ABSTRACT

USING DESIGN METHODS OF FASHION DESIGN PROFESSIONALS
TO ENHANCE THE TEACHING PRACTICE OF SECONDARY
SCHOOL DESIGN EDUCATORS

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Most of us take design and technology for granted as they have become heavily entwined with our everyday life and contemporary visual culture. Given the demands of a globally competitive environment, and the responsibility secondary school educators have in preparing students to succeed in tertiary education and become better informed consumers, school districts need to move forward with including design and technology into their arts curriculum.

Designers play a key role in imagining the future of our physical world, and their decisions shape the way humans think and behave with material culture and with each other. Fashion design—as both a global commodity and multi-billion dollar business—extends into our everyday life. Understanding the power of the design process is essential for creating this culture of well-informed citizens. Improved fashion design pedagogy in schools will better prepare secondary school students for tertiary design education and contribute to the creation of a culture of well-informed and savvy citizens who can think through design processes and make decisions that will positively impact our environment and society.

Using grounded theory and mixed methods research methods, this investigation explored the relationship between the design methodologies used by six fashion design professionals in the U.S. and the design methods taught by eight fashion design teachers in selected Illinois

secondary schools. The findings revealed some of the pedagogical shortcomings schools are facing in the teaching of design methods in secondary school design and applied arts classrooms. The study also revealed ways in which references to visual culture and the implementation of professional design methodologies by teachers can improve design product made by students in secondary school fashion design classrooms.

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USING THE DESIGN METHODS OF FASHION DESIGN PROFESSIONALS TO ENHANCE THE TEACHING PRACTICE OF SECONDARY SCHOOL DESIGN EDUCATORS

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DEDICATION

To my son, Jack, who is my greatest accomplishment

and whose imagination taught me that

creativity and craftsmanship are just a Lego brick away.

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CHAPTER 1

INTRODUCTION

Preparing secondary school students to succeed in a globally competitive environment heavily reliant on design and technology will require a major investment in design education within American secondary schools. In order to keep pace with the increasing demand for our nation's limited resources, school districts need to place greater emphasis on creating multifaceted and interdisciplinary curricula that promote creativity and an appreciation for our visual and material culture (Dewey, 1934; Efland, 2002; Freedman, 2010; Hillman-Chartrand, 2007; NAEA, 2014; Vande Zande, 2011; Zimmerman, 2010). By providing a more comprehensive education that includes an analysis of visual culture, students will acquire the practical skills needed to succeed in tertiary education and beyond (Lozner, 2013; Vande Zande, 2010). This research investigates whether the practice and knowledge of industry professionals can inform secondary school art curricula and improve the teaching practice of secondary school art and design educators.

Design education facilitates creating a culture of well informed, decision makers who can help meet the economic and societal challenges that lie ahead. These decision makers— educators, consumers and design professionals who can consider the economic, social and environmental impact of their decisions on an everyday basis— influence the products and services that eventually become part of our everyday visual and material culture. Design education is interdisciplinary in nature and provides a pathway for K-12 educators to align their

curriculum to Common Core, Next Generation Sciences standards and the new Core Arts Standards (NAEA, 2014). This study containts implications that extend beyond fashion design into all design practices. The findings demonstrate why teaching design process, specifically idea generation and conceptualization, can promote creative thought in the secondary school classroom. We need to rethink teacher education to improve design teaching by paying attention to the practice of professional designers and revise the traditional design models used in education.

As both a contemporary art practice and a multi-billion dollar industry,[1] fashion design plays a central role in the creative process of our postmodern society and has had a significant impact on American material and visual culture (Breward, 1998; Hilmann-Chartrand, 2007; vande Zande, 2011). Social and economic trends are formed through fashion, and these trends in fashion yield powerful cultural and social identities. As an example of how fashion has been integrated into American visual culture, one only needs to look at the long-running fashion television program, *Project Runway*. In Season 10, Episode 2 of the popular show, contestants used the unconventional material of candy to create fashion garments. Contestants used critical thinking skills to think outside of the box and create new textiles and original fashion couture out of candy (Project Runway, 2013). By examining creative processes such as those used on *Project Runway*, students can learn to think divergently and navigate artistic challenges not normally found in traditional high school art classrooms. These fashion design experiences afford students the opportunity to become more critical and discriminating consumers through meaningful and relevant curricula for secondary school students within the art classroom (Breward, 1998; Hilmann-Chartrand, 2007; Vande Zande, 2011).

[1] According to *The Economist*, a publication which tracks industry revenue on manufacturing and financial sectors, the fashion industry generated over $252 billion in 2011 ("Catwalk in the west," 2011).

Problem Statement

Since 1926, the field of art education has relied heavily on a design process model that is very linear in its approach (Wallas, 1926). Ideas are generated through an incubation process where they are analyzed, sythesized and eventually prepared for evalution (Lawson, 1950; Wallas). Over the past few decades, this model has been revised to include a design thinking process that includes empathy and reflection, but the visual represntation of the design process remains the same linear approach of its earlier predecessors (Todd & DeBruyn, 2014). This study revealed why the traditional design process model needs to be updated to reflect the dynamic nature of design thinking and include contemporary visual culture references.

The benefit of having a secondary school fashion design education is twofold. Fashion design education helps students become more critical and discriminating consumers, and for those hoping to become professional designers, the study of fashion aids students in preparing for success in tertiary education within the field. Research reveals that creativity is an important part of the education process and that art and design education have both positive economic and sociological implications for populations within a postmodern society (Dewey, 1934; Efland, 1990; Freedman, 2010; Hillman-Chartrand, 2007; NAEA, 2014; Vande Zande, 2011; Zimmerman, 2010).

Fashion design education extends into everyday life where producers and consumers become vital participants in a process that allows them to fully engage in the world around them (Dewey, 1934; Tillander, 2011). This specific segment of design education sharpens the everyday personal and aesthetic experiences of students who can connect to it through their own personal experiences and through aesthetics, form, inquiry and reflection. This process helps us

to consider the data; generate ideas; eliminate doubt; test, evaluate and refine ideas; and create meaningful solutions to achieve desired outcomes. And these learning environments become places for mutual satisfaction between maker and doer and producer and consumer, and through inquiry of a design professionals' knowledge, we can reconcile the need to proceed.

Yet fashion design is often ignored as an art form within American secondary school art curriculum because it has often been regarded as a reproduced or copied art, rather than a fine art form (Steele, 2012). This knowledge gap in art education provides an opportunity for the field of art education to understand how the design process is informed through the work of fashion designers; how idea generation is developed within the fashion design industry, and how we teach design process in secondary school classrooms. Therefore, the study of fashion design is both meaningful and relevant to secondary school students in today's globally competitive environment.

Research Questions and Sub-Questions

The purpose of this research was to examine whether the practice and knowledge of fashion design professionals could inform secondary school art curriculum and enhance the teaching practices of secondary school design educators. The following research questions along with their sub-questions were investigated in this research:

1. What design methodologies do selected fashion designers follow in the conceptualization, production, and refinement of their fashion designs?
    a. How do selected fashion designers generate design ideas?
    b. How do fashion designers refine, test, and judge their design ideas?

   c. What backgrounds and experiences do fashion designers need to achieve success in the fashion industry?

2. What instruction methods do selected Illinois fashion and art teachers employ to teach fashion design in secondary school classrooms?
   a. How do fashion and art teachers teach idea generation in fashion design?
   b. How do fashion and art teachers help students to refine, test, and evaluate their ideas?
   c. What backgrounds and experiences do fashion teachers need to achieve successful student learning outcomes?
3. What relationship exists between the design methods used by selected fashion design professionals and the design methodologies taught by art and fashion teachers in selected Illinois secondary school classrooms?
4. Do instruction strategies employed by secondary school fashion design teachers, who follow the design methodology used by fashion professionals, produce higher quality student design projects than those who do not?
   a. Is there a measurable difference in the level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?
   b. Is there a measurable difference in the quality of the craftsmanship of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?
   c. Is there a measureable difference of the effective application of formal qualities to the design problem of student design projects when teachers use instruction

strategies that follow the design methodology of fashion professionals compared to those who do not?

Significance of the Study

Understanding the knowledge and skills set design professionals have is important for improving design education within secondary school settings. This research reveals how design professionals' insights and creative practices can inform secondary school curricula and improve teaching the design process. By deeply examining the methodologies used by selected fashion designers to create innovative fashion and the instruction methods used by Illinois secondary school fashion and art educators to generate, refine, test, and evaluate student fashion design ideas, secondary school educators can better prepare more purposeful and engaging curricula to promote creative thought in the secondary school classroom. This design-based pedagogical approach supports improved teaching practices as well as individual student learning needs within a variety of classroom settings. The benefit of this excercise results in better preparation of students for success in an increasingly complex life and work environment. Improved fashion design pedagogy in schools can better prepare secondary school students for tertiary design education and contribute to the creation of a culture of well-informed and savvy citizens who can think through design processes and make decisions that will positively impact our environment and society.

Definitions of Terms

Applied arts – "the application of design and decoration to everyday objects to make them aesthetically pleasing." The term is applied to distinguish the fine arts, which aims to produce objects which are beautiful and/or provide intellectual stimulation from design (*Oxford Dictionary of Art*, 2013).

Design – the word originates from the Latin word *designare,* which means to mark out. While definitions vary, design today is often considered to be a project or a scheme intended mainly for a specific client, where the objectives and requirements of a problem or need are deliberately stated and ordering of materials and artistic elements and principles are needed to produce two-dimensional (2D) compositions (illustrations, drawings, photographs, commercial art and advertising) and three-dimensional (3D) objects, structures and environments, or 4D, which adds time and motion to 3D object, to serve human need in functional and aesthetic forms. Design is said to come from the deliberate choices a person makes within a project or scheme that meet the requirements of solving a problem, need or objective to produce functional or aesthetic forms through 2D compositions (drawings, illustrations, photographs, commercial art) or 3D objects, structures or built environments in order to satisfy a human need (Dorst & Cross, 2001).

Design education – teaching of theory and application in the design of products, services and environments. Design education "encompasses various disciplines of design, such as graphic design, user interface design, web design, packaging design, industrial design, fashion design, information design, interior design, sustainable design, trans-generational design, and universal design" (Archer, 1979; Dorst & Cross, 2001; Vande Zande, 2011)

Design process – the working process or method a designer follows in the act of designing. The three major components of the design process are the *concept* or idea, the *form* and/or product's process, and the *content* or meaning (Dorst & Cross, 2001). However, design as a process, can also be "variously documented in letters, sketches and notes, plans, briefs, company records and writings by designers as well as – crucially – in the objects and images that result from this process" (Houze & Lees-Maffei, 2010, p. 3).

Design thinking – inventive process through which "problems are identified, solutions are proposed and produced, and results are evaluated" (National Design for Thinking Institute, 1998, p. 1). Design thinking includes "role-oriented activities such as intending, defining, expiring, planning, producing, evaluating and integrating to help students in grades K-12 and teachers learn and teach through life-related experiences" (p. 1).

Fabrication – for the purpose of this study, the term fabrication refers to the manufacturing process of an item of clothing from natural (i.e., wools, silks, cotton) or man-made (i.e., polyester, blends, synthetic) materials.

Fashion design – is concerned with the conceptualization, aesthetics, design, construction and manufacturing of a garment influenced by cultural and social attitudes meeting human needs and wants (Milford, 1996).

Fashion designer – any person who designs commercial clothing within the prêt-a-porter or couture (custom-made) fashion industry (Milford, 1996).

Material culture – is the physical evidence of a culture in the objects and architecture they make, or have made. The term tends to be relevant only in archeological studies, but it specifically means all material evidence which can attributed to culture, past or present. Material culture is interdisciplinary and examines the relationship between people and their things, the

making, history, preservation, and interpretation of objects. It draws on theory and practice from such disciplines as art history, archaeology, anthropology, history, historic preservation, folklore, and museum studies, among others. Anything from buildings and architectural elements to books, jewelry, toothbrushes, or bubbles can be considered material culture (www.udel.org).

Prêt-a-porter – French term for ready to wear or ready-made fashion sold and distributed to consumers through manufacturers and/or through retail stores (Merriam-Webster, 2014).

Scaffolding strategies – scaffolds are temporary instructional support structures faculty put into place to assist students in accomplishing new concepts or tasks they could not typically achieve on their own. As students complete or master the task, the responsibility of learning shifts from the instructor to the student (Hogan & Pressley, 1997).

Secondary school fashion education – the instruction of fashion design in secondary school education ("High school of fashion," 2014).

Visual culture – a term that describes "all that is humanly formed and sensed through vision or visualization and shapes the way we live our lives" (Freedman, 2003, p. 1).Visual culture "provides context for the visual arts in its effects and points to the connections between popular and fine arts forms" (p. 1).

Assumptions

The following assumptions are recognized in this study:

a. The effect of the instructional strategies used by teachers will be observable in the final student projects.
b. The effect of the design methodologies used by designers will be observable in the final designed garment pieces.

Delimitations

There are several delimitations to this research:

a. Seven fashion professionals were selected to participate in this study. Three agreed to be observed while six others were observed through video footage obtained from corporate websites and/or existing articles and blogs as well as *Project Runway* video footage. This number represented an adequate representation of reputable fashion design professionals who were geographically accessible and willing to participate. Prominent designers from both Chicago and New York were included in this study.
b. There were only thirteen schools that offered fashion as part of their curricula within driving distance of the researcher. Because fashion design was not a core subject at all of these schools, it limited the number of schools that met the criteria to participate. Therefore, only eight fashion teachers were interviewed during a nine month period. However, this number represents an adequate representation of reputable fashion teachers who were geographically accessible and willing to participate.

Limitations

This research recognized the following limitations:

a. Generalizations about the professional practice of fashion design are limited to the population investigated.
b. Generalizations about the practices and qualifications of fashion teachers are limited to the population investigated.

c. Selected participants may not have answered truthfully or provided the researcher with access to information that might have been useful. In using audio footage, one of the teacher participants requested the right to read the final document and edit the narratives or stories she was willing to share and tell.

d. Given privacy laws for secondary students, the researcher was only allowed to audio record teachers and students in the classroom, which limited the data collected on teachers' and students' idea development practices.

CHAPTER 2

LITERATURE REVIEW

Art and design happen when individuals engage in their endeavors in such a way that their work demonstrates skill/craftsmanship; creativity; attention to detail through effective execution, and a sense of purpose through function and form (Amabile, 1998; Csikzentmihalyi, 1997; Dewey, 1934; Wallas, 1926; Freedman, 2003; Simonton, 1990a; 1990b; 1999). The usefulness of this exercise validates us, not only as creators and producers of art but also as viewers and participants and forges a necessary dialogue between individuals, cultures, and communities.

The design practice of fashion is worthy of our attention. As a multi-billion dollar global commodity, no other commercial activity has had a greater impact on our visual and material culture than fashion. Multifaceted and interdisciplinary in nature, fashion acts as both a discipline and a discourse in examining not only the aesthetic and phenomenological aspects of clothing but also the individual personae wearers create through their fashion choices. As a visual record of the times, fashion is an embodiment of the political, social, and economic changes that have occurred within society. Each movement of fashion records the visual culture that consumers embrace, and these movements are documented through visual image, text, form and object. The fashion industry taps into these visual culture references for inspiration, and these influences are seen in aesthetic movements of fashion (Irving, Flores-Vianna & Di Carcaci, 2013). By understanding how fashion is created, constructed and consumed, we gain an

understanding as to how this art practice acts as material object, social phenomenon, cultural value and abstract idea within society and becomes an important academic paradigm.

This chapter investigates fashion through a literature review of published works pertaining to the aesthetic aspect of fashion; the creativity, craftsmanship and formal qualities of fashion; the consumption of fashion; the methodologies used for viewing, analyzing and judging fashion; a history of fashion design education as an applied art within secondary schools both here and abroad and the models that have informed design process and thinking used in design disciplines;

The Aesthetic Aspect of Fashion

Historically, fashion has provided a backdrop for pushing the creative envelope for aesthetic beauty. In the nineteenth century, aesthetics had two goals: to analyze creative processes and to establish rules for judging beauty in the area of fine arts, such as drawing and painting. Philosophers such as Plato and Aristotle viewed aesthetics as a way to judge beauty in the arts; however, as time progressed, aesthetics took on new meaning as a study of both fine and applied arts created by modern day artists who were working on ideas (Eckman & Wagner, 1995; Saisselin, 1959). Charles Baudelaire, Walter Benjamin and Ulrich Lehmann recognized the importance of fashion as an applied art and expression of aesthetic beauty (Benjamin, 2003; Lehmann, 2000; Sokal & Bricmont, 1998).

Baudelaire (1863) connected fashion to art as the gateway to modernity, suggesting that a painter could hardly paint an individual without understanding the fashion of the period depicted. Baudelaire despised the paintings of artists such as Rubens whose laziness, he asserted, was the "reason for dressing the subjects of his paintings in garments from past centuries" (Irving et al.,

2013, p. 28). Baudelaire argued that art instead should be an accurate representation of everyday society and that fashions of the times should be accurately depicted in all artistic endeavors not just the fine arts. The philosopher Benjamin (1940) noted that "fashion was a 'tiger's leap' into the past" and thereby fused the "classical ideal with its antithesis, which is openly contemporary" (Arendt & Zohn, 1992, p. 148). Benjamin used the term dialectical image to describe images or objects that were produced by new modes of production, which he called industrial capitalism "where the new is intermingled with the old" (p. 148). Central to Benjamin's ideology surrounding fashion was his use of the key terms—outmoded and dialectical image—that put fashion into the historical context in which it belonged (Arendt & Zohn). In other words, fashion repeats itself with an idea, yet style, shape, fabric and texture may ultimately change through improved technologies and industrialization.

