics.com/jfe/form/SV_etFQxps7FqcrNfD **SONA Credit**	1 min

	https://usu.co1.qualtrics.com/jfe/form/SV_etFQxps7FqcrNfD?id=%SURVEY_CODE%	

2 week time frame between module 2 and posttest survey

Posttest: https://usu.co1.qualtrics.com/jfe/form/SV_8HBdA7r6X7uwAjb **SONA Credit** https://usu.co1.qualtrics.com/jfe/form/SV_8HBdA7r6X7uwAjb?id=%SURVEY_CODE% Participants will take the posttest survey. After they complete the survey they will be directed to the Incentive Survey **Posttest Survey Incentive: 10 - $25 Amazon Gift Card** https://usu.co1.qualtrics.com/jfe/form/SV_7Qef2XY0t4ysKC9	10 min 1 min

Appendix B

Survey Instruments

PRETEST SURVEY: Influencing Factors of Environmentally Sustainable Apparel Choices

Qualifying Questions:

By continuing to the "Influencing Factors of Environmentally Sustainable Apparel Purchases" survey, you agree that you are 18 years of age or older, and wish to participate. You agree that you understand the risks and benefits of participation, and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation, and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records.

- o I agree to take the survey (32)
- o I disagree to take the survey (33)

Skip To: End of Survey If Q1 = I disagree to take the survey
Skip To: Q2 If Q1 = I agree to take the survey

Q2 What is your age?

- o Under 18 (1)
- o 18 - 24 (2)
- o 25 - 34 (3)
- o 35 - 44 (4)
- o 45 - 54 (5)
- o 55 - 64 (6)
- o 65 - 74 (7)
- o 75 - 84 (8)
- o 85 or older (9)

Skip To: End of Survey If Q2 = Under 18

Unique Identifier Section:

To keep your responses anonymous, we would like you to create your own unique code to use each time you take a survey. That way we can connect all your survey responses without needing your name each time. To create your code: In the text box provided below, type the **last 2 letters of your mother's maiden name**, followed by the **last 4 numbers of your phone number.** For example, my mother's maiden name is Smith and my phone number is 435-952-3456, so my unique code is: TH3456.

Intention and Ability Section:

Q4Answer whether the statement is true.
I would buy a sustainable apparel item.
- YES (1)
- NO (2)

Q5 Answer whether the statement is true.
I would buy a sustainable apparel item for a friend, family member, or significant other.
- YES (1)
- NO (2)

Q6 Answer whether the statement is true.
I would repair a damaged apparel item.
- YES (1)
- NO (2)

Q7 Answer whether the statement is true.
I would launder my apparel items in cold water.
- YES (1)
- NO (2)

Q8 Answer whether the statement is true.
I would recycle textile and apparel items
- YES (1)
- NO (2)
- Click to write Choice (3)

Q9 Answer when the statement is true. Ability could refer to time, money, or resources.

	Indicate your response to each item	
	YES (1)	NO (2)
I intend to buy sustainable apparel items (1)	o	o
I have the ability to buy sustainable apparel items (2)	o	o
I DON'T intend to buy sustainable apparel items (4)	o	o
I DON'T have the ability to buy sustainable apparel items (5)	o	o

Q10 Rate the following statements. Be honest. Pick the answer that best describes yourself.

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
When I purchase apparel products, I always make a conscious effort to buy those products that are low in environmental pollutants. (1)	o	o	o	o	o	o	o
I make every effort to buy apparel products made from recycled materials. (2)	o	o	o	o	o	o	o

When I have a choice between two equal apparel products, I always purchase the one which is less harmful to the environment. (4)	o	o	o	o	o	o	o
Whenever possible, I buy products packaged in reusable packaging. (7)	o	o	o	o	o	o	o
I have convinced my family/friends NOT to buy some apparel products which are harmful to the environment. (8)	o	o	o	o	o	o	o
To reduce our reliance on oil, I select apparel products that do not use petro-chemicals. (9)	o	o	o	o	o	o	o
I normally make a conscious effort to limit my use of products that are made from or use scarce resources (i.e. water). (10)	o	o	o	o	o	o	o
When I purchase apparel products I purchase the item because it is durable and long lasting. (13)	o	o	o	o	o	o	o

Attitude Section:

Q11 What is your Opinion? Please rate your agreement with the following statements.

	Strongly agree (7)	Agree (6)	Somewhat agree (5)	Neither agree nor disagree (4)	Somewhat disagree (3)	Disagree (2)	Strongly disagree (1)
The clothing purchases I make as an individual have no impact on the environment. (1)	o	o	o	o	o	o	o
I feel that I have an ethical obligation to purchase eco-friendly apparel. (2)	o	o	o	o	o	o	o
Environmentally friendly apparel is too expensive. (3)	o	o	o	o	o	o	o
Environmental friendly fashions are primarily for “tree huggers.” (5)	o	o	o	o	o	o	o
It takes more energy to recycle clothing than it is worth. (7)	o	o	o	o	o	o	o

Q12 What is your Opinion? Please rate your agreement with the following statements.

	Strongly agree (7)	Agree (6)	Somewhat agree (5)	Neither agree nor disagree (4)	Somewhat disagree (3)	Disagree (2)	Strongly disagree (1)

The dyes and chemicals used in apparel production can be harmful to the environment. (2)	o	o	o	o	o	o	o
Major retailers should carry environmentally friendly products. (5)	o	o	o	o	o	o	o
Environmentally friendly apparel is a fad that will soon go away. (6)	o	o	o	o	o	o	o
It is important for the fashion industry to practice business in a sustainable manner (7)	o	o	o	o	o	o	o
It is important for consumers to make sustainable apparel choices (8)	o	o	o	o	o	o	o

Subjective Norms Section:

Q13 Please rate your agreement with the statements.

	Always (5)	Almost Always (4)	Undecided (3)	Sometimes (2)	Never (1)
I depend upon my friend's opinion when purchasing clothing. (4)	o	o	o	o	o
My parents	o	o	o	o	o

think that I should purchase apparel products that are environmentally sustainable. (7)					
The students enrolled in my program think I should purchase apparel products that are environmentally sustainable. (8)	o	o	o	o	o
Most people that are important to me wear environmentally sustainable apparel. (9)	o	o	o	o	o
Most people whose opinions I value would approve of my apparel purchases that are environmentally sustainable. (10)	o	o	o	o	o

Q14 Please rate your agreement with the statements.