Lehmann (2000) used Benjamin's concept of fashion as a tiger's leap to explain how fashion acted as an aesthetic ideal that leapt from the contemporary to the ancient and back again without coming to rest exclusively in one aesthetic configuration. Excerpts from Lehmann's writing demonstrate the leap from a sociological or material observation of clothes to an understanding of fashion's unique character as a structuring device and, potentially, as a revolutionary force that was able to transform the past and put it into contemporary context. Lehmann explains that by referencing clothing styles of the past, fashion breaks the historical continuum, and when coupled with dialectical image, the tiger's leap generates a new and important historical viewpoint of fashion. While retaining its materialism and sociopolitical significance, fashion, as part of an intellectual culture, becomes an interpretation, an expression of contemporary beauty, or an independent structure of modern existence and cognition.

Aesthetics, which deals with beauty and artistic taste, is often only dedicated to art courses that engage students in appreciation of artistic beauty or in active pursuit of skills in creating beautiful objects (Barkan, 1962). However, pushing the importance of aesthetic experiences through transformative learning within applied art classes as a means for discovering a different "mode of knowing" is a connection that needs to be recognized (Eisner, 1985, p. 24). Theoretical forces that have supported the notion that art has evolved to include both fine art and applied art through everyday living appear in the writings of both John Dewey (1934) and Richard Shusterman (2002). On the one hand, Dewey's pragmatic aesthetics "makes a related point about function," maintaining that "art is distinguished not by any one use, but rather by its wide ranging functionality which includes the life-enhancing pleasures of aesthetic experience" (p. 239). Dewey maintains that aesthetic experiences are formed through how we engage in the world around us and that aesthetic art satisfies many ends, which in turn validates our lives. When individuals engage in their work, in such a way that skill is demonstrated and appreciated, this allows both producer and spectator the benefit of mutually enjoyable aesthetic experiences. Without aesthetics, art ceases to exist and this idea that "to be truly artistic, a work must also be aesthetic" (p. 49) is significant to Dewey's and Shusterman's writings.

Shusterman (2002) examined in detail how the science of aesthetics dealt not only with artistic beauty but also with sensory perception and concepts of taste. Dewey (1934) made it clear that while art products are "physical and potential," there is a distinction between the two in that one results in product or form and the other is a work of art through process (p. 168). Shusterman's (2006) practical aesthetics "involves actively engaging in programs of disciplined, reflective, corporeal practice aimed at self-improvement," and his philosophy demonstrated that aesthetics is intrinsically tied to society's perceptions and "functions in our knowledge and

construction of the real world," which involved specific methods of improvement at specific moments in time (p. 243). In this evolution of aesthetics, Shusterman claimed that the future of aesthetics "depends on the ways theorists, artists, critics and consumers will appropriate the various meanings aesthetics already has and adjust them to reshape our contemporary cultural world" (p. 239). The idea of aesthetics becomes embedded in the significant form of fashion and as part of the process, aesthetics yields practical forms and practical functions.

Each season designers and producers of fashion create the latest and most innovative designs through observation, trial, and evaluation. A fashion designer who captured the aesthetic contexts of Baudelaire, Benjamin and Lehmann while taking into consideration the artistry of the clothes he made was Alexander McQueen. McQueen's collections were based on three of Benjamin's and Lehmann's concepts: illusion, idea and the tiger's leap transforming the woman into art through her dress (Benjamin, 2008; Lehmann, 2000; Wallace, 2000).

> McQueen always started every collection with an idea or a concept for the runway presentation before the fashions. After the concept, he would have this elaborate sort of storyboard with these various references from art, from film, from music—his influences from everywhere. There's a famous story about how he was watching *Friends* one day, and Joey was wearing a green sweater, and Joey's green sweater inspired an aspect of his collection…inspiration came from everywhere. The actual creative process in terms of the clothes themselves, were often designed directly on the mannequin during a fitting. So fittings, for McQueen, were incredibly important. (Bolton, 2010)

McQueen's use of this concept was evident in his exhibit, "Savage Beauty" (2010), organized by The Costume Institute at New York's Metropolitan Museum of Art. The exhibition featured over 170 ensembles and accessories from McQueen's short career and demonstrated how McQueen challenged and expanded the understanding of fashion beyond utility to its conceptual expression of culture, politics, and identity. As a champion for imagination and narrative inquiry, McQueen often referenced the exaggerated silhouettes of the 1860s, 1880s, 1890s, and 1950s in his imagery. By referencing clothing styles of the past,

McQueen's fashion broke the historical continuum and became both transitory and trans-historical, linking fashion to Benjamin's (1940) view of modernity.

McQueen drew upon historical and social references to create aesthetic and artistic fashion and his own interpretation of ideas on the runway have a valid and meaningful place in understanding of fashion as it exists today in our modern society.

> Every collection told a story. When you watched one of McQueen's collections, you were always having these feelings of awe or wonder or fear or terror. My personal opinion was that McQueen was channeling the Sublime through his collections…You always were left with feelings of confusion, and McQueen often said that he didn't care whether you liked his collections or not, as long as you felt something. And the intensity of his collections came from the fact that it was often very much about his state of mind at a particular time.
>
> McQueen was well known for upending conventional, normative standards of beauty. He would dress women up in garments that obliterated their features. And certainly the garments that he made can be interpreted as being misogynistic. I think that he felt as if the clothes he was designing for women were armor. So in his mind his clothes were very much to do with empowerment. Fashion wasn't just about pragmatics; it wasn't just about wearability. To him, fashion was a vehicle to convey or express complex ideas and complex concepts, but also could use fashion as a way to challenge our boundaries of what we think of as clothing and think about in terms of the requisites or fundamentals of clothing (Bolton, 2010).

McQueen's images provided a reality for the woman in which stylized formal qualities of fabrics and designs no longer represented the perfect illusion of an idea but rather the personality of the individual and its application within the art.

Factors Influencing Creativity, Craftsmanship and Design Resolution in Fashion

Inspiration becomes a springboard for creativity within fashion design. Some of the most important influences motivating artists and designers to create innovative products include visual culture references, great mentors, cultural backgrounds, social issues, nature, and historical events. And studies show that designers, more so than artists, are more willing to share these

influences and will openly credit the inspiration they take from some of these rich and powerful influences (Rodman & Eliot, 1961).

As part of our visual culture, fashion operates on a continuum (Freedman, 2003; Smelik, 2013). Society views this continuum through fashion movements and interprets the images and objects through historical, social and economic lenses. These movements of fashion provide a glimpse of how images may be viewed to tell the story of the users, makers, and technologies within social and cultural contexts (Houze & Lees-Maffei, 2010). Within every fashion movement, there is a visual culture connection that references these contexts. Within the context of art education, approaches for measuring the knowledge that fashion design professionals have in their pursuit of innovative fashion vary from those discussed within the context of art history. In a contemporary world, fashion is not just a means by which we express ourselves; it is also a very important aspect of the social change process. Film, photography, literature, museums and fashion magazines have all recognized the importance of fashion as a global commodity, and as a global commodity, fashion embodies the very sense of our cultural and modern society. While weather and climate may influence consumer choices, other factors such as human form, cultural values, personal likes and dislikes, daily activities, friends, family, social media and advertising may impact the styles individuals choose.

As a society, we participate in the bodily and intellectual art of fashion, seeking new and innovative ways to use dress as a way to cover and adorn bodies within a social space. This convergence enables us to "understand cultural phenomena and social relationships that are not generally accessible through other disciplines" and the value of fashion lies in the study of this design process within social and cultural contexts (Smelik, 2013, p. 310). These views of fashion all help to inform and recognize the cultural significance the study of fashion has had on modern

society. Therefore, it is important to put the creativity behind fashion into the historical, social and cultural contexts in which it belongs and to examine fashion as an artistic practice revealing some of the many underlying reasons for why we dress the way we do.

This section provides an historical review of the inspiration behind the creativity, craftsmanship and design resolution within fashion. It investigates how designers have used the some of these influences to solve design problems and create designed objects throughout fashion history, and highlights some of the more significant contributions of the components of creativity, craftsmanship and formal qualities of the elements and principles of design to create innovative fashion.

Fashion dates to prehistoric times when man first used animal skins, plants, grasses, and tree bark to create clothing that protected their bodies from the physical and harmful elements of nature (Boucher, 1985). As ancient civilizations flourished, artisans refined techniques for making fashion. Tomb carvings, sculptures, paintings, cave drawings from ancient Mesopotamia, and other art antiquities provide visual records of what clothing looked like in ancient civilization, and these visual records have helped piece together a rich and accurate description of the fashion of those times. From antiquity to the 14th century, fashion was heavily influenced by religious leaders and country monarchies. Archeological discoveries made during the 1900s provided evidence of a class system that evolved from fashion as textiles and materials used to distinguish social caste. Museum exhibits such as the Treasures of Tutankhamun (1972-1981) displayed a variety of artifacts that revealed how Egyptian kings and queens used gold and silver to distinguish themselves from the lower classes. As country borders became more evident after the 14th century, fashion experienced a social emancipation, and both men and women embraced the national characteristics of the regions from which they came. This cultural exchange between

country borders affected fashion practice as society adopted the styles of their own countries and adjusted them to suit their personal tastes.

Self-image became increasingly important during the Renaissance, as new materials and tailoring techniques provided this cultural movement with momentum. The movement allowed men and women greater freedom to re-create themselves through the artistic form of fashions, as innovations in footwear, hair care, and dress provided for greater differentiation between the sexes (Boucher, 1985). Prior to World War I, fashion was centered on the idea of classicism, where couturiers paid great attention to detail and fashion designers were "obsessed with construction and details" (Moss, 2014, p. 76). Fashion designer, Charles James, approached fashion from a sculptor's perspective and considered himself to be an artist (Moss). A dress was judged and appreciated not for its general line but rather for its finish, material, ruffles, lace, corsetry, embroidery and fine craftsmanship. With the Industrial Revolution, this changed. Designers such as Chanel and Dior focused on the more simple elements and principles of design through simple lines and balanced shapes. The female body was emphasized in more simplistic terms, and this forced the fashion industry to alter its criteria. Ballet and dance gave way to an Art Nouveau movement in fashion. The transformation occurred most obviously after the war when Dior and Chanel recognized that women became forms of art when they were constructing garments that expressed a woman's own individual personality. These new look of Dior and Chanel exploited established ideas, products, and views in an effort to embody the latest aesthetic. Economic and social trends were formed through fashion, which created powerful cultural identities as creativity was showcased in the fashion industry. Details of construction were sacrificed for expressions of personality, and the woman became the artwork through their personal fashion choices (Giroud, 1987).

As the visual culture of film became popular, theater icons like Mary Pickford, Lillian Gish and Clara Bow became fashion beacons setting new fashion trends (Mulvey & Richards, 1998). Film icons were eventually replaced with models, and these heroes or heroines functioned as "ideal images with which we identified ourselves" (Smelik, 2013, p.168.) In these scenarios, fashion gave way to a new system of meaning. Fashion styles for both men and women changed as women gained independence and as the decade drew to a close, fashion became ultra-feminine and extremely graceful and heavily accessorized.

World War I changed the role of women in the U.S. and creativity in fashion was minimalized. The clutter and adornment of the previous decades was streamlined with the introduction of slimmer silhouettes. But as men marched off to war, women went to work. The world could no longer afford the fashion excesses of the previous decades; hence simplicity became the essence of fashion (Mulvey & Richards, 1998). Television helped to promote shopping as a hobby. Designers like Chanel created clothing for the masses, and as the ravage of war began to fade, fashion promoting leisure and comfort was preferred. After decades of ironing, pinning, piling, and tightly coiling one's hair, simplicity in the form of "bob" haircuts were embraced by everyone except the dowagers of high society. Gone were the confining garments of the previous decades, replaced by sport garments such as loosely fitting sweaters, chemises and skirts.

The 1930s were often overlooked as a significant decade for fashion style. Designers had abandoned costly decorative techniques of the previous fashion movements and replaced them with simple lines and patterns. While Chanel was revolutionizing fashion with her "poor boy" looks of jersey sport clothes new designers such as Madame Gres, Molyneux, Mainbocher and Vionnet were streamlining silhouettes ("New York Fashion," 2014). Luxurious fabrications of

soft velvets, double mummy crepe and silk satins helped to highlight the curves of the body through the craftsmanship of draping (Milbank, 1985). New media such as film and advertising began to promote the latest dress and cosmetic trends. Film icons influenced fashion as sleek sculptured hair of the movie stars replaced the previously popular boyish look of the bob (Mulvey & Richards, 1998). Simple triangles of fabric with elastic fasteners at the back, known as brassieres, had completely replaced the uncomfortable highly crafted and constructed corsets of the previous century. The new fashion shapes of wide trousers, backless tops, espadrilles, and floppy hats became the casual uniform of the rich and the not-so-rich. The aesthetics of this era incorporated both form and function: women were skiing, skating, golfing and flying, and Amelia Earhart inspired boy-girl clothes that eventually became the foundation for American casual clothing.

As Hitler and his army moved across Europe, fashion houses closed. Materials were in short supply, and fabrics normally used for stockings and dresses were now used to manufacture parachutes. Women's skirts were slimmer and shorter due to fabric rationing (Mulvey & Richards, 1998). As women were called on to assist with keeping the war effort alive both here and abroad, women were not only working in factories that supplied the war effort, they were the war effort, as WASPS and WAFS flew military aircraft, taught flight and gunnery to their male counterparts, and tested and repaired airplanes (Weber, 2006). As a result, slacks and jumpsuits became popular as women replaced men in factories.

Christian Dior responded artistically by reincorporating the aesthetics from the Belle Epoque and Impressionism with a New Look that featured draping as a detail of craftsmanship (Muller, Thiebeau, Chenouen, Jeauffroy-Mairet, & Richard, 2013). Dior's A-line design element flattered most figures while employing excessive layers of fabrics. Fashion again was influenced

by designers, TV shows and movie stars. The 1950s ushered in refinement and femininity, but because of a more active lifestyle shift, body shape changed. Creativity shifted as designers once again had to rethink design elements to highlight the more muscular, toned and curvy bodies of this era. Bomber leather jackets, grey flannel suits and button down cotton shirts became popular for both men and women. Televisions appeared in more and more American homes, and American shows such as *Leave it to Beaver* featured wholesome American youth always on their best behavior. Grace Kelly and Doris Day became examples of the natural, outdoor, good looks that helped promote a prosperous new society and Chanel resurfaced timeless cardigan jackets and sweater sets accessorized by strands of pearls (Milbank, 1985). Hair salons were frequented by both men and women to maintain the back-combed, dyed, and teased hairstyles of this era.

During the 1960s, designers recognized a need to shift their design focus from form to function and cater more toward human needs. The influence of fashion designers waned as they were replaced by new technology developments in materials and mass production, and major cultural events, such as Woodstock; the Vietnam War, and Britain's boy-band – the Beatles (Mulvey & Richards, 1998). Politics influenced fashion during the 1960s as the decade opened with a Cuban missile crisis and the assassination of a youthful president ("Ten Days in October," 2007). These events changed Americans' attitude about its own power and vulnerability. Counterculture was in full swing, and revolutionary changes in sexual attitudes and lifestyles accompanied new developments in music, art and media (Baudot, 1999; Mulvey & Richards, 1998). As America raced to the moon, the "space age" influenced fashion with metallic and plastic materials showing up on runways with geometric styles from Pierre Cardin and Mary Quant (Mulvey & Richards, p. 137). Men wore jackets with wide lapels and unisex looks were widely popular. Craftsmanship all but disappeared in this decade as dissatisfaction with the

establishment appeared in changing fashions as men sported mustaches, sideburns, long hair and beards, and hippies donned jeans decorated with colorful patches, paint, beads and embroideries (Weber, 2006).

Much like the previous decades of the 1910s and 1960s, the 1970s idealized the very thin figure and fads from the previous decades re-appeared. While craftsmanship waned with easier access to petroleum-based products and fabrics, creativity in fashion was revitalized. The 1970s ushered in the "glam and the punk" (Weber, 2006, p. 155). Vietnam and Watergate made Americans distrust and question the authority of their government and those in control, and fashion featured a unisex form of feminism, as men and women wore similar styles to the office. Fashion designer Vivienne Westwood caused consumers to take notice with her spiked leather jackets, pinky plaids, and Bondage trousers worn with overly large platform boots. Street fashion originating in urban settings like London and New York became one of the bigger stories in fashion creativity, and tuxedo jackets for women were widely glamorized by fashion photographers. Hair was just as innovative, as geometric cuts became fashionable; face painting, colorful and shaded for effect, was popularized by KISS and David Bowie.

In the 1980s, practicality became the new aesthetic as clothes were fabricated to embrace the capitalistic viewpoints of a new minimalist generation. Styles featured large shoulder pads reminiscent of the 1940s and tailored jackets with tailored shirts. Creativity waned as women and men wore bow-ties and oversized shirts. Films such as *Flash Dance* popularized a fitness craze that spread globally, as Keds, headbands, leggings, Lycra and leotards became staple fashion accessories, and Gaultier and Madonna became key figures in fashioning underwear into outerwear. As America became wealthy again through new financial and technology sectors, costume jewelry was replaced with real jewels and real furs. It was an era of dual identity: pant

lengths were both wide and slim and skirt lengths were short and long. By the end of this decade, personal choice dominated personal style.

The internet changed the way we communicated (you've got mail), spent our money (online retail stores), and did business (e-commerce) during the 1990s, and designers responded artistically through new fashion trends inspired by changing social mores. Baggy pants, oversized shirts, skinny tops and the padded shoulder pads of the 80s were soon replaced with new fabrics such as microfiber. For youth, the fashion of the decade began with grunge on one hand and preppie on the other. The hip-hop style was born as boys' jeans, worn low on the hip, grew bigger and bigger, and girls wore bellbottoms and poly disco tops reminiscent of the 1970s. Polo shirts and khaki pants were the workplace norm, as dress down Friday became more commonplace.

The millennium ushered in a mash-up of the previous decades. No one particular style dominated this period as consumers were attracted to the updated versions of the fitted jackets of the 50s, the sheath dresses of the 60s, and the wrap dresses of the 70s. Baseball caps replaced the stylish hats of the previous decades, and leisure wear consisted of warm-up suits, tennis shoes, and long and baggy cotton dresses made popular by Laura Ashley. Individuality became the style icon of this decade, and attitude, rather than status, determined what was worn and how it was worn. The 2000s highlighted a global society that could not live without its gadgets. Apple headphones and smartphones became fashion accessories, along with UGG boots; fedoras, retro sneakers, and colored jeans. Social media helped to push these trends, and TV shows such as *Project Runway* showcased fashion's place as an innovative creative industry and artistic practice. Globalization also influenced the trends of this decade, as hybrid identity made its way into American culture through Middle Eastern and Asian dress. Pushing the trends for this new

decade were the millenials, a group of men and women born between 1977 and 1994 (Taylor, 2013). This group became the single largest consumer generation in history heavily influenced by social media, opinion and lifestyle. The Boho, Hip-hop, Nu-metal, rave and Goth movements groups competed for the wealthy youth who wore expensive designer clothing from retailers such as Abercrombie & Fitch and inexpensive clothing from Old Navy. Whether it was the online specialty shops of Pink or brick and mortar stores like Target, fashion retailing reinvented itself to cater to the demands of this new youthful consumer group. As the decade moved into 2013, throwbacks like neon leggings, bare midriffs, peplum tops and skinny jeans replaced some of these earlier trends.

The Consumption of Fashion

Creative thinking became a skill that could be learned; it improved teamwork, productivity and where appropriate profits (de Bono, 2009). The traditional idea of aesthetics in fashion was replaced by consumption as fashion took on a more industrial and capitalist version in the 19th century. Historians cited world events; changing social mores and values; advances in industry and technology, and most importantly, consumer wants and needs influenced by new and emerging media for some of the reasons these changes occurred (Boucher, 1985; Mulvey & Richards, 1998). The Industrial Revolution with innovations such as cotton mills, railways, and more and more Americans traveling abroad changed the American ideal of beauty. The decade known as the "gay nineties" was a time of great prosperity for the upper classes and high society (Mulvey & Richards, p. 10). Up until that time, American fashion had always been dictated by those who could afford it, but the fortunes of the American middle class increased through industrialization, and as American society became bourgeois, new

fashion garments made their way across the ocean, increasing American fashion consumption (Mulvey & Richards). Department stores, such as Marshall Fields and Macy's, made it possible for the masses to shop and acquire the latest fashion trends at much more affordable prices. Technological advances of the cotton loom and the sewing machine, the process of urbanization as well as a newly developed railway system all played important roles in the increasingly rapid development of the American fashion industry. Cotton manufacturers discovered new ways to manipulate their fabric and created intricate laces, velvets and embroideries (Boucher, 1985). During the 20th century, the role of aesthetics in "fashion-oriented consumer behavior" became increasingly more important (Sproles, 1981, p. 120). Consumers began to demand that products be both beautiful and functional, and compared to its fine art predecessor, applied arts needed to meet a broader set of needs and wants that consumers had. Benjamin (1940) perceived fashion not only a commodity but as a historical fact that activated or revolutionized "past occurrences for the present" and as a structural device that moved within historical contexts from the metaphysical to the material (Arendt & Zohn, 1992, p. 150). The outmoded was defined as objects that had been supplanted by newer, more fashionable objects, or commodities that were no longer in fashion and reflected an acceleration of the temporal experience that objects recently in fashion, now seemed archaic (Benjamin, 1940; Giobbia, 2012). By examining the history of modern fashion and the ideas it engenders, historians shed some light on Benjamin's interest in fashion as a cultural phenomenon and explored why he felt fashion was so important. Fashion, as both an economic force and a visual signifier, was one of the most important features for Benjamin's *Arcades Project* (Eiland, 1999). Benjamin's project focused on the arcades of 19th century Parisian glass rooftop shops that were the early centers of consumerism in the city of Paris. *The Project* represented a montage of reflections, sketches, and quotations with descriptive

rubrics that dealt with couture, dress codes, art, literature, philosophy, and sociology within fashion (Scholem & Adorno, 1994). Benjamin's method, in which a particular style or stylistic element was taken from history and brought into present fashion, was seen as the new commodity. It is especially inherent to fashion, not just as the result of the seasonal structure of *haute couture* but because fashion operates differently from other art forms. Benjamin's (1940) philosophy regarded the process of development as a structuring device against historicism that used styles, ornamentation, and motifs from the past to progress toward higher levels of technical proficiency and material satisfaction (Arendt & Zohn, 1992).

Fashion designers had an ability to understand these changes in consumer wants and needs and to respond to them immediately, and this external demand for fashion novelty and innovation is what kept the art going (Kisfaludy, 2008). In a study done by Eckman, Demhorst and Kadolph (1990), data were collected from consumers regarding their decision-making processes and the criteria they used to evaluate women's apparel when making in-store purchases. Research showed that the consumers engaged in the creative process of collecting aesthetic objects to enhance their personal image to pursue their own meaning of beauty (Bell, 1989; Davis, 1992). As individuals adopted the latest trends by making decisions on whether to purchase and wear new trends, fashion transformed the way people look, and personality and individualism played important roles in this process (Steele, 2005).

Methodologies for Viewing, Analyzing and Judging Fashion

Fashion is often viewed, analyzed and judged for its aesthetic and artistic qualities. However, the beauty of fashion is best judged as it is displayed on the body of the individual wearer (Eckman & Wagner, 1995). By understanding how fashion is created, consumed, and

constructed, we gain an understanding of how fashion acts as a contemporary art practice and a global commodity in a postmodern society. Through an understanding of the theories behind fashion history and the cultural studies and case study methodologies used to inform my research, fashion can be deconstructed to allow the viewer to understand the cultural phenomena and social relationships fashion forms within the visual and material world in which it resides. Whether fashion is seen as an artistic practice for displaying beauty, provoking meaning, creating controversy, or functioning as a global commodity, fashion embodies the very sense of our visual and material cultures. By examining fashion from social, economic and historical contexts, we can begin to see its place in modernity and its importance in art education.

Up until the mid-1990s, the vast majority of research dealing with the study of creativity and its measurement relied heavily on either the psychometric or biographical (case study) method approach. However, in the late 1990s, researchers, especially those in the field of cognitive psychology, developed new ways to look at creativity. By using a blend of psychometric, historiographical, and biographical methods, a method known as the "systems' approach to creativity" was developed to consider the relationship between the creative individual and the larger world (Gruber & Wallace, 1999, p. 5). Gruber (1989) practiced this systems' approach throughout his research for over three decades, and it eventually emerged as a more useful way to think about the phenomenon of creativity. Studies later performed by key researchers on the subject of creativity revealed that those who were involved in "making" had a fundamental sense of purpose (Csikszentmihalyi, 1996; Gruber; Gruber & Wallace). In the study, *Creative People at Work*, a collection of twelve case studies performed on former students and colleagues, Gruber and Wallace established validity for a theoretical model that placed major importance on how people become creative rather than why people become creative. While

other studies emphasized the underlying motives of the creative person, their childhood origins, and perhaps their neurotic character, Gruber and Wallace focused their attention on how creative people do their work rather than on why and "on the developmental process within the career rather than on that leading up to it" (Sternberg & Kaufman, 2011, p. 277). Gruber used the case study method to place the creative person in a historical context and examined "special skills that the particular creative person may have," allowing researchers an opportunity to understand the creative person's "point of view better" (Wallace, 2011, p. 5). Gruber and Wallace's systems approach also involved studying individuals whose creativity was beyond dispute, analyzing and following the creative process through the end product. These studies paid careful attention to the individual and especially to the "great" or extraordinary individual because great or extraordinary people have a tendency to "leave better traces" of their greatness (p. 5). "The making and leaving of tracks—through preliminary sketches, countless revisions or early notebooks," Gruber observes, becomes "part of the process itself" (p. 4). "Wittingly or not," Gruber noted, "creative people create the conditions under which we can study their development" (p. 5). By collecting artifacts of great creative people, Wallace and Gruber's qualitative method offered glimpses on how creative people documented their creative process. This "fossil record" became an important record of the creative process (p. 5).

Today's approaches for measuring creativity are usually classified into one of these categories: psychometric—which investigates the creative process, individual, product and attributes that foster creativity within appropriate environments (Plucker & Renzulli, 1999); experimental—a more costly yet similar version of psychometric research (Plucker, 1999); historiometric—where creativity is measured in the past and the present (Sternberg, 1999); biographical, or the case study—which relies on undisputed instances of creativity (Wallace &

Gruber, 1989); and biometric—which looks at the genetics and neurobiology of creative individuals (Eisner, 2002; Gardner, 1993). These methods have, by and large, been used to inform research throughout the years and provide a foundation for our current understanding of creativity (Sternberg & Lubart, 1999).

These qualitative studies all helped establish the context for judging creativity by developing new instruments that examine creativity within a social construct (Barone & Eisner, 2006; Runco, 2003; Sternberg, 2006; Gruber & Wallace, 1999). Csikszentmihalyi (1996) used "a systems approach" to measure creativity by studying the creative process and accomplishments of 90 individuals. Csikszentmihalyi's method of sampling was sound. He used creative persons from various demographic backgrounds and walks of life (including business, music, art and technology) and further defined creative individuals as those who had produced works that were publicly recognized as creative and who had influenced or affected their culture in some important way. Through the use of multiple case studies, personal interviews and matrices, Csikszentmihalyi's qualitative seminal research recognized that good ideas did not always yield good creative products and also disproved the earlier theory that "creative individuals came from conflicted backgrounds" (Wallace, 2011, p. 7).

Developmental theorists argued that creativity develops over time and involves at least some form of interaction between the person and his/her environment (Burton, 2009; Freedman, 2003, 2007, 2010; Gardner, 1993; Lowenfeld, 1947; Torrance, 1974; Gruber; Wallas, 1926). Developmental theory supports that art education movements have included fluency, flexibility, originality, and elaboration within a cultural context and through visual and material culture (Freedman, 2003). Cognitive theorists define creative process as having the ability to generate new ideas that are then put into practice, which has been instrumental toward creating a new

generation of critical thinkers and problem-solvers. (Csikszentmihalyi, 1996; Isakson, Dorval, & Treffinger, 2011; Kozbelt, Beghetto & Runco, 2003; Sternberg & Kaufman, 2011; Smith, Ward & Finke, 1995; Sternberg & Lubart, 1999). Cognitive theorists analyzed the motivation behind design creativity, giving special attention to why creative individuals create. Systems theorists viewed creativity as the result of a complex system of "interacting and interrelated factors" lending itself to theory that supports a collaborative culture that is interdisciplinary in nature (Kozbelt et al., p. 28). And economic theorists, who argue creativity is market driven and is supported by a material culture, have influenced a new generation of design professionals in an era of globalization and unprecedented technological advances (Hillman-Chartrand, 2007). Still, whichever way creativity is defined, understanding this terminology is crucial in trying to make the creative process more transparent and explicit to educators, and these theories help to illuminate how "differing perspectives" have shaped teaching and learning about design process in the art classroom (Kozbelt et al., p. 41). Understanding this process would advance the overall aim of education and result in an active attempt to include creativity development and design education within the curricula.

Since art is a result of the realization of a creative process, originality is often seen as being sufficient enough for an end product to be considered creative. While creativity is said to involve at least one of the 6*p*s—person, process, product, place, potential and persuasion, studies on creativity demonstrate just how complex it really is (Amabile, 1998; Czikszentmihalyi, 1996; Freedman, 2010; Guilford, 1968; Isakson, Dorval & Treffinger, 2011; Kim, 2006; Runco, 2007; Simonton, 1999; Sternberg & Lubart, 1999: Sternberg, 2011; Torrance, 1974; Wallas, 1926). Studies done on creativity illuminate the long and slow process of the development of an idea, but the majority of these do not discuss the end creative product, which researchers now

recognize as a vital component for understanding creative development (Isakson, Dorval & Treffinger, 2011; Wallace & Gruber). The implications of these studies indicate the need to provide a better working definition of creativity and to develop a more accurate test that measures creativity in order to make it relevant to all areas of art and design (Csikszentmihalyi, 1996; Runco, 2004; Sternberg, 2006; Wallace & Gruber).

Fashion, however, encourages us to look at art in a different way and, therefore, requires a methodology for judging creativity that takes into account "multiple meanings and interpretations" (Breward, 1998, p. 304). As a result, the cultural studies methodology must be taken into account to unpack how we view, analyze and judge fashion as artistic practice. Whereas the case study methodology, as part of grounded theory, allows us to view fashion as a discourse and provide a foundation for understanding creativity, the cultural studies methodology allows for us to look at fashion within the context of social, historical, political or economic institutions (Breward; Sternberg, 1999). Deconstructing fashion through image and text lies at the very heart of the cultural studies methodology. Within the context of art history, we look at image through the messages or signs it conveys. The phenomenon of signification allows us to understand how fashion is a "textual product of society" that relies heavily on the "reality of the moment" or the style of the times and, therefore, allows for cultural change (p. 306). Every time fashion is decoded or "read" through its literary or visual qualities—materials, decoration or adornment, or by way of print or television advertising—the value of the fashion offers us "evidence of status, nationality, age, sexuality or date" (p. 306). The overlap between fashion and literacy gives meaning to the role fashion plays within a material world through consumption in which cultural systems are established.

This study of cultural systems gained ground in Britain during the sixties, when discussions about the different theory and methodology split this discourse into two groups—structuralists and culturalists (Breward, 1998). Structuralists viewed culture as the primary source of study in which "forms and meanings" provided "empirical quantitative evidence" about the process of cultural and historical change (p. 309). Culturalists, on the other hand, looked "inward to historical experience rather than outward to European theory" (p. 309). But a broader vision of cultural studies linked theory to experience, which resulted in moving discussion away from academics and more toward everyday life experiences. Breward reiterates that "the rise of postmodernism placed the issue of pleasure and consumption at the center of cultural studies" (p. 310.)

In the past few years, the visual methodology approach has gained importance in studying and analyzing visual culture (Rose, 2011). This methodology exposed a new way to use visual materials for research, and researchers have embraced it as a way to analyze and interpret visual content and designed objects (Rose). While most educational theorists will agree that the creative process is multifaceted and consists of the person, process and environment, this knowledge does not help when it comes to pedagogy (Boughton, 2011; Csikszentmihalyi, 1996; Rhodes, 1960).

Design Process Models and Design Thinking

Design process models have historically consisted of a series of activities or methods that when put together solve a particular design problem (Wallas, 1926; Cannizzaro, 1997; Dorst & Cross, 2001). Several versions of this model exist—linear, circular, feedback; however, the most widely used model in art is the branched design process model where "perception, conception,

and expression are the primary phases of the creative process" (Nathan, 2009, p. 1). This model includes feedback, analaysis and decision that ultimately lead to creation of product (Nathan). However, the most widely used model, developed by Wallas (1926), shows the linear process of design through preparation, incubation, illumination and verification (see Figure 1).

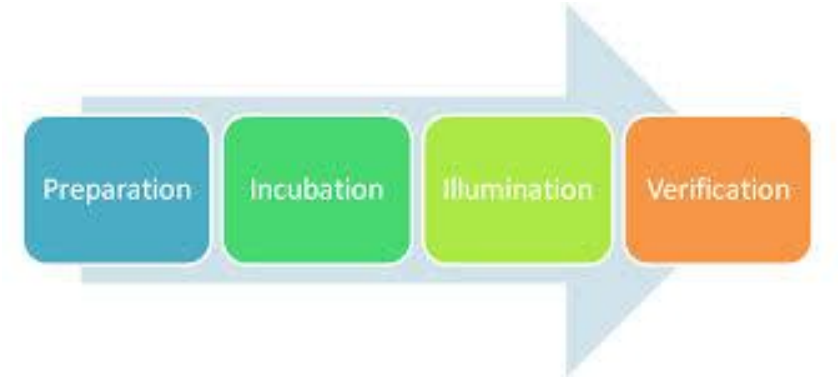

Figure 1. Linear design process model (Wallas, 1926).