	Always (5)	Almost Always (4)	Undecided (3)	Sometimes (2)	Never (1)
When I purchase clothing, I am more concerned about the look and feel of the garment versus if it's environmentally friendly. (8)	o	o	o	o	o
I am a conscious environmental consumer. (2)	o	o	o	o	o
Purchasing environmentally friendly clothing, increases my peace of mind. (4)	o	o	o	o	o

Q15 To you, how important is being fashionable?

	0 2 4 6 8 10
Not important ()	

Q16 When I dispose of unwanted clothing (choose all that apply)

- ☐ Donate to charity (1)
- ☐ Throw it away (2)
- ☐ Store it in a box (3)
- ☐ Hand down to family members (4)
- ☐ Give to friends (5)
- ☐ Sell online (6)
- ☐ Re-purpose the clothing item (7)
- ☐ Other (please specify) (8) _____

Knowledge Section:

Q17 Current fashion industry practices by brands and consumers are contributing to _____.
- **increased greenhouse gas emission** (1)
- increased health and well being of our planet (0)
- decreased greenhouse gas emissions (2)
- decreased energy and water use (3)

Q18 The textile industry is the _____ largest polluter of **clean water** behind agriculture.
- 1st (1)
- **2nd** (2)
- 3rd (3)
- 10th (4)

Q19 The textile industry is the second largest polluter behind the _____ industry.
- **Oil** (1)
- Automotive (2)
- Agriculture (3)
- Technology (4)

Q20 Large amounts of pesticides and chemicals are used to produce _____.
- **Cotton** (1)
- Polyester (2)
- Wool (3)
- Nylon (4)

Q21 A common practice for many fashion brands is to replace their clothing line options _____.
- **weekly** (1)
- once a year (2)
- twice a year (3)
- four times a year (4)

Q22 The majority of discarded textiles end up _____.
- **in the landfill** (1)
- at textile recycle centers (2)
- being incinerated (burned) (3)
- being donated to second hand stores (4)

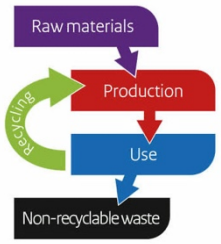
Q23 Characteristics of Fast Fashion: (choose all the that apply)
- ☐ **Low Cost** (1)
- ☐ Repairable (2)
- ☐ **Disposable** (3)

- ☐ Restyled apparel (4)
- ☐ **Quick turn around** (5)
- ☐ **Increased number of fashion collections** (6)
- ☐ High number of wears (7)
- ☐ Eco-friendly (8)
- ☐ **Low-tech productio**n (9)
- ☐ Fair trade (10)
- ☐ **Unsustainable material**s (11)

Q24 Sustainable apparel characteristics: (choose all that apply)

- ☐ **Environmentally friendly** (1)
- ☐ **Non-toxic chemicals** (2)
- ☐ Disposable (3)
- ☐ **Responsibly sourced** (4)
- ☐ Quick turnaround (5)
- ☐ **Organic cotton** (6)
- ☐ **Safe supply chains** (7)
- ☐ **Eco-friendly** (8)
- ☐ Dependent on high water use during production (9)
- ☐ **Recycled materials** (10)

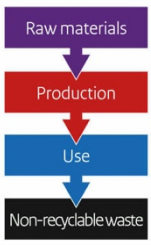
o Q25 Which image represents a circular economy?

o 

(1)

o 

(2)

o 

(3)

Q26 Who holds the responsibility of ensuring sustainability in the fashion and textile industry?

- Brands (1)
- Fabric Mills (2)
- Consumers (3)
- Government Policy makers (4)
- **Everyone who is involved with fashion and textiles** (5)

Demographics Section:

Q27 How often in the past year have you acquired new clothing (apparel, accessories, shoes, etc.)?

- 0-3 times (1)
- 4-6 times (2)
- 7-10 times (3)
- 11-12 times (4)
- More than 12 times (5)

Q28 In the past 30 days how much money (round to the nearest dollar amount) have you spent on personal clothing items (apparel, accessories, shoes, etc.)?

_____

Q29 In the past year how much money (round to the nearest dollar amount) have you spent on personal clothing items (apparel, accessories, shoes, etc.)?

_____

Q30 Select your gender.

- Male (0)
- Female (1)
- Other (please specify) (2) _____
- Prefer not to answer (3)

Q31 How many years have you been a student at this school?

- less than 1 (0)
- 1 year (1)
- 2 years (2)
- 3 years (3)
- 4 years (4)
- 5 years (5)
- 6 years (6)

Q32 What is/was your Major/Program of Study? (Please fill in the blank)

_____

KNOWLEDGE ASSESSMENT: Fast Fashion and Sustainability Knowledge Quiz

Unique Identifier Section:

Q1 To keep your responses anonymous, you were asked to create your own unique code to use each time you take a survey. That way we can connect all your survey responses without needing your name each time. To create your code: In the text box provided below, type the **last 2 letters of your mother's maiden name**, followed by the **last 4 numbers of your phone number**. For example, my mother's maiden name is Smith and my phone number is 435-952-3456, so my unique code is: TH3456.

_____

Q2 Current fashion industry practices by brands and consumers are contributing to _____.

- **increased greenhouse gas emission** (1)
- increase health and well being of our planet (0)
- decreased greenhouse gas emissions (2)
- decreased energy and water use (3)

Q3 The textile industry is the _____ largest polluter of **clean water** behind agriculture.

- 1st (1)
- **2nd** (2)
- 3rd (3)
- 10th (4)

Q4 The textile industry is the second largest polluter behind the _____ industry.

- **Oil** (1)
- Automotive (2)
- Agriculture (3)
- Technology (4)

Q5 Large amounts of pesticides and chemicals are used to produce _____.

- **Cotton** (1)
- Polyester (2)
- Wool (3)
- Nylon (4)

Q6 A common practice for many fashion brands is to replace their clothing line options _____.

- **weekly** (1)
- once a year (2)
- twice a year (3)
- four times a year (4)

Q7 The majority of discarded textiles end up _____.

- o **in the landfill** (1)
- o at textile recycle centers (2)
- o being incinerated (burned) (3)
- o being donated to second hand stores (4)

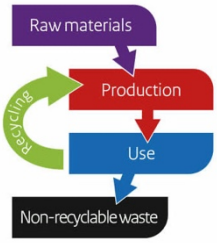
Q8 Characteristics of Fast Fashion: (choose all the that apply)

- ☐ **Low Cost** (1)
- ☐ Repairable (2)
- ☐ **Disposabl**e (3)
- ☐ Restyled apparel (4)
- ☐ **Quick turn around** (5)
- ☐ **Increased number of fashion collections** (6)
- ☐ High number of wears (7)
- ☐ Eco-friendly (8)
- ☐ **Low-tech production** (9)
- ☐ Fair trade (10)
- ☐ **Unsustainable materials** (11)

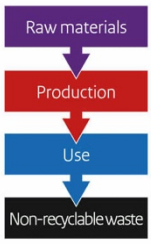
Q9 Sustainable apparel characteristics: (choose all that apply)

- ☐ **Environmentally friendly** (1)
- ☐ **Non-toxic chemicals** (2)
- ☐ Disposable (3)
- ☐ **Responsibly sourced** (4)
- ☐ Quick turnaround (5)
- ☐ **Organic cotton** (6)
- ☐ **Safe supply chains** (7)
- ☐ **Eco-friendly** (8)
- ☐ Dependent on high water use during production (9)
- ☐ **Recycled materials** (10)

Q11 Which image represents a circular economy?

- 

(1)
- 

(2)
- 

(3)

Q12 Who holds the responsibility of ensuring sustainability in the fashion and textile industry?

- Brands (1)
- Fabric Mills (2)
- Consumers (3)
- Government Policy makers (4)
- **Everyone who is involved with fashion and textiles** (5)

POSTTEST SURVEY: Influencing Factors of Environmentally Sustainable Apparel Choices

Unique Identifier Section:

To keep your responses anonymous, you were asked to create your own unique code to use each time you take a survey. That way we can connect all your survey responses without needing your name each time. To create your code: In the text box provided below, type the **last 2 letters of your mother's maiden name,** followed by the **last 4 numbers of your phone number**. For example, my mother's maiden name is Smith and my phone number is 435-952-3456, so my unique code is: TH3456.

Intention and Ability Section:

Q2 Answer whether the statement is true.
I would buy a sustainable apparel item.
- o YES (1)
- o NO (2)

Q3 Answer whether the statement is true.
I would buy a sustainable apparel item for a friend, family member, or significant other.
- o YES (1)
- o NO (2)

Q4 Answer whether the statement is true.
I would repair a damaged apparel item.
- o YES (1)
- o NO (2)

Q5 Answer whether the statement is true.
I would launder my apparel items in cold water.
- o YES (1)
- o NO (2)

Q6 Answer whether the statement is true.
I would recycle textile and apparel items
- o YES (1)
- o NO (2)
- o Click to write Choice (3)

Q7 Answer when the statement is true. Ability could refer to time, money, or resources.

	Indicate your response to each item	
	YES (1)	NO (2)
I intend to buy sustainable apparel items (1)	o	o
I have the ability to buy sustainable apparel items (2)	o	o
I DON'T intend to buy sustainable apparel items (4)	o	o
I DON'T have the ability to buy sustainable apparel items (5)	o	o

Q8 Rate the following statements. Be honest. Pick the answer that best describes yourself.

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
When I purchase apparel products, I always make a conscious effort to buy those products that are low in environmental pollutants. (1)	o	o	o	o	o	o	o
I make every effort to buy apparel products made from recycled materials. (2)	o	o	o	o	o	o	o
When I have a	o	o	o	o	o	o	o

choice between two equal apparel products, I always purchase the one which is less harmful to the environment. (4)							
Whenever possible, I buy products packaged in reusable packaging. (7)	o	o	o	o	o	o	o
I have convinced my family/friends NOT to buy some apparel products which are harmful to the environment. (8)	o	o	o	o	o	o	o
To reduce our reliance on oil, I select apparel products that do not use petro-chemicals. (9)	o	o	o	o	o	o	o
I normally make a conscious effort to limit my use of products that are made from or use scarce resources (i.e. water). (10)	o	o	o	o	o	o	o
When I purchase	o	o	o	o	o	o	o

apparel products I purchase the item because it is durable and long lasting. (13)	

Attitude Section:

Q9 What is your Opinion? Please rate your agreement with the following statements.

	Strongly agree (7)	Agree (6)	Somewhat agree (5)	Neither agree nor disagree (4)	Somewhat disagree (3)	Disagree (2)	Strongly disagree (1)
The clothing purchases I make as an individual have no impact on the environment. (1)	o	o	o	o	o	o	o
I feel that I have an ethical obligation to purchase eco-friendly apparel. (2)	o	o	o	o	o	o	o
Environmentally friendly apparel is too expensive. (3)	o	o	o	o	o	o	o
Environmentally friendly fashions are primarily for “tree huggers.” (5)	o	o	o	o	o	o	o
It takes more energy to recycle clothing than it is worth. (7)	o	o	o	o	o	o	o

Q10 What is your Opinion? Please rate your agreement with the following statements.

	Strongly agree (7)	Agree (6)	Somewhat agree (5)	Neither agree nor disagree (4)	Somewhat disagree (3)	Disagree (2)	Strongly disagree (1)
The dyes and chemicals used in apparel production can be harmful to the environment. (2)	o	o	o	o	o	o	o
Major retailers should carry environmentally friendly products. (5)	o	o	o	o	o	o	o
Environmentally friendly apparel is a fad that will soon go away. (6)	o	o	o	o	o	o	o
It is important for the fashion industry to practice business in a sustainable manner (7)	o	o	o	o	o	o	o
It is important for consumers to make sustainable apparel choices (8)	o	o	o	o	o	o	o

Subjective Norms Section:

Q11 Please rate your agreement with the statements.