However, studies conducted in the 1990s began to challenge some of these more widely accepted design process models, especially when it came to teaching design process in secondary schools. In a seminal study on the use of traditional design process models among high school students, Cannizarro (1997) challenged the effectiveness of two design process models in the secondary school classroom. In the traditional "analysis-synthesis," Cannizzaro discussed how this process involved identifying the problem, researching ideas, generating ideas, developing ideas, evaluating ideas, and communicating solutions to achieve the objectives of the specific design problem (p. 127). In the "generator-conjecture-analysis" model, Cannizzaro noted that the design process involved only four of those steps: generating ideas, conjecturing solutions and testing and re-testing ideas (p. 129). While this study exposed the "generator-conjecture-analysis" design method was preferred among secondary school students, especially in the early stages of the design process, the statistical data did not support whether either model was effective in the secondary school classroom for solving design problems. Therefore, the study

implied that the use of the traditional design methods cannot be assumed as the most appropriate design process for secondary school students working on design activities (p. 129).

During the mid-1990s, researchers started using design process models that promoted "design thinking" and helped students in Kindergarten through grade 12 solve design problems through life-related educational experiences ("Design for," 1992, p. 1). The design thinking process shared a common set of traits that include defining a problem, ideation, building a solution and testing it (Dorst & Cross, 2001; Cannizarro, 1997). This design process model was tested in the Pennsylvania K-12 school dsitrict when the Pennsylvania Department of Education and the Pennsylvania Council for the Arts worked jointly to provide funding for implementing a design process model that provided students and teachers with a systematic way to "organize information and solve problems either as a team or individually" (p. 2). The Design for Thinking, DK-12 project (1990) utilized the "I/DEPPE/I (Intending, Defining, Exploring, Planning, Producing, Evaluating and Integrating) model to stimulate and guide inventive thinking" (p. 3). The model was found to be successful in "creating an enduring framework that supported student's retention and use of knowledge to solve problems" and promoted the "use of design and technology in improving teaching and learning in arts education" (p. 4). More importantly, the project illuminated the need to provide "faculty with a practical knowledge of art and design thinking as a creative problem-solving approach" while "cultivating imagination, innovation and creative thinking" in the K-12 classroom (p. 5).

Creativity in the design process is often referred to as "the creative event or leap" (Dorst & Cross, 2001, p. 425). Studying and/or thinking about these events has been problematic since there is no guarantee that a creative event will occur during design process. Previous studies on design process have acknowledged this flaw, resulting in the conclusion that creativity in design

cannot be assessed. However, recent studies on creativity in design reveal that it can be assessed if the assessment "includes procedures that measure perceived creativity" (p. 426). In a study done on nine industrial designers with five or more years of professional design experience, it was found that creativity in design can be recognized and "assessed dependably in this manner" (p. 426). Dorst and Cross' (2001) study referenced the work of one doctoral student who used an inter-rater reliability table to compute the alpha co-efficient to gain agreement between judges when assessing creativity in various designs. The panel of skilled and trained judges were given images of design concepts and assessed the images "based on creativity, aesthetics, technical aspects, ergonomics and business aspects," all in random order (p. 428). The study demonstrated that the more time a designer spent on solving the problem, the more creative the outcome and that the "element of surprise" is what leads to the originality of the design (p. 434).

Design thinking has now come to replace many of the previous models of design process especially in the K-12 classroom (Cross, 2006; Lozner, 2013). This process has come to be defined as a way to "combine creativity in the generation of insights and solutions, and rationality in analyzing and fitting various solutions to the problem context" (Cross, p. 435).

Fashion Design Education in Public Schools

In the art classroom, the field of art education has always worked toward finding balance between teaching creativity and teaching craftsmanship or technical skills. Fashion should have the same conversation or investigation. Historians argue that studying fashion allows us to understand the cultural phenomena, economic implications and social relationships that are normally not accessible through other core academic disciplines (Breward, 1995; 1998; Houze & Lees-Maffei, 2010). Shaped by culture, gender, class and race, the study of fashion goes beyond

the traditional paradigms of design process and consumption and becomes a construct of our embodied identity. Therefore, the study of fashion affords students an opportunity to become critical and discriminating consumers through meaningful and reflective creative exploration. Yet the study of fashion design education has had an unsystematic history within American secondary school curricula, as educational reformers have sporadically looked for ways to instill "an appreciation of the importance of beauty in the manufacturing of utilitarian objects" within the art classroom (Efland, 1990, p. 176). Until the mid-1800s, the profession of clothing design was handled mostly by anonymous seamstresses who created garments worn by patrons of the royal courts (Mulvey & Richards, 1998; Breward, 1998). Classes in fashion, clothing and interior design found their way into the American art classroom as school reformers emphasized the need for students to develop life skills needed to succeed in a postmodern Industrial Age during the first half of the nineteenth century (Dewey, 1934; Efland, 1990; Wallas, 1926). The Art of Daily Living aesthetics movement, which began in the 19th century and continued throughout much of the 20th century, assured fashion its place in the art classroom by introducing courses aimed at bringing artistic beauty and refined taste into the homes of American families through the American curricula (Efland). This revolution in "popular taste" geared toward the middle class reached the height of its popularity in the early 20th century when the arts and crafts movement, consisting of applied arts, manual training and handicrafts, began to place greater emphasis on visual and manual learning through the use of activities aimed at children's specific interests (p. 170). In an effort to provide students with training to work in trades, which included fashion-related industries, vocational education became firmly established in most secondary schools and in 1926 the Manual Training Movement was born. Critics of the Manual Training Movement, which emphasized intellectual and social development through hand and eye coordination,

argued that manual training did not belong in secondary schools and especially not in art classes, and in 1910, a split between art education and vocational education occurred. With the clamor for "industrial education" reaching its peak in the early 20th century, the Manual Training Movement again gained momentum within public education. Art teachers turned their focus back to teaching and appreciating art and beauty, and vocation educators prepared students for trades and life skills they could use. Classes that encouraged design careers, which included fashion and sewing, were moved into vocational education departments within secondary schools. This reduced the importance of art as a core subject within secondary schools and also relegated art to becoming merely an elective leftover.

By the 1950s, the production of food, clothing, and home furnishings began to occur outside the home. As a result of these new jobs, more women entered wage-earning careers outside of the home and home and family-related service careers boomed. As women entered the work force, men exited, and courses were expanded to now include homemaking and parenting roles so both males and females could prepare for these new family, career, and community responsibilities. To meet these needs, schools began offering general home economics courses that involved teaching students the basics of cooking and sewing and were open to both males and females. As male enrollment increased in these career and family-related programs, schools tailored their home economics programs to add more classes directed at helping students make the transition from high school to college or post-secondary jobs and careers. Fashion classes were included in this curriculum.

During the seventies, there was yet again a shift within fashion education as art school programs acknowledged the need to provide students with a more comprehensive visual arts education that included not only aesthetics and art history but also studio coursework that

embraced the psychological, physical and social wants of the 21st century consumer (New York State Education Department, Bureau of Secondary Curriculum Development, 1976). Recognizing the growing economic need to give students a foundation that prepared them for post-secondary careers in commercial art and design, New York took the lead in developing curricula that included studio coursework geared toward advertising, fashion design, industrial design, architecture and stage design that started as early as sixth grade (New York Department of Education, 1976). In some secondary schools, fashion came under the umbrella of Art but in most, the study of fashion design appeared within Vocational Education and through departments of Family and Consumer Sciences. As dropout rates encouraged school districts to look for ways to engage students who were not interested in heading on to post-secondary education, more and more school districts recognized the need to provide students with opportunities for attaining life skills, and high schools began offering fashion design and fashion merchandising classes as part of their curricula to reflect these cultural and educational developments within Family and Consumer Sciences departments. Goals within these departments promoted lifelong learning skills, including creative and critical thinking, problem-solving, evaluation and collaboration, and focused on families and societies creating appropriate career paths for future individual success. Today, these departments offer a variety of opportunities and experiences designed to maximize the intellectual, creative, emotional and communicative growth of each student through the study of these courses in society and everyday life, which includes fashion design.

Design education took off in England as 'Schools of industry' were set up to provide the poor with manual training and elementary instruction. According to *Records of the Society for Bettering the Conditions of the Poor,* children were taught reading and writing, geography and

religion, while "older girls were employed in knitting, sewing, spinning and housework, and older boys were taught shoemaking" (Gillard, 2011, p. 312).

In the 1990s, British Prime Minister Margaret Thatcher argued heavily for design education within secondary schools, stating that "in order for industry to make and market products that people wanted to buy, more attention needed to be given to design education in secondary schooling" (Archer, 2007, p. 171). The argument for design education in schools became entangled within arguments about British economic success. Britain needed young people capable of forming a cadre of designers, design managers, manufacturers and retailers who, supported by a design-aware public, could help to put Britain back on the world's manufacturing map (Archer). Teachers of craft, design and technology, art and design, fashion and home economics recognized this need to reform and reinvigorated their subject areas to meet the challenges posed by a new world order of consumerism, mass media, mass marketing and emerging environmental and social problems (MaGee, 2005). In design education they saw a strategy for teaching and learning that was relevant to the task of providing young people with intellectual and practical tools useful for their future in an industrialized world. As a result, the UK placed a heavier emphasis on design education and design pedagogy than the U.S. and, therefore, now leads the world in design thinking and design technology. Britain made "forming an elite group of design professionals, trained to the highest international standards and ready to compete on the global art & design market" one of their major curriculum goals (British International, 2013).

Despite the fact that fashion design offers students skills that allow them to relate their personal and prior knowledge to other core subjects and to approach situations with originality, appreciation and imagination, a limited number of public secondary schools actually offer it

within their curricula. Core teachers suggest that these skills do little to prepare students for achievement on standardized tests or for admittance into university programs. As a result, classes within these elective disciplines have slowly been eked out of the secondary school curricular system as creativity is replaced with teaching strategies that focus on correctly filling in bubbles on scantron forms. In Australia, efforts have also been made to study why fashion design is so important to art and design education. In a phenomenological and biographical research study conducted by Bailey, Drew and Shreeve (2001), a review demonstrated how fashion design education encompasses values of aesthetics, form and inquiry and how fashion students approached learning within the context of fashion design courses. In Bailey et al.'s study of 17 fashion students, they identified that experiment, research and practice were important parts of the learning process when it came to fashion design. Their study revealed that in fashion design classes, students focused on making technically competent artifacts (form, garment, drawing, and pattern). The study also showed how the creative process focused on remembering procedures and techniques in which students visualized their fashion concepts through the experimental design process and making. This development of visual concepts was considered to be fundamental in fashion design for developing critical and conceptual thinking skills. Bailey et al.'s study illustrated just how important creativity development was to curricula, but they noted that while craftsmanship was emphasized, creativity was not being taught in post-secondary schools.

Design education, which includes applied arts, merges creativity development with practical application. Dewey's (1938) University of Chicago's Laboratory School offered an example of how design education can be blended into school curricula (The University of, 2013). The Lab School approach abandoned traditional methods of instruction and encouraged teachers

to use everyday items such as newspapers and other materials to teach reading and learning. Classroom work was a carefully orchestrated extension of the child's familiar life in the home. Rote exercises were minimized, and project based learning resembling traditional arts and crafts were used to teach practical lessons on reading and arithmetic. The school was an experiment toward integrating the home with the community and in time became a place where students could engage in acquiring skills that led to a broader intellectual life organized around doing and making rather than reading about them. Central to this educational philosophy was that children were more engaged through their personal experiences and only learned what was meaningful to them as it occurred in their daily life. Goals in design education should enable children to "learn how to read their own environment" and ultimately help them to "modify and change their environment so that the quality of their experiences fits their values about what is important in their lives" (McFee & Degge, 1977, p. 96).

Design education sharpens our everyday personal and aesthetic experiences, and students can connect to it through their own personal experiences of aesthetics, inquiry, form and reflection. Using aesthetics, form, and inquiry to guide design education within secondary schools can provide the necessary foundation for creating a culture of well-informed decision-makers. These decision-makers—which include educators, students, consumers and design professionals—all play an equally vital role in the design process that influences the products and services that become part of our visual and material culture. Nestled in its cultural discourse, aesthetics becomes the reason to engage in the world around us. From everyday mundane experiences to extraordinary ones, aesthetics generates "a new rewarding of its use" (Shusterman, 2006, p. 243). By acknowledging that aesthetics holds value for learners within all subjects and is important for students to experience and appreciate, incorporating aesthetics into

the school curricula becomes vital to student success. In the design process, aesthetics is manifested through form. To recognize knowledge through the aesthetic of form helps learners to experience form, and by observing the behavior of others creating form, students are exposed to different practices and trades and acquire new knowledge and new skills that are valued within their communities (Florida, 2002). Learning environments become places for mutual satisfaction between maker and doer and the producer and consumer, and through inquiry of a design professionals' knowledge, we can reconcile our need to proceed. This process helps us to consider the data, generate ideas, eliminate doubt, test, evaluate and refine ideas and create meaningful solutions to achieve desired outcomes. Design education extends into everyday life where producers and consumers become vital participants in a process that allows us to fully engage in the world around us (Dewey, 1934; Tillander, 2011).

The lack of consistency and/or a cohesive and stable design program within American curricula has not done much to advance the overall importance of fashion design in secondary school settings. While there are schools that have recognized the importance of fashion design within their curricula within the U.S., one needs to look internationally to countries such as Britain, Australia, and China to gain real insight into how fashion design education can work as a part of secondary school curricula. Since European schools are government funded, politicians and government agencies can influence changing educational policies and policies, and politicians have encouraged and promoted design education, which includes fashion design education, within their secondary school curricula. Unlike the United States, which leans on private colleges and universities to provide the greatest basis for most art and design education programs, governments in these aforementioned countries play a significant role in dictating the direction of curriculum within a secondary school setting.

Summary

Designers and artists take inspiration from the world around them. Throughout the history of fashion, some of these influences have included visual culture references, mentors, and nature. An historical review of how fashion designers have used aesthetics within their fashion collections allows the viewer to see how important it is to the design process. As design is applied to ideas, aesthetics need to take into consideration the function of the idea as well as the final form. When the interest in design and its role in the production of goods peaked, aesthetics took on a different meaning. As time progressed, aesthetics became a worthwhile study for modern day artists who were working on ideas within fine and applied arts. Baudelaire (1863), Benjamin (1940) and Lehmann (2000) all viewed fashion as an aesthetic that needed to be placed into historical context. Dewey (1934; 1938), Eisner (1985), and Shusterman (2006) examined how we judged the aesthetic and quality of design products, and discussed how life enhancing pleasures of aesthetic experiences are beneficial to both producer and viewer. Bolton (2010) who curated Alexander McQueen's Savage Beauty demonstrated how fashion designers draw upon historical and visual culture references to create aesthetics that yield both practical form and function.

Previous studies on the design process have acknowledged that creativity cannot be assessed. However, recent studies on creativity in design reveal that it can be assessed if the assessment includes procedures and instrumentation that measure perceived creativity. The work of the social psychologists (Amabile, 1998; Cannizzarro, 1997; Csikzentmihalyi, 1997; Dorst & Cross, 2001; Kozbelt, Beghetto & Runco, 2010) have helped to further provide a greater understanding of how creativity should be judged rather than measured in secondary school

settings. Social psychologists, art historians and art educators have traditionally viewed creativity as a product of individual traits and how social context can affect end product but this literature review discusses how fashion can no longer be viewed in this same way and focuses on the cultural studies methodologies of Breward and Davis to analyze and judge fashion (Amabile, 1998; Cziskentmihalyi, 1996).

The literature review of the history of fashion design education both here and abroad revealed that fashion design classes only allow for students to focus on creating artifacts (form, patterns, drawings, garments) rather than creativity and idea generation. Yet, the segment on design process models revealed that traditional design process models have been challenged and are being replaced with newer Design Thinking process models (Dorst & Cross, 2001). Fashion design professionals take inspiration from many different sources, not only historical references, but cultural, social and personal experiences as well. Yet the traditional conceptions of design methodology are spiral and do not draw upon visual culture as part of the process of idea generation (Cross, Dorst & Roozenburg, 1992; Dorst & Cross, 2001). Fashion designers, like artists, draw on visual culture, everyday experiences, and the historical, social, and cultural references of the past and present to form collections that reference and include the worldly influences of a multicultural society that is globally connected. The work of the aestheticians, social psychologists, and art educators help us see how visual culture is a part of the design process (Dewey et al; Dorst & Cross; Freedman, 2003, 2007).

CHAPTER 3

METHODOLOGY

This research was designed to access knowledge about design development within the fashion industry, and investigate whether design methods used by fashion professionals could promote creative thought within secondary school art classrooms. This chapter 1) describes the research methodology used in this study; 2) explains the sample group selection; 3) describes the procedures used for collecting the data, and 4) provides an explanation of the procedures and instrumentation used to analyze this data.