	Always (5)	Almost Always (4)	Undecided (3)	Sometimes (2)	Never (1)
I depend upon my friend's opinion when purchasing clothing. (4)	o	o	o	o	o
My parents think that I should purchase apparel products that are environmentally sustainable. (7)	o	o	o	o	o
The students enrolled in my program think I should purchase apparel products that are environmentally sustainable. (8)	o	o	o	o	o
Most people that are important to me wear environmentally sustainable apparel. (9)	o	o	o	o	o
Most people whose opinions I value would approve of my apparel purchases that are environmentally sustainable. (10)	o	o	o	o	o

Q12 Please rate your agreement with the statements.

	Always (5)	Almost Always (4)	Undecided (3)	Sometimes (2)	Never (1)
When I purchase clothing, I am more concerned about the look and feel of the garment versus if it's environmentally friendly. (8)	o	o	o	o	o
I am a conscious environmental consumer. (2)	o	o	o	o	o
Purchasing environmentally friendly clothing, increases my peace of mind. (4)	o	o	o	o	o

Q13 To you, how important is being fashionable?

	0 2 4 6 8 10
Not important ()	

Q14 When I dispose of unwanted clothing (choose all that apply)

- ☐ Donate to charity (1)
- ☐ Throw it away (2)
- ☐ Store it in a box (3)
- ☐ Hand down to family members (4)
- ☐ Give to friends (5)
- ☐ Sell online (6)
- ☐ Re-purpose the clothing item (7)
- ☐ Other (please specify) (8) _____

Demographics Section:

Q15 How often in the past year have you acquired new clothing (apparel, accessories, shoes, etc.)?

- 0-3 times (1)
- 4-6 times (2)
- 7-10 times (3)
- 11-12 times (4)
- More than 12 times (5)

Q16 In the past 30 days how much money (round to the nearest dollar amount) have you spent on personal clothing items (apparel, accessories, shoes, etc.)?

_____

Q17 In the past year how much money (round to the nearest dollar amount) have you spent on personal clothing items (apparel, accessories, shoes, etc.)?

_____

Q18 Select your gender.

- Male (0)
- Female (1)
- Other (please specify) (2) _____
- Prefer not to answer (3)

Q19 How many years have you been a student at this school?

- less than 1 (0)
- 1 year (1)
- 2 years (2)
- 3 years (3)
- 4 years (4)
- 5 years (5)
- 6 years (6)

Q20 What is/was your Major/Program of Study? (Please fill in the blank)

_____

Appendix C

Letter of Intent

Can Teaching Practices Implemented by Family and Consumer Sciences Instructors Influence Environmentally Sustainable Apparel Choices?

Survey Name: Influencing Factors of Environmentally Sustainable Apparel Choices

You are invited to participate in a research study by Brian Warnick, a professor, and Amber S. Williams, a graduate student in Applied Sciences, and Technology Education department at Utah State University.

The purpose of this research is to examine the effect of an educational experience on intention to make sustainable apparel choices by college students. Enrollment as a college student who is 18 years old qualifies you to be able to participate in this study.
Your participation in this study is voluntary and you may withdraw your participation at any time for any reason.

If you take part in this study, you will be asked to *complete* an online pretest survey, complete two online learning modules about fashion sustainability and finally complete a posttest survey in an online Qualtrics survey. The estimated amount of time to complete the study will take approximately an hour and half, spread over six weeks. You will be asked to engage with components of the study three separate times taking approximate 20-30 minutes each time. *If you agree to participate, the researchers will only collect personal information if you choose to make yourself eligible to receive one of the incentives.*

The possible risks of participating in this study include loss of confidentiality and answering uncomfortable, or controversial questions about social and environmental concerns. Although you will not directly benefit from this study, it has been designed to learn more about sustainable apparel consumption and whether such habits can be influenced by education.

We will make every effort to ensure that the information you provide remains confidential. We will not reveal your identity in any publications, presentations, or reports resulting from this research study.

We will collect your information through Qualtrics, an online survey tool. Online activities always carry a risk of data breach, but we will use systems and processes that minimize breach opportunities. This survey data will be securely stored in a restricted-access folder on Box.com and in a locked drawer in a restricted-access office. If you choose to supply personal contact information for incentive eligibility, the information will be collected using a survey that is separate from the study survey. All personal contact information will be deleted within a month after the incentives are distributed to awardees.

For your participation in this research study you may be randomly chosen to receive one of 30 Amazon gift cards. Identification of the gift card recipients will be done using an external website to randomly choose eligible participants.

You can decline to participate in any part of this study for any reason and can end your participation at any time.
If you have any questions about this study, you can contact Brian Warnick, brian.warnick@usu.edu or Amber Williams, amber.williams@usu.edu . Thank you again for your time and consideration. If you have any concerns about this study, please contact Utah State University's Human Research Protection Office at (435) 797-0567 or irb@usu.edu.

Click here to download a copy of this Consent Document

By continuing to the "Influencing Factors of Environmentally Sustainable Apparel Purchases" survey, you agree that you are 18 years of age or older, and wish to participate. You agree that you understand the risks and benefits of participation, and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation, and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records.

CURRICULUM VITAE

AMBER S. WILLIAMS

Lecturer, Family & Consumer Sciences Education, Outdoor Product Design & Development
Department of Applied Sciences, Technology & Education
Utah State University
2920 Old Main Hill
Logan, UT 84322-2920
435.797.1561
amber.williams@usu.edu

EDUCATION and CERTIFICATION

Dec 2021	**PhD, Curriculum & Instruction: Career & Technical Education—Utah State University, Logan, UT** Dissertation: "Does Fashion Sustainability Instruction Influence Student Intention to Make Sustainable Apparel Choices?"
May 2008	**Master of Arts, Curriculum & Instruction—University of Phoenix, Salt Lake City, UT** Action Research: "Improving the Advisory Program at Davis High School"
June 1999	**Bachelor of Science, Family & Consumer Sciences Education—Utah State University, Logan, UT**
Feb 2021	**Mental Health First Aid Certification, Logan, UT** www.mentalhealthfirstaid.org
June 2018	**Browzwear Software Certification—Corvallis, OR**
April 2012	**Math in CTE Training and Certification—Louisville, KY**
April 2008	**Survivors Offering Assistance through Recovery (SOAR) Certification—University of Utah, Salt Lake City, UT**

PROFESSIONAL WORK EXPERIENCE

Aug 2016 to present — ***Lecturer, Family & Consumer Sciences Education***
Utah State University

- Teach FCSE 3030: Textile Science; FCSE 2700: Housing and Interiors; FCSE3790: Housing and Interior Design Teaching Methods 2; FCSE 3040: Advanced Clothing Studies—Pattern Making; FCSE 1040/1140: Introductory Sewing for Outdoor Products; FCSE 2040: Intermediate Clothing Construction Skill, Principles and Alterations;

FCSE 4400: FCSE Teaching Methods 2; FCSE 4300: FCSE Clinical 2; FCSE 4000: Early Childhood Education and Internship; FCSE 2510: Orientation to Family and Consumer Sciences Education

- Develop course goals and objectives, content, lesson plans, assessments, syllabi
- Provided feedback on student work, exams, and projects
- Administer grades and manage learning manage system for each course

Aug 2017 to Aug 2019 ***Connections Instructor***
Utah State University
Mentored and facilitated discussions and activities to promote the three tenets of Connections (Why am I here? How do I engage as a student? How do I engage in the university community?)

- Teach USU1010: Connections
- Prepared course goals and objectives, content, lesson plans, assessments, scheduled activities
- Provided feedback on student coursework
- Worked with peer mentors assigned to my course
- Provided support to students through email during fall semester

Aug 2017 ***Dress for Success Trainer,*** Miller Family Office
Sandy, UT
Developed and presented a dress for success course to train the Larry H. Miller Family group

- Presented a three-hour workshop
- Developed handouts/workbooks for participants

Jan 2014 to July 2014 ***Teacher Leader Supervisor—College and Career Readiness,*** Davis High School, Kaysville, UT
Responsible to provide educator support through professional development.

- Attended monthly leadership meetings
- Determined which teacher training was needed for weekly late start meetings
- Facilitated and ran weekly faculty trainings, sophomore orientation night, Merit Cord Awards and the annual school career fair

Jan 2010 to Jan 2014 ***Arts and Communications Small Learning Community Dean,*** Davis High School, Kaysville, UT
Responsible for training, support, and communication with the Arts and Humanities (A&H) small learning community faculty.

- Attend monthly school leadership meetings
- Facilitated weekly professional learning community meetings
- Provided curriculum and training for weekly advisory meetings
- Assigned students (700+) their A&H faculty advisor

Aug 2008 to Dec 2009 ***Advisory/Tutorial Chair,*** Davis High School, Kaysville, UT
Led a committee of teachers in making decisions about the Advisory/Tutorial program at Davis High School.

- Implemented changes and managed student placement in advisories.
- Maintain advisory/tutorial teacher resource shared drive
- Collected data from advisory students and faculty, analyzed data to direct changes for the program
- Our advisory/tutorial program was adopted district wide in all eight high schools

Jan 2016 to June 2016 ***FCS Apparel Design & Production Curriculum Chair,*** Utah State Board of Education, Salt Lake City, UT
Led a committee of FCS teachers and post-secondary leaders in developing and updating new curriculum for the Fashion Design, Marketing and Merchandising pathway.

- Created strands and standards for four courses: Apparel Design & Production 1, Apparel Design & Production 2, Sports & Outdoor Product Design 1, Sports & Outdoor Product Design 2
- Created performance objectives for each course
- Wrote the CTE state skills test for each course

July 2015 to Dec 2016 ***FCS Reframing Committee,*** Utah State Board of Education, Salt Lake City, UT
Reviewed FCS Fashion Design, Marketing, and Merchandising pathway, suggested relevant changes to courses to align with industry standards and economic needs for the State of Utah.

Jan 2015 to June 2016 ***FCS USBE Conference Chair for Fashion, Clothing & Textiles,*** Utah State Board of Education, Salt Lake City, UT

- Contacted presenters to present at annual FCS teacher conference
- Collected handouts from presenters
- Helped facilitate AV and technology needs for each presenter

June 2014 to Aug 2014 ***FCS Curriculum Developer,*** Utah State Board of Education, Salt Lake City, UT
Developed new curriculum for Textile Designer Entrepreneurship USBE course

- Wrote curriculum for Textile Designer Entrepreneurship course
- Wrote CTE state skills test for course
- Planned and facilitated a one-day conference for teachers. Arranged for speakers and presented
- Planned conference room assignments

Sept. 2014 to Present ***Fit Specialist, Alterations Specialist, Tailor & Designer,*** Self Employed,
Smithfield, UT

- Consult small apparel companies (ROOLEE, TruWear, Joy-Junkie) with sample fitting and sizing guidelines.
- Perform alterations on special occasion dresses (wedding, prom)
- Custom design and sewing for clients (dresses, tops, pants, men's pants)
- Provide private sewing lessons (ages 8-adult)

Jan 2013 to April 2014 ***Burn Camp Young Adult Burn Retreat Assistant Director,*** University of Utah Burn Center**,**
Salt Lake City, UT
Planned and facilitated burn camp program for young adults (18-24 years)

- Planned and coordinated retreat activities
- Arranged for personnel and counselors to mentor and provide support during the retreat
- Managed registration and communication with attendees

June 2010 to Oct 2015 ***Burn Camp Pre-School Director,*** University of Utah Burn Center,
Salt Lake City, UT
Planned and facilitated burn camp program for preschool age (4-6 years) for Camp Nah Nah Mah

- Planned day camp activities, purchased supplies, arranged for entertainers to present at camp
- Managed registration and communication with campers and their caregivers
- Oversaw camp counselors as they worked with preschool campers

Jan 2007 to June 2016 ***Family & Consumer Sciences Teacher,*** Davis High School,
Kaysville, UT
Responsible for developing and teaching family and consumer sciences courses to high school students, grade 10-12.