Four specific research questions were investigated in this study:

1. What design methodologies do selected American fashion designers follow in the conceptualization, production, and refinement of their fashion designs? Sub-questions: How do selected fashion designers generate, refine, test and judge their design ideas? What backgrounds/experiences do fashion designers have to achieve success within their industry?
2. What instruction methods do Illinois fashion teachers employ to teach fashion design in secondary school classrooms? Sub-questions: How do fashion teachers teach idea generation in fashion design? How do fashion teachers help students to refine, test, and evaluate their ideas? What backgrounds/experiences do fashion teachers have to achieve success in their profession?

3. What relationship exists between design methodologies employed by fashion designers in the U.S. fashion industry and design methodologies taught by fashion teachers in select Illinois secondary schools?
4. Do instruction strategies employed by secondary school fashion design teachers, who follow the design methodology used by fashion professionals, produce higher quality student design projects than those who do not? Sub-questions: Is there a measurable difference in the level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not? Is there a measurable difference in the quality of the craftsmanship of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not? Is there a measurable difference of the effective application of formal qualities to the design problem of student design projects when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?

Research Methodology

A mixed methods research design using grounded theory was employed for the purpose of this study. Case studies, ethnographies, and phenomenological studies have all been proven to be useful and effective research methodologies for studying creativity within a "modernist phase" (Denzin & Lincoln, 1998, p. 16). However, a new generation of qualitative researchers are now using grounded theory design to build upon these stalwart approaches of the past to "give greater voice to our current society" (Hillman-Chartrand, 2007, p. 2).

The grounded theory research approach involves the researcher "going out into the field and collecting data to generate grounded theory on diverse phenomena" (Robson, 2002, p. 191). Introduced by Glaser and Strauss in the 1960s, these researchers believed this approach would "close the embarrassing gap between theory and empirical research" (as cited in Denzin & Lincoln, p. 162). Denzin and Lincoln's use of this methodology had one very specific aim, to legitimize qualitative research, which in their opinion had "sunk to new low status" (p. 162). This approach gave qualitative research design a well-deserved credibility, and grounded theory design gained momentum throughout the 1980s as more and more researchers used this approach to generate theory on diverse phenomena (Charmaz, 2006; de Freitas, 2007; Strauss & Corbin, 1990; 2008). One such benefit of using grounded theory research was that it provides the researcher with explicit procedures for generating theory and analyzing data (Robson). Corbin and Strauss (2008) maintain that what makes this research so purposeful is that there is a systematic and sequential process that allows "researchers to make choices, according to their own perceptions of the data presented to them" (p. 5). Thus, this procedure has made this methodology "both effective and influential" (Denzin & Lincoln, p. 161).

Grounded research design has the dual purpose of being both "a method of inquiry and the product of inquiry" (Mertens, 2010, p. 236). A benefit of using grounded theory research is that it provides the researcher with explicit procedures for generating theory and analyzing data (Robson, 2002). Corbin and Strauss (2008) maintain that what makes this research so purposeful is that there is a systematic and sequential process that allows "researchers to make choices, according to their own perceptions of the data presented to them" (p. 5). Thus, this procedure has made this methodology "both effective and influential" (Denzin & Lincoln, p. 161).

A significant component of grounded theory research design is the "constant comparative method of data analysis" (Robson, 2002, p. 193). This method involves a "sequential and repeated comparison of collected data and emergent theory" (p. 193). Central to the operational function of this methodology is the systemized collection, coding, and analysis of quantitative data of surveys and qualitative data of interviews, observations, and document review through constant comparative analysis for the purpose of allowing theory to trickle down from the collected data (Glaser & Strauss, 2011). The key components of grounded theory generated by constant comparative analysis are "conceptual categories and the conceptual properties" that later form hypotheses from these categories and their properties (p. 35). "Both categories and concepts indicated by the data vary in degree of conceptual abstraction" (p. 36). Hence this constant comparison leads the researcher to discover grounded theory, which can be further categorized and developed into theory. In grounded theory design, researchers are expected to learn from the participants' perspectives of the actions and interpretations of event(s), and in doing so, researchers "accept responsibility for their interpretative roles" in gathering this data (Denzin & Lincoln, p. 108). This form of research design allowed me, as the researcher, to take on the added dimension of redefining the actions and behaviors of the participants. However, there are those who will argue that grounded theory research design is simply not feasible because research projects cannot begin without some "pre-existing ideas and assumptions" and/or that researchers cannot know when the "theory is sufficiently developed" (p. 192). In grounded theory design, researchers are expected to learn about the actions and interpretations of event(s) from the participants' perspective, and in doing so, researchers "accept responsibility for their interpretative roles" in gathering this data (p. 108). This form of research design allowed the researcher to take on the added dimension of redefining the actions and behaviors of the

participants. This discovery process can provide researchers with some very useful and relevant predictions, explanations, and interpretations for their studies within a constructivist, real world research paradigm (Glaser & Strauss; Robson).

Quantitative Research Methods

Quantitative data refers to the "systematic empirical investigation of social phenomena via computational or statistical techniques" with the objective being to "develop theory or mathematical models that pertain to the phenomena" (Given, 2008, p. 267). While qualitative research asks broad questions through collected word data, the quantitative method allows for the researcher to ask specific questions and collect numerical data from participants to answer specific research questions. Quantitative methods often give more precise and testable expression to qualitative methods by forming fundamental connections between the empirical observations and the collected statistical data. Therefore, quantitative data forms a mutually beneficial relationship with the qualitative data. Collecting quantitative data allowed the researcher to investigate the cause and effect relationships between the instruction strategies used by teachers and the design work produced by students in the secondary school classrooms.

To test theory on the quality of student-produced work in the classrooms where teachers used specific instruction strategies to teach design process, the researcher performed simple ANOVA tests in SPSS that allowed investigation of the cause and effect of the relationships between the instruction strategies used by teachers and the design work produced by students in the secondary school classrooms. The effectiveness of the instruction strategies on the quality of student produced design work was judged by a panel of experts who evaluated the quality of each of the dependent variables: creativity, craftsmanship and the effective application of the

formal qualities to achieve design resolution, against the individual instruction strategies of the teachers (independent variables). Using this analysis tool, individual ANOVA tests were performed to analyze whether certain instruction strategies produced significantly higher quality student produced design works than others.

This research design also required the use of an assessment known as Inter-rater Reliability, or IRR, to compute agreement among the judges of the observational data (Hallgren, 2012). An assessment of Inter-rater agreement is "needed when data are collected through rankings provided by trained or untrained coders" (p. 1). Inter-rater reliability was used to "assess the degree to which different raters make consistent estimates of the same phenomena" (Multon, 2012. p. 1). This assessment provided a way to quantify the collected data by way of agreement "between two or more coders who make independent ratings about the characteristics of a set of subjects" (Hallgren, p. 1). This analysis is unique in that it measured agreement of an "actual construct" rather than agreement among the coders. Using SPSS and R syntax to measure the strength of the association between the variables and to compute intra-class correlations, the researcher used the descriptive statistic of the Pearson Product-Moment or Correlation Coefficient because this "consistency estimate of inter-rater reliability allowed for multiple raters" (Multon, p. 1).

Research Participants

The units of analysis for this research were selected fashion designers in the United States and selected educators who taught fashion and art classes in Illinois secondary schools. The study started in February, 2012 and continued through the 2013-14 academic school year. The sampling techniques chosen for this research were 1) convenience sampling because the

researcher lived in Chicago and had limited funds for traveling to and spending time in the areas in which the participants lived or worked and 2) criterion sampling, which identified specific criteria for why the participants were selected for this research (Mertens, 2010). Therefore, this study does not represent all teachers in Illinois who taught fashion during the 2013-2014 school year or all fashion designers who achieved industry success during their professional careers. Instead it represents about 50 percent of the identified teachers who taught fashion design in Illinois and less than five percent of the fashion designers who created fashion in the U.S. in 2013 and 2014. The two groups were observed either creating fashion, as in the case of the fashion design professionals, or teaching fashion, as in the case of the fashion and art educators.

Rationale

The review of relevant literature in the field of art education identified a knowledge gap regarding how secondary school students learn about design process. The purpose of this research was to examine the relationship between the design methods used by recognized and emerging fashion designers in developing innovative fashion design and the design methods being taught in Illinois secondary school fashion design programs in order to bridge that knowledge gap. This research is not based on any major theory of creativity development or any widely accepted model of creative process, and therefore, it does not contain a conceptual framework. Instead this research employs grounded theory and a mixed methods research design, which sought to generate theory on whether the design methods used by selected fashion designers in the creation of innovative fashion are similar to the design methods being taught in selected secondary school fashion design programs in Illinois (Glaser & Strauss, 2011; Robson, 2002).

Description of Data

This research collected data from two different groups of participants: 1) selected fashion designers and emerging fashion designers in Chicago and New York and 2) the faculty who taught fashion in selected Illinois secondary schools during the 2013-2014 school year (Mertens, 2010). Since my research was grounded in the specific data of the actions, interactions, behaviors and processes of the participants and was designed to be open to their individual creative processes rather than attempt to verify existing theories on creativity and creative process, grounded theory research design was considered an appropriate methodology.(Glaser & Strauss, 2011; Robson, 2002). Since the primary goal of this research was to discover how fashion designers developed artistically, data on the creative processes of fashion designers were collected from multiple sources in multiple ways, including qualitative methods of direct observations, one-on-one interviews, and documentation review to dig deeper into the designer's creative process. Specifically, I sought to discover what informed fashion designers' creative process and how they created innovative fashion. Descriptive narratives were used to describe the interactions between individual fashion designers and their clients through audio recording and field notes in an effort to generate theory on how fashion designers develop artistically.

In an effort to determine the best practices of fashion faculty, data were collected from multiple sources in multiple ways, including direct observation of teachers within fashion programs, curricula documents, student activities, completed projects, assessments, field notes and personal artifacts (Bogdan & Biklen, 2003; Denzin & Lincoln, 1998; Glaser & Strauss, 2011; Hoyle, Harris & Judd, 2002; Mertens, 2010; Robson, 2002). Central to this research was the collection of data that investigated each faculty's teaching strategies as well as the

measurable learning objectives and assessments used within local high school fashion programs through observation, interviews and document review. I observed the instructional strategies fashion design educators used to teach design process within their classrooms. These teachers allowed me complete access to their curriculum and their student product. By spending several days within their classrooms, I gained meaningful data as to how teachers help students generate, refine and test their ideas.

I also interviewed participants who provided detailed information about their backgrounds and experiences for their careers as fashion faculty as well as reflected on their experiences in industry and school, where applicable. In interviews with teachers, participants answered questions about their professional experiences, activities, perceptions of themselves, and how they prepared for success in their chosen careers and offered their reflections on the design process. Data were also generated by a panel of three expert judges who evaluated the quality of student design products. Judges assessed the degree to which three qualities existed in the work. These were creativity, craftsmanship and effective application of formal qualities to design resolution. The data collected from these interviews were analyzed and compared between the two groups. I specifically looked for relationships, similarities and differences between how the design process was generated within the fashion industry and how it was taught within secondary schools. Data were also generated by a panel of expert judges who evaluated the quality of student design works.

Fashion Designers

Using Google as a search engine, I identified a list of fashion designers who were currently working in the metropolitan areas of New York and Chicago (Fashion designers and,

2012; Fashion & Style, 2012). The criteria I established for selecting these participants involved choosing fashion designers who 1) were recognized in their field for new design, 2) had received accolades or awards for their work, 3) were living within a geographic area to which I could easily travel for interview purposes, and 4) agreed to participate in this research (Mertens, 2010). Since my data collection relied heavily on convenience sampling, or using those designers who were working in locales I could easily travel to and spend time within their studios to collect data, my unit of analysis involved a very select group of contemporary fashion designers located in the Chicago and New York metropolitan areas (Mertens, 2010). Using these sampling methods, I identified seven fashion designers, six females and one male, ages 27-49, who fit these criteria. Of the seven designers, three agreed to participate, and I spent five days with two of the designers and two days with one designer, collecting data for a total of 12 field days. This involved spending time in their studios as well as following them through their daily routines, watching their interactions with staff; going to fabric/material stores; and attending client meetings. I also observed and analyzed three more designers through their personal blogs, articles that had been written about them and company websites, which brought this total to six designers.

Emerging Fashion Designers

Since I felt this was a small sampling, I further reviewed and analyzed hundreds of hours of video footage of recent seasons of Project Runway (2012). In these videos, I was able to follow the design process of three additional participants through their specific artistic challenges. Data were collected on three designers using this method. This group is discussed in the Project Runway Designer section.

Faculty Who Teach Fashion Design in Secondary Schools

For this sampling, I established two criteria: 1) the school had a current fashion program in place and 2) the school and faculty agreed to participate in the research. To identify these schools, I visited individual school websites in Illinois and examined their curricula. I identified 19 schools throughout Illinois that listed fashion programs as part of their curricula. I then prepared a list of names of faculty who taught fashion at those schools and identified 12 Illinois high schools that fit the criteria for this research. These schools were all located within a 60 mile radius of the researcher. I found that the faculty teaching in these programs were all female ages 30-64, and the classes contained both males and females ages 15-19. I contacted each faculty member through email, and 12 teachers initially agreed to participate in my research. However, during the course of this research, two classes of fashion were not offered due to budget restrictions and one teacher retired, so therefore the number of teachers who actually participated in my research was reduced to eight, since four teachers taught different sections of fashion within their school districts.

Variables

For the purpose of the quantitative component of this research, variables were placed into two groups:

1. Independent variables. These consisted of the instruction strategies used to teach design process in selected classrooms.
2. Dependent variables. These consisted of the quality of student learning outcomes, specifically student projects and activities defined as creativity, craftsmanship and effective resolution of formal qualities.

Procedures Used for Data Collection

Direct Observations

The everyday work lives of fashion designers and fashion teachers needs were studied in this research. Field visits were conducted during this research. Direct observations allowed me, as the researcher, to follow the creative process from design to production of a garment and to observe the interaction among the designers, their assistants and clients as well as to observe teachers, their instructional strategies and the student learning outcomes. By using direct observations, decisions were made on "what type of activity was going to be observed…non-verbal behaviors, spatial behaviors, extra-linguistic behaviors, linguistic behaviors" and academic language (Robson, 2002, p. 327). For this segment of my research, I modeled my observational protocol form after Marzano's (2007) form to observe the best practices of faculty and the best practices of fashion designers. I chose this template because it was a highly regarded and widely accepted observational tool and could be easily adapted to research either groups. I used SPSS to create an Inter-Rater Reliability graph to evaluate student projects.

Interviews

A designer's past can greatly affect the present and future state of their creative process. To understand that process, interviews are considered to be one of the most powerful sources of information for obtaining "meaning of the central themes in the life" of the participant (Kvale, 1996, p. 30). In the interview process, I documented critical incidents that they believed may have changed their lives or created that *aha* moment. Through personal interviews and narrative inquiry, I investigated the creative journey of each of the individual designers in which "images

and collections of words" began to form patterns that provided evidence for theory generation (Glaser & Strauss, 2011, p. 108). In this data collection, I used a *Word Frequency Query Analysis* to analyze the importance of words in the designers' creative process with NVivo (2014), a comprehensive qualitative data analysis software package that organizes and analyzes field notes, interviews and text sources. I conducted interviews after the initial observations, which gave me an opportunity to collect more information on their creative processes. I originally allocated hour long sessions with each fashion designer, but in reality, the interviews lasted much longer. I conducted 30 minute interviews with faculty members to understand the importance of their background and personal experiences and how these related to the curricula they developed within their specific programs.

Surveys

Surveys are useful tools that can help to quantify pertinent information for generating theory, and therefore, face-to-face surveys were used in this research for these groups (Glaser & Strauss, 2011; Hoyle, Harris & Judd, 2002; Kvale, 1996; Mertens, 2010). Using a close-ended questions survey design, I investigated the educational qualifications, backgrounds and preparation each individual designer and faculty member had that led him/her to his/her current career paths (Kvale, 1996; Mertens, 2010). To improve data retrieval and to ensure more accurate representational data, I gave the surveys directly to the participants at the time of the observations to "construct quality checks for each stage" (Merriam, 1998, p. 175).

Documentation Review

I collected physical evidence to further support my observations and interviews through the documentation reviews. These documents included artifacts such as letters and memos between designers and staff and/or designers and clients as well as designers' written agendas, journals, and research books; and administrative documents, unit plans, lesson plans, essential questions, student activities, journals, student projects, student narratives, and visual images for fashion faculty; or any other document that was germane to my investigation (Mertens, 2010; Robson, 2002). These were important because the documents became written records of a designer's and/or faculty's thinking process and were extremely useful for making inferences about certain events and corroborating evidence from other sources (Corbin & Strauss, 2008).

Instrumentation

Inherent to grounded theory research design are the four key stages of coding, conceptualizing, categorizing, and theorizing (Glaser & Strauss, 2011; Robson, 2002; Strauss & Corbin, 2008). Coding helped to identify the key points of this research, and conceptualizing allowed codes to be put into groups that centered on certain themes or constructs. Categorizing generated theory based on conceptual groupings; and theorizing led to a collection of explanations that corroborated the research (Glaser & Strauss, 2011; Robson, 2002). The data analysis tools used throughout this research included open-coding, NVivo (a comprehensive qualitative data analysis software package used to analyze field notes, interviews and text sources), counting, triangulation, Contrast Comparative Analyses for the teachers and designers, Rubrics for evaluating student activities, ANOVA tests and Pearson Correlation tables to test agreement of the raters through Inter-Rater Reliability.