- Teach IDT1010 (Weber State University-Concurrent Enrollment), Interior Design 1, Interior Design 2, Apparel Design and Production 1, Apparel Design and Production 2, Fashion Strategies, Teachers of Tomorrow, ED1010 (Weber State University-Concurrent Enrollment), Food and Nutrition 1
- Maintained a teacher website and used Canvas (learning management system) to assign coursework and assess student learning
- Maintained a sewing and interior design lab. Kept equipment updated and in good working condition
- Managed approximately $5000 budget
- Advised FCCLA. Provided direction, encouragement on STAR events, service projects, and school activities

2007 **Textbook Adoption Committee,** Davis School District, Farmington, UT

- Responsible to select Family and Consumer Sciences textbooks for the school district

Aug 2006 to Jan 2007 ***FCS Teacher,*** Syracuse Junior High, Davis School District Syracuse, UT

- Teach Food and Fitness, Teen Living, 7th grade TLC
- Updated curriculum for Teen Living
- Managed Foods and Sewing Lab

Aug 2005 to June 2006 ***Art & Keyboarding Teacher,*** Spring Creek Middle School, Cache School District, Providence, UT

Taught and managed 6th grade art, and keyboarding.

- Applied for an art supplies grant and received funds, managed grants funds and met grant requirements.
- Organized and facilitated an art gallery in the school, showcasing student art work
- Helped select and advise student in the local Writer's and Artist's Fest
- Built and maintained a teacher website

Fall 2004 to Present ***Motivational Speaker,*** Utah

Speak to teenagers, young adults, and adults about overcoming challenges.

- Approximately 70 presentations given (youth committees, religious groups, college groups, fundraising events)
- Share personal story of overcoming challenges related to my experiences as a burn survivor.
- Topics covered: overcoming challenges, developing good self-esteem, positivity, body image

Aug 2000 to June 2005 ***FCS Teacher,*** Sky View High School, Cache School District, Smithfield, UT

Taught FCS courses to high school

- Taught Adult Roles, Sewing 1, Fashion Strategies, Foods 1, Foods 2, Work Based Learning
- Planned learning activities aligned with state learning standards and objectives
- Implemented and oversaw a new work-based learning program, met state standards, received work-based learning teaching endorsement from USBE
- Re-instated and advised the student organization Family, Career and Community Leaders of America (FCCLA) club
- Selected by the state office of education to assess and contribute to rewrite the fashion strategies standards and objectives and skills test

Aug 1999 to June 2000 ***7th Grade Math Teacher,*** Spring Creek Middle School, Cache School District
Providence, UT
7th grade math teacher

- Taught Pre-Algebra, Math 7, Reading
- Worked with team members and community members on the Stream Project. This project allowed students to apply math skills in monitoring water quality on local farmland.

Fall 1998 to June 1985 ***Student Teacher,*** Spring Creek Middle School, Cache School District
Providence, UT
Middle School FCS teacher

- Taught and managed: 6th grade TLC, 7th grade Life Skills, 8th grade Life Skills
- Directed a student enterprise unit with 8th grade Life Skills

TEACHING: UNIVERSITY CREDIT COURSES

Abbreviations: Utah State Board of Education (USBE); Family and Consumer Sciences Education (FCSE); Outdoor Production Design and Development (OPDD); Applied Sciences, Technology, and Education (ASTE); Utah State University (USU)

Introductory Sewing for Outdoor Products—FCSE 1040(1140): Introductory-level sewing techniques in this course are geared toward beginning sewing students. Topics focus on sewing for the outdoor industry and manufacturing. It includes the use of sewing machines and sergers. No previous sewing experience is needed. (2016—2018, Fall & Spring)

Intermediate Clothing Construction Skills, Principles, and Alterations—FCSE 2040: Students learn intermediate-level sewing techniques and construction of clothing. Other topics include pattern alteration and fitting, use of elements and principles of design in apparel, and use of multiple construction machines. (2018-Present, Spring)

Advanced Clothing Studies: Patternmaking—FCSE 3040: Students learn two methods of developing apparel patterns: flat pattern design and basic drafting. Students test these methods by constructing garments, culminating with the development of a design challenge. (2017-2020, Spring)

Textile Science—FCSE 3030: Students study fibers, yarns, fabric constructions, and finishes related to suitability for the desired end uses. They learn to use mathematics and descriptive statistics for reporting and interpreting data collected from lab experiments. The course includes lectures and laboratory. (2016—Present, Fall & Spring)

FCSE Housing and Interiors—FCSE2700: This course emphasizes the identification and use of the elements and principles of design. Other topics include furniture arrangement basics, floor plan evaluation, space planning, and design-related careers as they relate to the associated high school courses taught in FCSE. (2016—Present, Fall)

Housing and Interior Design Teaching Methods—FCSE 3790: This course emphasizes the

identification and use of the elements and principles of design. Other topics include furniture arrangement basics, floor plan evaluation, space planning, and design-related careers as they relate to the associated high school courses taught in FCSE. (2016—2020, Fall)

Orientation to Family and Consumer Sciences Education—FCSE 2510: This course provides an overview of what is required to teach Family and Consumer Sciences Education in secondary schools and community-based organizations. (2022, Spring)

Early Childhood Education Internship—FCSE 4000: Students learn how to legally operate a childcare center and help young children increase their skill development. Students complete an internship at a licensed early childhood educational facility in addition to completing assignments that correspond with this experience.

Family and Consumer Sciences Education Clinical Experiences 2—FCSE4300: This is an on-site experience that allows students to work with a family and consumer sciences education teacher. Students practice teaching and learn classroom management principles. (2021—Present, Fall)

Family and Consumer Sciences Education Methods 2—FCSE 4400: This course explores the development of competency in curriculum planning and skill in using instructional strategies, resources, and assessment based on theories of learning and human development. Topics include instructional strategies, assessment, curriculum planning, program promotion, and professional development. (2018—Present, Fall)

University Connections—USU 1010: Connections provides an environment of challenge and support to help new students make a successful transition to USU. (2018—2020, Fall)

Evaluation System Used by Utah State University

Course evaluations were obtained using the IDEA Center Student Ratings of Instruction which assesses effectiveness by focusing on learning and curricular objectives. Converted scores take into account weighted course objectives and are shown with respect to the databases indicated. Scores 45-55 are statistically "similar" to peers in the comparison group, with the average set at 50. Scores 56-62 are statistically "higher" than peers, and scores ≥ 63 are statistically "much higher" than peers, in the top 10% of all classes. Further details can be found at http://www.usu.edu/aaa/idea_faculty_faq.cfm.

Average converted evaluation scores in comparison to instructor scores for the IDEA database; the applied sciences, technology and education discipline, and Utah State University.

Overall Student Evaluation Mean Ratings Fall 2016 to Present	IDEA Database	Discipline	USU	Ranking
Progress on Relevant Objectives	61	58	60	Higher
Excellent Teacher	59	58	58	Higher
Excellent Course	61	58	58	Higher
Summary Evaluation	61	58	59	Higher

SUPERVISION and MENTORING

Graduate Students

2021	Emmalee Brown, M.S. Family and Consumer Sciences Education and Extension; USU Graduate Committee; member
2017—2018	Michelle Clouse, M.S. Family and Consumer Sciences Education and Extension; USU Graduate Committee; member

Independent Study Student Projects

2020	Mentoring: Tyler Homer, URCO grant project to design and create an adaptive clothing line
2019, Spring	Mentoring: Ben Johnson, URCO grant project for a comparative analysis of a Peruvian textile
2019, Spring	Mentoring: Traci Rollins, Independent Study, tailored jacket
2019, Spring	Mentoring: Jordan Jensen, Independent Study, Browzwear pattern to 3D prototype
2018, Fall	Mentoring: Janelle Bradley, Independent Study, Interior Design student housing project
2018, Spring	Mentoring: Krista Myers Hinton, independent study, 4-H horse show blankets
2018, July	Mentoring: Tristan Peterson, honors capstone project

University Teaching Assistants/Grad Assistants

2020—2021	Supervision: Ashlee Allan, Teacher Assistant, Textile Science
2019—present	Supervision: Matthew Huff, Teacher Assistant, Textile Science
2019—present	Supervision: Anna Killpack, Adjunct Instructor, Beginning Sewing
2019—2021	Supervision: Shaelin Nilsen, Grad Assistant, Beginning Sewing
2019	Supervision: McKenna Andersen, Teacher Assistant, Textile Science
2017—2019	Supervision: Haley Jennings, Teacher Assistant, Textile Science
2017—present	Supervision: Sewing lab techs; hire, oversee scheduling, and tasks to be completed in the Family Life sewing lab
2016—2017	Mentoring: Lacee Boschetto, Graduate Assistant, Textile Science

PROFESSIONAL DEVELOPMENT

2021, June 30	*Emerging Consumers: Back to School Buying Behaviors Post Pandemic.* Hosted by Cotton Incorporated. Virtual.
2021, June 15	*Adobe Suite for Interior Design FCS Summer Conference.* Hosted by Utah State Board of Education. Virtual.
2021, June 14	*Child Development Associate Certification information FCS Summer Conference.* Hosted by Utah State Board of Education. Virtual.
2021, June 16-18	*AAFCS Virtual Conference*. Hosted by American Association of Family and Consumer Sciences. Virtual.
2021, Spring	*Learning Circle: Ungrading.* Hosted by Center for Innovative Design & Instruction, Utah State University, Logan, UT.
2021, January	*Building Leadership Competencies for FCS Professionals.* Hosted by American Association for Family and Consumer Sciences. Webinar.
2020, Sept	UAFCS Fall Conference. Hosted by Utah Association of Family and Consumer Sciences. Virtual.
2020, Sept 24	*Low-Cost Measurement of Facemask Efficacy for Filtering Expelled Droplets During Speech.* Hosted by American Association of Textile

	Chemists and Colorists. Webinar.
2019, August 14	Empowering Teaching Excellence Conference, Utah State University, Logan, UT.
2019, April 16	*Financial Wellness, How to Define it, Assess it, Achieve it*. Hosted by American Association of Family and Consumer Sciences. Webinar.
2019, February 27	*Mindfulness Mapping: Cultivating Calm Creativity in the Classroom.* Hosted by American Association of Family and Consumer Sciences. Webinar.
2018, October 24	*Financial Literacy Mountain Land Region Professional Development*. Hosted by Federal Reserve Bank of San Francisco, Salt Lake City, UT.
2018, August 15	Empowering Teaching Excellence Conference, Utah State University, Logan, UT.
2018, June	*Browzwear Education HUB training*. Hosted by Browzwear, Corvallis, OR.
2018, May 8	*Planetary Thinking in the Curriculum Workshop.* Hosted by Utah State University Sustainability Council (competitive application), Logan, UT.
2017, Fall	Brown Bag Academy. Hosted by Utah State University, Logan, UT.
2017, August 16	Empowering Teaching Excellence Conference, Utah State University, Logan, UT.
2017, March	*REVAMP* Seminar. Hosted by Utah State University, Logan, UT.
2016, November	*Teaching Naked Seminar*. Hosted by Utah State University, Logan, UT.
2016, August 17	Empowering Teaching Excellence Conference, Utah State University, Logan, UT.
2016, August 15	Foundations of USU Teaching. Hosted by Utah State University, Logan, UT.

RESEARCH

2020—2021	Williams, A. (2021). *Does fashion sustainability instruction influence student intention to make sustainable apparel choices?* [unpublished doctoral dissertation]. Utah State University. IRB#11680.
2020	Warnick, B., & Williams, A. (2020). *Can teaching practices implemented by family and consumer sciences instructors influence sustainable apparel choices?* [unpublished pilot study]. Utah State University. IRB#11245.

PUBLICATIONS

Clouse, M., Hall, K. & Williams, A. (2020). Predicting U.S. adolescents' purchasing of denim jeans using quality attributes, behavioral characteristics, and sociosdemographics. *Journal of Textile and Apparel, Technology and Management, 11*(3). Retrieved from https://ojs.cnr.ncsu.edu/index.php/JTAMTM/article/view/16349

Williams, A. (2007, October 1). Computer usage in the classroom*. Techniques: Connecting Education and Careers,* (82)7, 62.

PRESENTATIONS and POSTERS

Williams, A. (2021, June 18). *Fashion inspired by NEHMA* [Fast talk]. America Association of Family and Consumer Sciences Virtual Conference. Virtual.

Williams, A., & Nilsen, S. (2021, June 15). *Hip pack sewing workshop: Best practices for teaching clothing construction* [Workshop]. Utah State Board of Education FCS Summer

Conference. Virtual Zoom Class.