For the qualitative side of this research, I coded initial sets of materials obtained from my field notes and video-taping as well as from observations and interviews with all of my participants (Robson, 2002). This technique of coding and categorizing was useful for answering specific types of research questions with regard to grounded theory research design (Glaser & Strauss, 2011; Robson, 2002).

For research question 1, (What design methodologies do selected American fashion designers follow in the conceptualization, production, and refinement of their fashion designs?) and Sub-Question 1a. (How do selected fashion designers generate, refine, test and judge their design ideas?). NVivo was used to transcribe audio tapes of interviews with designers and field notes taken during observations. The collected data were broken into relevant themes as they related to the research question. For the fashion designers, this type of analysis helped define individual designers' patterns of thought as well as their actions and behaviors and led to a greater understanding of the fashion design culture while recording key creative events. Through this method of analysis, the collected data identified similarities or differences of phrases and categorized these findings into themes (Glaser & Strauss, 2011; Robson, 2002). A Word Frequency Analysis was performed illustrating the importance of key terms with regard to how fashion designers generate ideas for innovative fashion.

For question 1b (What backgrounds/experiences do fashion designers have to achieve success within their industry?), interviews and surveys were conducted to gather information on the designers' backgrounds, education and experiences in preparing for careers as fashion design professionals. Using NVivo, the collected data were categorized and placed into a table. Data were described through narrative phrases and words.

For question 2 (What instruction methods do Illinois fashion teachers employ to teach fashion design in secondary school classrooms?), descriptive narratives were audio recorded for analysis. NVivo was used to identify similarities or differences of instruction strategies for teaching design process in the secondary school classroom. A chart was compiled that illustrated the instruction strategies each teacher used to teach design process and the student activities performed against those instruction strategies. For the teachers, this type of analysis provided greater understanding of the instruction strategies that led to key creative events in the classrooms. Through this method of analysis, the collected data identified similarities or differences of strategies and student activities and categorized these findings into specific themes (Glaser & Strauss, 2011; Robson, 2002). For question 2a, (How do fashion teachers help students to refine, test, and evaluate their ideas?), sets of information that included data from the observations, interviews and document review, were tested against each other, and significant creative events that happened in the classroom, such as students working on garments, laptops or sketches, were recorded. Student projects were photographed and these images were evaluated by a panel of experts, discussed later under Evaluation of Student Design Work. For question 2b, (What backgrounds/experiences do fashion teachers have to achieve success in their profession?), interviews and surveys were conducted to gather information on the teachers' backgrounds, education and experiences in preparing for careers as fashion design professionals. Using NVivo, the collected data were categorized and placed into a table. Data were described through narrative phrases and words.

For Research Question 3, (What relationship exists between design methodologies employed by fashion designers in the U.S. fashion industry and design methodologies taught by fashion teachers in select Illinois secondary schools?) a constant comparative analysis was

performed to examine the relationship between the design methodologies employed by fashion designers in the U.S. fashion industry and the design methodologies taught by fashion teachers in select Illinois secondary schools (Glaser & Strauss, 2011). A text by text scheme was organized, and these schemes were used to identify differences and similarities between the fashion design group and the teacher group resulting in a lens comparison. The researcher used transitional expressions of comparison and contrast (i.e. similarly, likewise, conversely, on the other hand) to create conceptual relationships between the designer group and the teacher group (Merriam, 1998).

For Research Question 4, (Do instruction strategies employed by secondary school fashion design teachers, who follow the design methodology used by fashion professionals, produce higher quality student design projects than those who do not?) and research Sub-Question 4a, (Is there a measurable difference in the level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?), Sub-Question 4b, (Is there a measurable difference in the quality of the craftsmanship of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?), and Sub-Question 4c, (Is there a measureable difference of the effective application of formal qualities to the design problem of student design projects when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?), I used simple ANOVA tests as my statistical analysis of variance. Two variables were identified: the independent variables, which were the instruction strategies the teachers used to teach design process in the classroom, and the dependent variables, which were the quality of the creativity, craftsmanship and effective resolution of formal qualities to achieve

design resolution of the student activities. I also used Pearson Correlations to determine Inter-rater Reliability of the panel of experts.

Evaluation of the Quality of Student Design Products

As the qualitative data were analyzed, it appeared that the student design products, which resulted from the work of teachers whose methods most closely resembled the work of fashion professionals, were superior to the work of the students taught by teachers whose methods were not so closely patterned after fashion professionals' work. Therefore, to test this observation, a quantitative analysis of the quality of student work was conducted, and this became a separate qualitative research component of this study.

To answer Research Questions 2a and 4, the collected data were further separated into classroom sets of student design works, I took photographs of individual student works from every classroom involved in the study. Members of the panel of experts, which included an art teacher, a fashion professor, and a professor of art education, were each given a slide deck of these images that included class sets of each of the projects students completed during this study as well as a matrix to assign scores for each of the individual projects. The criteria judges evaluated student work on the criteria of 1) creativity, 2) craftsmanship or technical skills, and 3) effective application of the formal qualities to design resolution. Classroom sizes varied between 9-22 students; however, only finished work was photographed and, therefore, 123 images between the 12 classrooms were collected. For the purpose of this research, a rubric was generated that identified three specific criteria important to design education. Criteria included creativity, craftsmanship or skill, and the effective application of formal qualities to achieve

resolution of the design problem. Each of the criteria was assigned a numeric value between one and five.

Creativity	/5
Craftsmanship	/5
Effective resolution of formal design qualities to solve design problem	/5

Figure 2: Assessment criteria.

Tables 1, 2, and 3 describe the descriptors for which the panel of judges based their evaluations on and include performance descriptors for each of the categories.

Table 1

Student Work Rubric – Level of Creativity

Level of Creativity	
Performance Level	Performance Descriptors
1	The design product and supporting evidence shows the candidate worked only under direction with an unimaginative approach, showing little engagement with and empathy for the project. No evidence of visual problem solving is present. The work is commonplace and entirely derivative with no evidence of ability to develop and express original ideas.
2	The design product and supporting evidence shows the candidate worked mostly under direction with a fairly unimaginative approach, showing moderate engagement with and empathy for the project. Little evidence of visual problem solving is present. The work contains few imaginative elements, is generally derivative with limited evidence of ability to develop and express original ideas.
3	The design product and supporting evidence shows the candidate sometimes worked independently with only a moderate amount of direction. Some imaginative elements have been demonstrated in the approach to the work, and an acceptable level of engagement and empathy with the projects is shown. Moderate evidence of visual problem solving is present. The work is occasionally derivative but some evidence of ability to express original ideas is demonstrated.
4	The design product and supporting evidence shows the candidate worked largely independently. Many imaginative elements have been demonstrated in the approach to the work, and a high level of engagement and empathy with the project is shown. Considerable evidence of visual problem solving is present. A high level of ability to express ideas with imagination is demonstrated.
5	The design product and supporting evidence reveals a consistently independent and imaginative approach, with an outstanding level of empathy and engagement with the project. An exceptional level of visual problem solving evidence is present. The work is extremely imaginative demonstrating a highly unusual ability to express ideas with originality.

Table 2

Student Work Rubric – Level of Craftsmanship

Level of Technical Skills: Craftsmanship	
Performance Levels	Performance Descriptors
1	Cannot manipulate the chosen materials. The design product is well below the basic skill potential for students of this age and experience. Shows no knowledge of the particular qualities of the materials and does not understand how to achieve a basic level of expression in the media chosen.
2	Has difficulty manipulating the chosen materials. The design product is below the basic skill potential for students of this age and experience. Shows some limited knowledge of the particular qualities of the materials and has difficulty applying it to the content of the work in order to achieve a very basic level of expression.
3	Is able to manipulate the chosen materials with a satisfactory level of skill. The design product meets the basic skill potential for students of this age and experience. Shows fundamental knowledge of the particular qualities of this medium and is able to apply it to achieve a rudimentary level of achievement in the creation of the design product.
4	Is able to manipulate the chosen materials with an above average level of confidence and skill. Shows good knowledge of the particular qualities of this media and is able to apply it in a reasonably effective way. The technical resolution in the design product is above the typical skill potential for students of this age and experience.
5	Is able to manipulate the chosen materials with an outstanding level of confidence and skill. Shows outstanding knowledge of the particular qualities of this media and is able to apply it to the content of the work in a highly expressive manner. The technical resolution in the design product well exceeds the typical skill potential for students of this age and experience.

Table 3

Student Work Rubric – Effective Application of Formal Qualities to Achieve Design

Effective Application Of Formal Qualities To Achieve Resolution Of The Design Problem	
Performance Levels	Performance Descriptors
1	Cannot use selected elements and/or principles of design to achieve any degree of resolution in the design product. The use of elements and principles show no effective outcome. The formal qualities of the art work demonstrate no knowledge of composition appropriate to the design product.
2	Has difficulty using selected elements and/or principles of design to achieve a small degree of resolution of the design problem. The use of elements and principles may not necessarily be related to the intention of the design product. The formal qualities of the art work demonstrate limited knowledge of composition that is below expectations for students of this age.
3	Is able to employ selected elements and/or principles of design to achieve a basic level of resolution of the design problem. The use of elements and principles are reasonably appropriate to the intention of the design product. The formal qualities of the art work demonstrate basic knowledge of composition that is typical for students of this age.
4	Is able to employ selected elements and/or principles of design to achieve a good level of resolution of the design problem. The use of elements and principles are mostly appropriate to the intention of the design product. The formal qualities of the art work demonstrate knowledge of composition that is above typical understanding for students of this age.
5	Is able to employ selected elements and/or principles of design to achieve a high level of resolution of the design problem. The use of elements and principles are completely appropriate to the intention of the design product. The formal qualities used in the design demonstrate knowledge of composition that well exceeds the typical understanding for students of this age and experiences appropriate to the intention of the design product. The formal qualities used in the design demonstrate knowledge of composition that well exceeds the typical understanding for students of this age and experience.

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A panel of three experts graded the student works. This panel consisted of an experienced secondary school art educator, an experienced university art educator, and an experienced fashion professor, who all independently assessed the student work. The panel of experts was trained to evaluate student work by describing each of the rubrics and their descriptors and undertaking a random sample in a group practice session. To code the work, a slide deck of

student design works was assembled and given to each of the individual judges (Appendix C). The panel evaluated each of the individual student projects and assigned individual grades for each of the student works based on the criteria. Grades were individually assigned, and none of the judges communicated with each other about the scores they had assigned the student works. The panel assigned scores of 1-5, with five being the highest, to each of the individual student works. Data were compiled by classroom. These grades are included in Chapter 4, Data Collection and Analysis.

An ANOVA test was used to identify differences in the levels of quality in the student design work determined by the scores awarded by three judges. Pearson Correlations statistical analysis was used to determine the IRR agreement among the panelists. Separate tables were created to represent achievement against each of the criteria: Creativity; Craftsmanship and Effective Application of the Formal Qualities to Resolution of Design. The following matrix provides an overview of the data collection tools and analysis techniques used in analyzing the data collected against each of the individual research questions.

Table 4

Overview of Research Questions and Data Collection/Analysis

Research Questions	**Data collection tools**	**Data analysis techniques**
What design methodologies do selected American fashion designers follow in the conceptualization, production, and refinement of their fashion designs?	Direct observations, interviews, document review	Open Coding, SAS Frequency Table, Triangulation, NVivo Word Frequency Analysis
Sub-question: How do selected fashion designers generate, refine, test and judge their design ideas? What backgrounds/experiences do fashion designers have to achieve success within their industry?	Direct observations; interviews, document review, garments	Open Coding, Counting, SAS Frequency Table, Triangulation, NVivo Word Frequency Analysis

Continued on next page

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Research Questions	Data collection tools	Data analysis techniques
What instruction methods do Illinois fashion teachers employ to teach fashion design in secondary school classrooms?	Direct observations, interviews, document review, garments	Open coding, NVivo Frequency table
Sub-questions: How do fashion teachers teach idea generation in fashion design? How do fashion teachers help students to refine, test, and evaluate their ideas? What backgrounds/experiences do fashion teachers have to achieve success in their profession?	Direct observations, interviews, document analysis, Student activities: Inspiration boards[2], garments, Barbie doll fashions; Student fashion shows; paper dresses;	Open Coding, NVivo Frequency table
What relationship exists between design methodologies employed by fashion designers in the U.S. fashion industry and design methodologies taught by fashion teachers in select Illinois secondary schools?	Direct observations, interviews, document review	Constant comparative analysis
Do secondary school fashion design teachers who follow the design methodology used by fashion professionals produce higher quality student design projects than those who do not?	Observations, student design work	Panel of Expert Rubric and Evaluations; ANOVA tests; Inter-rater reliability SPSS' Pearson Correlation Coefficient Calculator
Sub-question: Is there a measurable difference in the quality of the creativity/craftsmanship/effective application and resolution of formal qualities of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?	Observations, student design work	Panel of Expert Rubric and Evaluations; ANOVA test; Inter-rater reliability SPSS' Pearson Correlation Coefficient

Validity

Undoubtedly my greatest challenge was checking for validity to establish the credibility and verification of this research study (Glaser & Strauss, 2011).The quantitative and qualitative

[2] Inspiration boards are collages of things that inspire the designer. It usually consists of trends in colors, patterns and lines. It includes cultural, social, historical and personal references.

data were collected through observations and interviews (Mertens, 2010). The qualitative data were formatted into EXCEL spreadsheets and analyzed using NVivo; the quantitative data were analyzed using SPSS analytical tools. To improve the validity of the research, data collection tools were triangulated against each other, resulting in a more thorough analysis of the outcomes of this research. Themes were cross-checked by another doctoral student in the program to advance and confirm the reliability of my data, thus minimizing my own personal judgments (Kvale, 1996; Mertens). Furthermore, calculation of inter-rater judgment reliability eliminated any potential researcher bias.

Participant anonymity was protected by numerically coding all collected data and keeping responses confidential. While conducting individual interviews with selected respondents, participants were assigned numbers for use in the data description and reporting results. All collected data, including the survey electronic files, interview tapes, and transcripts, were stored on DVDs in the researcher's office. Summary data will only be disseminated to the professional community, unless otherwise requested; however, it will not be possible to trace responses to individuals.

CHAPTER 4

DATA COLLECTION

Introduction

The purpose of this research was to investigate whether the practices and knowledge of fashion industry professionals can inform secondary school art curricula to improve student design product. Within this research, I used observations, interviews and document analysis to compare the design process of a group of selected fashion design professionals in the United States to the instruction strategies fashion educators used to teach fashion design in twelve secondary school classrooms in Illinois.

While my research found there was a positive relationship between understanding design professionals' knowledge and practice and the skills students need to better prepare them for success in tertiary education and in selected careers, this analysis demonstrated that the design methodologies employed by industry professionals are occasionally different from the instruction methods used in the secondary school classroom to help students solve design problems.

The research questions that framed my investigation were:

1. What design methodologies do selected fashion designers follow in the conceptualization, production, and refinement of their fashion designs?
    a. How do selected fashion designers generate, refine, test and judge their design ideas?

b. How do selected fashion designers refine, test, and evaluate their ideas?

c. What backgrounds/education/experiences do fashion designers have to achieve success in the fashion industry?

2. What instruction methods do selected Illinois fashion and art teachers employ to teach fashion design in secondary school classrooms?

a. How do selected fashion and art teachers teach idea generation in fashion design?

b. How do selected fashion and art teachers help students refine, test, and evaluate their ideas?

c. What backgrounds and experiences do fashion teachers need to achieve successful student learning outcomes?

3. What relationship exists between design methods used by selected fashion design professionals and the design methodologies taught by art and fashion teachers in selected Illinois secondary schools?

4. Do the instruction strategies employed by secondary school fashion design teachers, who follow the design methodology used by fashion professionals, produce higher quality student design projects than those who do not?

a. Is there a measurable difference in the level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?

b. Is there a measurable difference in the quality of the craftsmanship of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?

c. Is there a measurable difference of the effective application of formal qualities to the design problem of student design projects when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?

The data collected in this research were descriptive and emerged from within qualitative and quantitative frameworks. This mixed methods study asked designers and teachers to talk about their experiences in creating fashion in the industry and in teaching fashion in secondary school settings and evaluated the student learning outcomes from these individual classrooms. To organize and analyze the data, the researcher followed the following steps:

1. Observations and interviews were collected and transcribed for both groups.
2. The researcher analyzed the transcripts, and general ideas were noted and sorted into specific categories. The qualitative descriptive data for the designers was analyzed using SAS Frequency tables and NVivo's Word Frequency Query Analysis to measure the importance of the steps designers followed in the generation, conceptualization and refinement of their design ideas. ANOVA tests were used as a statistical measurement of variance to analyze the quantitative data and the effect instruction strategies had on the quality of student design work as it related to the categories of creativity, craftsmanship and effective design resolution. SPSS' Pearson Correlation Tests to measure Inter-rater Reliability and determine the proportion of agreement between the judges who evaluated the quality of student work.
3. A design process model was developed to show the design process concepts that were key for the fashion designers' process. From this process, descriptive terms

were placed into individual categories and recurring themes were highlighted using NVivo. The collected data revealed which words were most frequently used by the designers in their design process and these were color coded in different font size to discover the importance of the steps of the design process.

4. The researcher analyzed the transcripts for the teachers and general ideas were noted and sorted into more specific categories using NVivo. A chart was created that sorted the student work by classroom and by activity.
5. Student images were collected and these were assigned ranking based on evaluation from an independent panel of experts. These were then analyzed using SPSS' Pearson Correlations tables.

Research Questions

For Research Question 1, I observed the creative process of three designers from Chicago and New York, as well as their staff, working through the various stages of garment production and used descriptive narratives to describe their design processes. Also I observed and analyzed hundreds of hours of video footage from the popular series, Project Runway (Seasons 2002-2013).

With this data, I observed fashion designers borrowing from visual culture and personal, cultural, social and historical references of materials and style elements as inspiration for creating fashion. Designers used these references for sketching; when talking with personnel about fabric selection, for pattern-making and garment construction; and in creating final pieces for sale and distribution. I used the qualitative analysis tool of NVivo to import, code, and analyze all my audio transcripts from the observations and interviews as well as a Word

documents, PDF files, and text sources from my case studies as a way to form emerging themes and patterns among each designers' process. I then triangulated the collected data against each other.

For research Sub-Question 1a, NVivo was used to import, code, and analyze all my audio from my observations and interviews, Word documents, PDF files, and text sources to identify specific patterns among designers' processes. For Research Question, Sub-Question1b, I used descriptive narratives and to show collected data of designers education, backgrounds, and personal and professional experiences.

For Research Question 3, a Constant Comparative Analysis was used to identity similarities and differences between the designer group and the teacher group. The two groups were compared in a chart that identified the similarities and differences between the two groups. This was also discussed by the researcher in this study.

For Research Question 4, I used ANOVA tests to determine whether there was a variance between the scores achieved by students in different classrooms and that the judges scoring was in agreement and therefore reliable. A panel of experts was assembled to judge creativity, craftsmanship and effective resolution of formal qualities for each of the completed student activities. Scatter plots helped to analyze the rubrics the panel of experts used to evaluate student work for student work and show test outcomes.

Designer Data Results

Project Runway Designers

Over the course of a year, I watched and analyzed hundreds of hours of Project Runway video footage (2002-2013). Project Runway is an important and popular aspect of our visual

culture and, therefore, needs to be included within this research, and since one of the designers I observed and interviewed for this research competed in this series, I felt it was important for the reader to understand it. This section discusses four designers from this popular series. On the show, which is now in its 13th season, designers are given challenges to create garments using both traditional and non-traditional materials. Designers are asked to discuss their inspiration for their designs and why they chose the materials they used to create their designs; ultimately they are evaluated on their creativity, craftsmanship and effective resolution to use formal qualities within their fashions. There are usually 10-12 challenges in any one given season, and those who fail in their challenges are eventually eliminated from competition. The winner of the final challenge wins $100,000 for their personal fashion line start-ups. To date, over 13 designers have launched individual fashion lines through this poplar show.

Each season starts off with 16 designers, but only four are chosen to participate in New York's Fashion Week. Season 11 was all about "teamwork." Tim Gunn, the producer of the show and who also works as acting dean at the Parson School of Art & Design, explained how teamwork is an important part of the design process and ultimately any fashion collection. While designers may have ideas that eventually make it to the runway, they are constantly supported by staff who physically make their creations visualize on the runway.

Their first challenge of Season 11 involved creating a look inspired by New York City as well as a garment that included some design aesthetic that showcased each contestant's individual persona through the individual garment. Designers were split into two teams of eight contestants each. Gunn and Klum, the show's hosts, continually reminded designers that they needed to "collaborate, communicate, and work it out, and how every challenge would be a team challenge since the real world is about working in teams" (Project Runway, 2013). Drawing on

inspiration from New York City, the teams each spent a day touring the city using two different methods. One team's inspiration was derived from a point of view that was taken from a boat while riding on the Hudson River and the other team went to the roof top of the Atlas and got "inspiration from above."

The 16 contestants, both male and female, had a variety of fashion experiences and ranged in age from 24-48. Each designer had to create his/her own garment. Teams had the challenge of not having a lot in common; almost all of the members discussed the difficulty of working in teams while still visually representing their own design aesthetics in their garments. Specifically, one contestant discussed how he liked faded glamour and was drawn to vintage, while another discussed her Native American roots and how she liked to use textiles to provide a voice for Native Americans. Gunn showed them the rooms where they would be creating their garments: a Brother sewing room; the Lord and Taylor accessory wall, and an L'Oreal makeup room. Each of the contestants was given an HP tablet with Intel technology to "elevate their creativity" (Gunn, 2013). Gunn urged contestants to "get to know your teammates and take advantage of their peer feedback. Sketch, caucus, huddle," he yelled as he left the room (Gunn).

I followed designers through their first challenge. The team on the boat discussed how "everything [in NYC] is breathtaking, the details, the craftsmanship is beautiful" ("Project Runway, 2013). They referenced New York City landmarks like the Statue of Liberty and the Brooklyn Bridge as they passed by. On Day 1 of the Challenge, the designers head to Mood, a store Project Runway uses for material shopping. Each designer was given $150 to buy fabric to create his/her garment challenge. The designers discussed their individual projects: "I am making a ready-to-wear dress that a woman could wear to work and after work put on heels and meet her significant other for cocktails." Another said, "I am so inspired by architecture, really impressed

at how much the buildings and patches of greenery fit together like a quilt." Another drew "inspiration from all the different heights of the building." A variety of fabrics were selected by each designer for this challenge, but the majority of designers used chiffon, jerseys, wools or denim to create their sculptured looks.

From this initial inspiration trip, each of the designers came up with a sketch and then started working on pattern making, sewing, and finishing as part of the design processes. Designers were expected to be masters at these technical skills, but it was evident from the video and the final product that there were varying levels of technical skills. Members of the team helped those who were struggling when they finished with their own designs. In this episode, Emily was eliminated from the first competition for her craftsmanship. "Really, Emily, my eight year old daughter could have done better," Klum says in her evaluation of Emily on stage.

In Episode 1, the three top designers revealed their inspirations for their designs:

> Daniel: we had taken a boat around the city, and I got my inspiration from the buildings on the [Hudson] river…black is a symbol of New York, so I created a chic, tailored black jacket with fitted black pants.
>
> Richard: I am from a rural area, and when I first got here, all I saw was buildings and concrete; I immediately thought of grey and balanced it with black; I played the very urban landscape with the asymmetry of the buildings and created a different aesthetic for me. The peer feedback I got was to change the bindings on the side…it helped to make [the fit] very successful.
>
> Patricia: As we were leaving the city, I started to see the different shapes of the windows and thought of the Cubist artists, and I said maybe if I work in my design aesthetics of hand painted fabrics, I can manipulate the leather to look like little cityscapes, so I chose that really strong cobalt blue. The judges felt the panels were very tactile and gave it movement.

The final challenge for this season was to create a high end couture look to compete at New York's Fashion Week. Each of the remaining four designers were sent to a different European Fashion capital to find inspiration and buy textiles for this final challenge. Contestants

were given airplane tickets to a fashion capital and spent a day soaking in the culture and fabric shopping. I followed each of these designers in this last challenge.

Emily was sent to Barcelona, Spain. She admired the small streets of the city: "This city is a place of so much passion. I was really drawn to the details of the tiles. I felt so inspired by the monuments, especially the Sagrada Familia [church]. I wanted to work with leather…make a leather jacket with a tile pattern, skinny pants and a simple tank top." She spent time sketching her design out in front of the church. When she started looking for leather, she could not find any. Recognizing Barcelona was known for its lace, she created a jacket out of two black regional laces. Despite the fact that the laces were nicely made and intricately designed, the judges felt she missed the passionate heritage of Barcelona. The judges felt her design did not "capture the youth of the city," and her model "looked like an old lady mom; no hotness, no sexiness" (Klum, 2013).

Patricia was sent to Paris and declared, "The amount of history that is in this city. Right now, I am on sensory overload…look at that ripped paper on that painting: this city is so incredible: the Arc de Triomphe, the Eiffel tower. We were at the Eiffel Tower, and I knew that's where I was going to start sketching." She was seen throughout the city taking photos of all the street art and graffiti

> I can totally make a textile out of this. I am starting to see more and more texture in the layers of the graffiti…I'm doing the true grit, make-a-statement Paris, not the romantic Parisian Paris...For the top, I want something really expensive that's going to create all those wonderful pieces of layering that are seen throughout Paris. The jacket should be fitted; the biggest challenge of the fabric shopping is the language barrier.

The judges called her work, "decoupage graffiti. Trash couture— with no character."

Daniel was sent to Berlin and declared: "I think of the Berlin Wall, what it meant to be on the other side, what it stood for. How it kept families apart, and all the heartbreak that was there.

I was not expecting this." He stopped at a building that was very modern with many angled windows. "Wow, the mother ship has landed…This building has all these angles going on. I love the geometric-ness of it, this is my inspiration…we just need to find a really pretty leather. I can do something bias cut." His assistant reminds him he needs to think about designing for a younger woman. He shows her a sketch of a bias cut dress: "it has movement; everything I've done so far has been fitted and tight; this is soft and angular." He chose plethora for the jacket when he cannot get the leather he wants and satin for the bias cut dress. He creates a pair of wedge boots from black leather. The judges give him high marks: "You captured the beat of Berlin; the city is hard and strong, with modern architecture."

Stanley was sent to London, noting that "I liked seeing the old and new together; look at the extravagant arches of Westminster Abbey; I'm inspired by all the architecture and I look over at Big Ben and it's so massive." He started sketching.

> My eyes keep floating up to the windows. The further I go up the building, the darker the windows get. What if there was woman living up there, very ghost-like? So, I designed something very modest in the front. The silhouette was long and lean. I used all black and it was very structural in shape…I had this fascination with dark when I was young; I wanted to be a vampire when I was a little boy. I did a caplet and this is going to be beaded. I have done cheery all season, I just want to do something Stanley. Something really dark. It looks like a long column with a cape and leather sequins.

The judges felt it was very dramatic, "You gave us a glimpse of luxury with paella on the inside. The silhouette was simple yet strong and powerful. It gave us that mystery that London is, Sherlock Holmes and all" (Klum, 2013).

Michelle was the only contestant who did not travel to Europe for her inspiration; instead they stayed in New York for one last design challenge. "Not getting to go to Europe like all the others, I felt homesick and really lonely. My self-doubt takes over; but I knew if I didn't get the dark cloud hanging over my emotions, I could end up creating something really miserable. New

York is great, there is still a lot of media around me." A bus tour through the city provided the inspiration for this last piece. "I love how the old is sandwiched in between the new; I love that; especially when it's reflected in the glass of something new. I wonder if there was a way to paint like that and then remove it, I love the old chimneys; that's something I might want to re-create. She used cashmere and leather to create a tailored cashmere dress with a sculptured leather reversible harness to place over it. The judges compliment her design: "the simplicity can be luxe."

Designer 1

This designer modeled how creative process takes place. She provided me with some of her sketches that showed not only design but where the functional pieces of the garment are placed. Closing elements as zippers, buttons and Velcro fastenings are strategically placed on these sketches, giving the pattern maker an idea of where these need to be to ensure an easy and reliable fit for consumers. This sketch was then given to pattern makers who then drafted the design onto lightweight cardboard paper. The designer showed me the pattern making room where two women were drawing and cutting patterns onto a large flat table. The pattern included the type of necklines, shape of skirts, dresses, sleeves or pants as well as the darts placement to give the garment its shape. Seam allowances were not indicated on these patterns, but zippers, closings, fasteners and buttons were.

The designer shared some of the inspiration she used for creating the one-of-a-kind designs her collections are made of. She acknowledged clients facilitate the creative process by bringing in clippings from magazines and even films that help in the development of the final end product or garment. Seated at a table, she listened to her client talk about her recent trip to Thailand where she "picked up this fabulous piece of silk fabric." [The client pulled the fabric

out of her bag and both the designer and client began to discuss the "aesthetic" qualities of the fabric.] The fabric was multi-colored in shades of blue, and the client stated how she was drawn to this fabric because it "reminded her of the water." The women discussed additional qualities of the fabric: how it was a lightweight "Thai silk," which "lends itself to certain garments" such as blouses and caftans. The client agreed and made references to celebrities like Susan Sarandon, who "showed up at the Oscars, wearing a Moroccan caftan." More references were made to celebrities, such as Beyoncé, as well as films in which caftans have appeared. The client became convinced that creating a caftan from the material was the best use of the fabric, and the designer agreed that it would "suit the client's figure equally well."

The designer discussed the importance of fittings. She noted that it is in the fitting where "things are worked out." Reflection on the process is humanized through the fitting. "If you can connect to the client through a conversation over what works and what does not work," the designer explains, "you can usually be successful in the final outcome of your design." She described how "listening" to clients and talking through their own wants and needs during the initial consultation process leads to a final product. The designer aided in this process and said she takes her references from aesthetics in art, magazines, films, or even music to further enhance the creative process and noted that these references are discussed during the initial consultations with individual clients and her creative staff. Every "idea or concept comes from the world around her," and this concept is sketched onto a letter sized piece of white paper that carries the company's logo. However, the actual creative process in terms of the clothes themselves is often designed directly on the client during a fitting. This designer emphasized that it is through the fitting where the design process is "humanized." "In some instances, you do not know that something is not going to work on a client or on a mannequin until you actually

see it on them. That is the reason why I always draft the garment first in the lining I am going to use."

Designer 2

This designer credited her artistic background as the reason why her designs are so well received by the Chicago market. She says she draws inspiration from visual culture but contends that it is through the actual experimentation with fabrics and materials that the garments evolve. She discussed how on paper when a garment is produced, it may appear as if it will work, but when it "hits the streets" it "just doesn't sell." She tells how the company invested a great deal of money in mass producing a fashion item, but analysis revealed the outsourced manufacturer[3] had used the wrong fabric: "it just didn't have the same flow as I intended it to have and there was nothing we could do about it." In this case, she says, "you can't even send them to an outlet for reduced sales because no one is going to buy them."

As a designer, she works independently in her studio. The room is large, and individual stations are set up to handle the many individual jobs of pattern making, sewing, and finishing that go into garment manufacturing. In one section of the room, a giant table is used for laying out patterns. Here, pattern makers adjust slopers after being fitted into muslin onto mannequins. The designer makes her own patterns. Another station has a table with a shelf underneath that holds bolts of fabrics. The designer pulls one out and lets me touch the material; it will be used to create one of the items in her upcoming collection. We walk over to another portion of the room where sewing machines are arranged in neat rows. Here, seamstresses put together individual garments, each one working on specific pieces of the garments. Two are working; I watch as one

[3] Outsourcing is when goods or services are obtained from an outside or foreign third party in lieu of an internal source. It is considered to be an effective cost-saving strategy within the garment industry (Investopedia, 2014)

puts in an invisible zipper. The designer then shows me more machines; one is a serger[4]. She explains how the serger is used for a lot of her fine fabrics, such as chiffon, to finish the hem. I learn about the process from the woman who is serving. She explains how serging keeps the hem light and fluffy rather than stiff. She shows me an example; the chiffon is finished with a very small rolled hem that is almost invisible to the eye. She picks up the skirt and lets it drop; the chiffon falls and separates from the lining.

I walk to another part of the room where sewing mannequins display various stages of the process. On one, muslin is used to create the pattern. The designer shows me a sketch of a sleeveless top and explains how this particular piece will have a cowl neck and an invisible side zipper. The designer's knowledge of pattern making and style terms is obvious. The designer goes through each sketch and talks about her idea generation. A lot of her pieces are "recycled from past styles taken from historical references." She admits she watches old films to gain inspiration and is heavily influenced by other designer's styles.

Designer 3

Designer 3 works in a small apartment that doubles as both her home and studio. Her pieces are sold through major online retail outlets therefore, she does not have a store front or fashion boutique. Her garments are outsourced for all phases of production, including patternmaking, sewing and finishing. She was born outside of the US, having immigrated here to attend college. Her pieces are very unique in the sense that she uses fabrics and textiles she purchases on her travels when she returns home to her native Congo. She says she collaborates

[4] Sergers are machines that gives projects and garments a finished and professional look by creating ravel-free seams, over-locked stitching and decorative edging (Merriam-Webster, 2009).

with a graphic designer to create her textiles, and just recently she did a Kickstarter[5] project where she raised $20,000 through anonymous investors to embark on a fashion endeavor that utilized some of the leftover stamped leather fabrics she creates to manufacture small clutch bags using local artisans in her native Congo. When it comes to idea generation, her inspiration comes from everywhere; for example she went to Mexico, and that trip inspired some of her textiles. She is also a "TV buff" so she was inspired by "Games of Thrones (2012), because they have some really intricate fashion." Her collections for Fall/Winter 2014 were inspired by a tree. "So just anything, everything, really, and visual culture. It is always a mash up. For instance, one of my collections was inspired by my late father and how he used to dress in the 60s." She walks me to the back of her apartment and shows me some of the pieces from her latest collection. Her craftsmanship is extraordinary; she shows me one of her tailored jackets and discusses how the details (she opens a vesom pocket) are very important to her. The jacket is multicolored and has wide lapels. It is cinched at the waist with a tie belt. The buttons are made from wood, something she picked up on her last visit to New York. We discuss the difficulty in getting materials and resources in the Chicago area. She is seriously "contemplating a move to New York."