Williams, A. (2021, June 16-18). *Fabric properties*. Utah State Board of Education FCS Summer Conference [Online course]. Canvas course.

Williams, A. (2020, June). *Textile science 101* [Online course]. Utah State Board of Education FCS Summer Conference. Canvas course.

Williams, A. (2020, June). *Fashion revolution: A look at sustainability in the fashion industry* [Online course]. Utah State Board of Education FCS Summer Conference. Canvas course.

Williams, A. (2020, March 12). *Reading the wrinkles: Assessing fit for apparel* [Conference workshop]. Utah State University Extension Clothing and Textiles Training Conference, Lehi, UT.

Delgadillo, L., & Williams, A. (2019, June 12). *Money and society* [Conference presentation]. Utah State Board of Education FCS Summer Conference, Saratoga Springs, UT.

Shoop, C., Wheeler, J., Boschetto, L., Nielson, J., & Williams, A. (2019, June 12). *FCSE at USU* [Conference presentation]. Utah State Board of Education FCS Summer Conference, Saratoga Springs, UT.

Williams, A. (2018, September 18). *Implementing sustainability practices in textile science* [Poster presentation]. Planetary Thinking Workshop, Utah State University, Logan, UT.

Williams, A. (2017, June 14). *Understanding performance textiles* [Conference presentation]. Utah State Board of Education FCS Summer Conference, Saratoga Springs, UT.

Williams, A. (2017, June 14). *Textile design entrepreneurship: Technology used in fashion design/interior design* [Conference presentation]. Utah State Board of Education FCS Summer Conference, Saratoga Springs, UT.

WEBSITES and ONLINE COURSES

Williams, A., & Warnick, B. (2021). *Sustainable apparel choices research study*. Sustainable Fashion Learning Module. Retrieved August 11, 2021 https://sites.google.com/d/1fwK9_0jdWnj2uBe8xefPfe-2H1FDJPKP/p/1_EoNV1ydkVZCKUbYBsLel5kZpT46V9L-/edit

Delgadillo, L., & Williams, A. (2020). *Financial literacy FCSE 1350*. Utah State University. Retrieved August 11, 2021 https://caas.usu.edu/fcse/index

EDUCATIONAL MATERIALS

Williams, A., & Perkins, S. (2021). *Hip pack sewing pattern.* Utah State Board of Education Family and Consumer Sciences Summer Conference Canvas Page.

Williams, A. (2016). *Textile design entrepreneurship teaching resources.* Utah Education Network Family and Consumer Sciences File Cabinet. Retrieved August 11, 2021 https://www.uen.org/cte/facs_cabinet/facs_cabinet5c.shtml

Williams, A. (2016). *ADP Best Practices.* Utah Education Network Family and Consumer Sciences File Cabinet. Retrieved August 11, 2021 https://www.uen.org/cte/facs_cabinet/facs_cabinet5b.shtml

CREATIVE ACCOMPLISHMENTS SUPPORTING FAMILY and CONSUMER SCIENCES

Williams, A. (2021). *Children Grading Rules Size 2-14* [Database record]. ROOLEE Children Grading Rules.

Williams, A. (2020). *Men's Grading Rules* [Database record]. TruWear Men's Grading Rules.

GRANT SUPPORT

External Funding Total: $12,000

Primary Investigator: Lead author of the proposal and person with administrative authority and responsibility to direct the project—intellectually, fiscally, and logistically.
Co-Primary Investigator: Co-author of the proposal and person with administrative co-authority and co-responsibility to direct the project—intellectually, fiscally, and logistically
Collaborator: Individual not responsible for the administrative or fiscal conduct of the project; significant contributor to at least one defined goal/objective of the project

Project Dates	Agency	Requested	Status
7/2018 – 6/2019	Utah State Board of Education	$10,000	Funded
Financial Literacy/Adult Roles in the Northern Region PI: L. Delgadillo, Collaborator: A. Williams Grant objective: Develop a concurrent enrollment financial literacy course that aligns with breadth social science perspective and designation. Provide materials and training for high school financial literacy teachers in the State of Utah.			
2007	Qwest	$2,000	Funded
Qwest Technology Grant PI: A. Williams Grant objective: Provide new technology to aid learning in the high school classroom.			

PROFESSIONAL ASSOCIATIONS

2018 – present	American Association of Family and Consumer Sciences (AAFCS)
2018 – present	Utah Association of Family and Consumer Sciences (UAFCS)
2017—present	American Association of Textile Chemists and Colorists (AATCC)
2010—2014	Future Educators of Tomorrow
2008—2012	Family, Career and Community Leaders of America
2008—2016	Davis Education Association
2008—2016	Utah Education Association
2008—2016	National Education Association
2008—2016	Association for Career and Technical Education
2008—2016	Utah Association for Career and Technical Education

SERVICE: ACADEMIC and COMMUNITY

2021 Spring	Family and Consumer Sciences Education Search Committee, member. Utah State University.
2020 Spring	Family and Consumer Sciences Education Search Committee, member. Utah State University.
Oct 2019 to present	Family and Consumer Sciences Education Program Lead. Utah State University.
Aug 2019	Department of Applied Sciences, Technology Education Graduate Committee,

to present	member. Utah State University.
Jan 2019 to Oct 2019	Family and Consumer Sciences Education 100-year Celebration Committee, member. Utah State University.
2019 Spring	Family and Consumer Sciences Education Assistant Professor Search Committee, member. Utah State University.
2019 Spring	Nutrition, Dietetics and Food Sciences Search Committee, member. Utah State University.
Oct 2018 to present	Apparel and Textiles, board member chair. Utah Association of Family and Consumer Sciences.
Aug 2016 to Aug 2018	Youth Leader (ages 12-18), president. Church of Jesus Christ of Latter day Saints, Kaysville, UT.

AWARDS and HONORS

2021	Utah Family and Consumer Sciences Post-Secondary Teacher of the Year, Utah Association of Career and Technical Education (UACTE)
2015	Secondary Teacher Mentor of the Year, Utah State University, College of Education
2012	Teachers of Tomorrow Educator of the Year, Weber State University, Future Educators of America, Ogden, UT