I met this designer after she had just come back from a fashion show in Milwaukee where she featured her new 2014 collection. She confides to me how "surprised she was at the lack of enthusiasm for her latest pieces." She knows that it has to do with the fact she is in Chicago and not New York, where "people would most likely embrace her designs more, given the diversity of the culture there." She discusses how she "used to do everything herself" but "now outsources pattern making, sewing and grading to local contractors" as many new designers often do. She says that human form and experimentation are key to her designs. She gets a lot of feedback

[5] Kickstarter is a crowd funding website that allows underfunded entrepreneurs to help bring their creative projects to life ("Kickstarter," 2014).

from her clients in terms of fit because human form is really important and it is important to make the fit right, so "they're kind of like my guinea pigs." "One client," for example, "was telling me she didn't like this and she didn't like that, and now just from that one client, I changed the entire style of that one piece." One of her biggest clients is Zappos, "I can see what is sold, but "I don't get the information that says if it was returned, or why it was returned. That would be more useful information to me although it's nice to know my things are selling."

She also competed in Project Runway, Season 12. We discussed how one particular challenge was won by another designer who created a more avant garde look using butterflies as her inspiration. The winner of this challenge described how designers were told to use the environment to create a garment piece:

> We all traveled to a nature island. We were brought to the butterfly house and told to use that environment; the butterfly as our inspiration. And I looked around, I saw all the other designers were picking specific butterflies or they seemed to be sketching very literal things. I wanted to do something more than that, so my inspiration was the butterflies actually fluttering around through the air. It's the feeling I had of being there with my inspiration, of this silent chaos; the idea of the butterfly was my initial inspiration.

She was eliminated after this round. The designer confessed that while the experience was exciting, "it did not do much for her business."

Designer 4

Designer 4 works out of her home. She showed me samples of her works: headless mannequins attired in beautifully crafted paper dresses. They are displayed in her basement, and she discussed how they are very delicate and have a tendency to yellow after time. She spoke enthusiastically about her design process. She said she creates flowers, sequins and dress details from magazines, newspapers and books. "I am always creating. I will sit in front of the TV and

just keep cutting out these lace details out of paper. Sometimes, I don't even know how long I spend doing it." She showed me a box of flowers she had made from these nightly adventures. Her craftsmanship was flawless. She admitted that her designs are "totally created on her mannequins." She said there is no "pre-conceived" process; "when it comes to idea generation, it's mostly in my head." She admitted she looks at history and follows Tumblr and certain blogs that have to do with fashion, paper fashion and art. She says she has her own Tumblr website but "doesn't collaborate with others." Instead she discusses how her design process is "directional."

> It's an intuitive process. One idea leads to another and then the next; it takes a while, and they all tend to inspire each other. If I get stuck, I just stop. I stop if I'm just not feeling it. For example, one night I just went to bed, and when I got up the next morning, I looked at the piece and I ripped it apart.

This designer earned a BFA in Art and an MFA from a recognized art program in Illinois. She does not belong to any professional affiliation. She went to Catholic high school, where she wore uniforms and said she never had any real interest in clothing until college. "I cannot sew," but the class that "really prepared me for this career was a sculpture class." She said she worked retail at a clothing store while she was taking the sculpture class and became interested in the form and function of clothing during this time.

Designer 5

Designer 5 has had a long career in the fashion industry. Armed with degrees from prestigious fashion schools, she is best known for designing the purple dress Michelle Obama wore to the National Democratic Convention in 2008 (Saulny, 2008). This designer claims her career in fashion "began at the age of ten," when she first read *Women's Wear Daily*, a fashion periodical she borrowed from a neighbor (Branch, 2008, p. 1). "I've been making clothes for myself since I was little. I was always really interested in art, and then I decided I needed more

clothes to wear. That catapulted everything. I designed clothes for myself and for my girlfriends. They would come up to me and say, "I love what you are wearing, I want one, and I would make it for them on my Singer sewing machine. I actually started to get clients that way, and it just kept evolving" (p. 1). After attending Parsons School of Design and working for Geoffrey Beene in New York, she went back home to Chicago and refocused. "I started with accessories and then wraps and scarves, selling mostly to Barneys and Saks [Fifth Avenue]. A couple of years later I got into evening wear" (Bourne, 2009, p. 1). Throughout her long and prolific fashion design career, the designer has allowed high school students to visit her studio and view her design process. Before her west side Chicago shop closed in 2010, she created all of the garments she sold in her retail shop in a large atelier located above her retail shop. The atelier was one large room with stations designated for performing each of the individual tasks needed to manufacture her well-known fashion goods. Bolts of fabric were stacked under large cutting tables and sewing machines hummed as seamstresses stitched and finished her garments here.

She said that inspiration over the years has come from many different places. For the exhibit she created at Chicago's Field Museum, the designer took inspiration from the Museum's artifact collections and photographed the items she liked (Nusser, 2012). The design process entailed rummaging through the Field Museum's vaults looking for priceless artifacts. Twenty-five artifacts were eventually chosen and placed alongside eight of her unique designs. As part of the editing process, she "storyboarded them like a fashion collection" (p. 1). "We're spoiled as designers these days," she says of man-made materials, "but these cultures used what they had, and created such beauty" (p. 1). Some of the objects included in the exhibit were a seal-intestine raincoat ("you just want to wear it," she declared enthusiastically); a Brazilian ensemble made from bark; and her shearling pants displayed next to shearling Inuit hot pants. "There's an

artifact from every continent except Europe," and many of these items are on display for the first time. "Fashion is over after you do it. At the end of the day it's done. You move on. You can't move on fast enough." she says. "This is different. I want people to say this is different when they view this exhibit" (p. 1).

Designer 5 is well known for her quality designs. "The craftsmanship in [her] work is amazing, even under a microscope," notes Shelley Paine, the Exhibitions Curator at the Field Museum, who inspected every object of the exhibit at the Museum (Nusser, 2012, p. 1). Designer 5 recently re-launched her brand under a new name through the help of Kickstarter[6]. Within a span of six weeks her new company had raised a little over a quarter of a million dollars to fund her new venture. Her collections are timeless and are based on both the curvaceous-ness and consciousness of American women (Branch, 2008).

Designer 6

Designer 6 said she prepared heavily for the career she now has in fashion. She attended the prestigious art academy in London, where she studied fine arts, and has worked at several European and American name labels since her graduation. She has worked in the industry for several decades and has an impressive resume, which includes working for other major designers. She noted that gets inspiration from flea markets and fashion films. She searches for local artisans and manufacturing practices that make the brand she is in charge of unique. She frequently travels around the world in search of the latest trends, artifacts, and manufacturing methods that target her consumer. A visit to the company website unfolds the artistic process of

[6] Kickstarter is one of the leading online crowd-funding platforms, helping individuals, entrepreneurs, small businesses and early start-ups raise money. Individuals are invited to pledge money, typically in return for one of the products or services being produced, rather than an equity stake in the enterprise.

the latest collections and the inspiration behind each one. From her blog, she gushes about the "inspiration behind the brand's 2014 spring collection, which features signature clothing items in this year's 'it color' of citron yellow, like the New York taxi, with pops of reds and greens."

> NYC is one of the things we love, because it's the city we started in. NYC is one of the best cities in the world. It's full of energy; night or day, it's so inspirational. And that's what inspired me for this collection. You see that skyline as you drive into NY and you will always remember it. It was the skyline where everything started; and it's the color of NY. We call it NY citron. It's the yellow color you see on road markings and on taxis…We also love taking the concept of the big apple and using that for color, so you have these reds and greens. The designer goes on to say that one of her biggest inspirations came from the photographs David Bailey did of Jean Shrimpton in the late 60s. "It's one of my favorite books. It's one of my favorite photo shoots and definitely was an inspiration for this collection.

For Research Question 1, I was interested in how designers generated, conceptualized, refined and tested their ideas. Table 5 provides an overview of how the fashion design process works. As illustrated in Table 5, all of the designers used some form of visual culture references to generate fashion ideas. Within their design process, designers borrowed from films, books, magazines, as well as historical references from other designers and their own personal experiences to generate ideas. Specifically important to the designers, was "the world around them." Many of the designers referenced their personal experiences, such as travels to foreign countries, building architecture, street graffiti and local flea markets as inspiration for their creative process. Designers discussed how their ideas were refined through experimentation of fabrics in the final designed pieces, explaining how when something was known to not work in the patternmaking stages, they refined or changed their sketches. Designers also revealed how experimentation with the human form in client fittings also played a major role in refining ideas. In the interview with designers, designers emphasized when something was known not to work

in the fit of the garment, designers adjusted the finished examples through the technical skills of patternmaking, sewing, finishing and embellishment.

Table 5

Designer Idea Generation Process

Designers	**Hours Observed**	**Idea generation/Refinement**	**Evaluation of Success**
Project Runway	100+	Ideas generated from VC ref (European cities); refined through fabric experimentation	Designer challenges
1	24	Ideas generated from VC ref (films, books, magazines) Refined through human form; client fittings	Bridal, evening attire
2	8	Ideas generated through VC ref (recycled "from past historical references"); refined by experimentation with fabrics, craftsmanship	Women's wear
3	17	Ideas generated through VC (*Games of Thrones*)[7]; refined in fittings, fabrication	Women's wear
4	4	Ideas generated through VC ref (Tumblr); refined in experimentation with materials	Flatforms; paper dresses
5	24 Non-participant hours	Ideas generated through VC ref (historical references; Field Museum artifacts)	Women's wear
6	36 Non-participant hours	Ideas generated through VC ref (NYC)	Women's wear; accessories

For Research Question 1 and 1a, I spent over 150 hours observing how designers took inspiration from reference to visual culture to generate new ideas by spending time in their workshops through direct observations and non-participant observations as indicated in the above Table 5. The collected data revealed that all of the fashion designers observed were inspired by some form of visual culture reference to generate new ideas. In the design process,

[7] Games of Thrones is an American fantasy drama television series that follows a number of noble houses and their fictional characters in their attempts to reclaim thrones and kingdoms (Benloff & Weiss, 2011).

fashion professionals refined their ideas through experimentation with human form in client fittings and through experimentation with fabrics and materials. Ideas were further refined through technical skills and craftsmanship; they tested their ideas through the evaluation of sales. As designers moved through their design process, experimentation played an extremely important part of their process: the human form allowed designers to test their ideas, and manipulation of the fabrics used in created product helped designers revise their sketches. Unlike fine artists, who often give credit to their ideas from ideas that simply come to them, designers demonstrated how they are more willing to talk about their inspiration and give credit to the influences form which their ideas are generated.

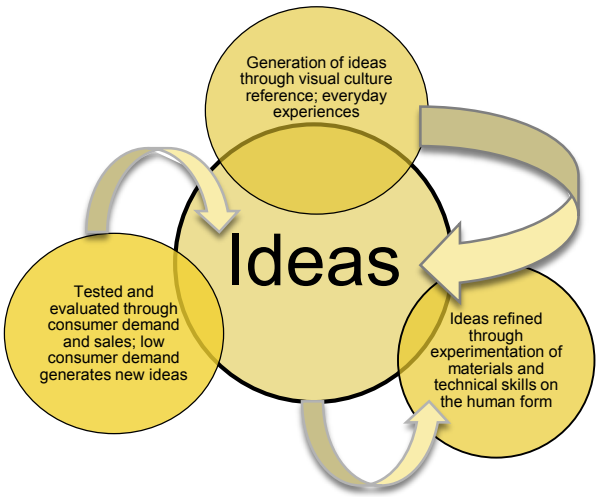

Figure 3. Fashion designer's design process model.

Figure 3 illustrates the evolution of design process for fashion design professionals. As Figure 3 indicates that the design process model of the fashion designers is much more dynamic than the traditional linear design process models of the past, and that visual culture and experimentation play important roles in the generation and conceptualization of ideas for fashion design professionals. All of the designers in this study agreed that success of their collection is

based on the sales and demand of their product, however, this study did not collect data for designers' sales. However, as garments eventually hit the runways and/or stores, if consumer demand is low, designers noted they would rethink their design process and start over with new idea generation.

For Research Question 1b, I conducted personal interviews. I concatenated the interviews into a single file, and used NVivo software to analyze the most frequent terms. Idea generation for the designer group is illustrated through an Evolving Note Structure, and further analyzed through a Word Frequency Inquiry Analysis (NVivo, 2014). The Fashion designer idea generation word frequency query analysis illustrated in figure 4 demonstrates how visual culture played an extremely important part in the design process of the fashion designers. The number of times Visual Culture phrase appeared in transcription was 43 times. Other words that appeared frequently were human form (38 times); experimentation (36 times); and the phrase, the world around us (29 times). Professional fashion designers and designers' noted that their own personal and cultural experiences heavily influenced their design choices. Other words that were almost as important in designer idea generation were fabric, social, culture and historical. I then created a word cloud[8] which used size to represent the occurrence of the words most frequently used by designers to describe their idea generation process. In the following word cloud, the frequency of words designers used to describe their specific visual culture references is displayed by their size and color. The larger the word, the greater the frequency used among all designers. As noted in Figure 4, the phrase visual culture was used and indicates greater significance.

[8] A word cloud is generated by text. Greater prominence is given to words that appear more frequently in the source text. Word clouds can be created using different fonts, colors and layouts ("Wordle," 2014).

Figure 4: Fashion designer idea generation word frequency query analysis.

For Research Question 1c, I conducted personal interviews with each of the designers. Of the six designers I interviewed, all six of them had degrees in art and/or design. All six of the designers had taken at least two classes in drawing, painting and sculpture each during their training. One designer earned a Bachelor's degree in Architectural Engineering but noted she was always "interested in the concept of form and function," especially with fashion. All six of the designers worked in some retail capacity during their career by either selling or buying clothing or working specifically at magazines that featured women's clothing. Likewise, the Project Runway designers also had training in art and/or design to prepare for their careers[9]

Summary

The fashion design professionals were able to describe their design processes and discuss how they used visual culture references to generate design ideas as well as their own everyday personal experiences to give meaning to their works and create the garments that eventually appeared on the runway. The designers frequented flea markets; traveled to exotic locales; and used films, artwork, historical references (such as books and magazines), and patterns taken from

[9] Not all Project Runway designers through the history of this show, which has run for 12 seasons, have training and/or education in art and design, however the specific designers I observed for this specific study did.

everyday things (such as flowers, taxicabs, or things in nature) for inspiration or from "just by sitting in a café and watching the world go by." Their ideas were refined through experimentation with materials and techniques in the design process. Based on these practices, instructional strategies should expose students to a variety of tools, techniques and materials so new ideas can be developed. The observations and interviews revealed that these designers' creative processes went beyond the theories of the 6ps of person, place, process, promotion and product and into the aesthetics of everyday personal, cultural and socioeconomic experiences, where visual culture played an important role in the inspiration of their collections. Using visual culture and technology, these designers found things that interested them and generated new ideas.

The collected data also revealed that these designers were able to recognize that human form influences the design process. The designers recognized that refinement and the judgment of success come through a variety of things: individual fittings and human form, the materials chosen for each individual garment, the pattern-making, and actual construction of the garment. Sales distributed through various retail and distribution outlets, or lack thereof, of a designer's fashion collections could also indicate success, but this study did not investigate the success of the fashion designers collections.

Classroom Data

As a discipline, fashion is not considered a necessary component of a district's core curriculum and, therefore, is often ignored by school districts. Specifically in Illinois, fashion is typically administered through funding set aside from the Career & Technical Education (CTE) arm of the Illinois State Board of Education and often appears in the Fine and Applied Arts

curriculum or as an after school program or club for those interested in it (ISBE, 2013). Yet studies on design thinking and visual culture emphasize why fashion is so important for promoting creative thought in the classroom today and why it needs to be included in secondary school art curriculum.

For both Research Question 2 and Sub-Question 2a, fashion educators were observed teaching design process in the classrooms. NVivo was used to categorize the collected data into themes and patterns, and SAS was used to import, code, and analyze student artwork, and other artifacts to look for similarities and patterns among the course outcomes and teaching methods and then to be triangulated against each other. For Sub-Question 2b, I examined student projects: completed projects (e.g., fashion sketches, garments, inspiration and trend boards, Barbie dolls, avatar embroideries, repurposed t-shirts, and fashion retail boxes) and various student sewing and art activities. Following is the descriptive narrative for the collected data on the teachers. Data were collected on only the units that had to do with the instruction of the design process.

Classroom Data Results

Classroom 1

This teacher used visual culture references, modeling, PowerPoint technology, open dialogue and guided practice to teach idea generation and conceptualization, craftsmanship and formal qualities of design. Some of the scaffolding strategies used were academic language and visual aids to teach vocabulary; show and tell of visual culture references through PowerPoint, demonstrations, modeling, and open dialogue. The student activities I observed throughout my

five observations in this class were student Inspiration Boards, student CROCI[10] sketches, and Barbie OSCAR fashion. This room was set up to encourage idea generation. There were cork boards with inspiration phrases and student artwork and garments from previous years. There were clothing dummies throughout the classroom on which students could experiment with fabrics and see how they draped.

The first project I observed was students creating Inspiration Boards. On the first day of four lessons on this activity, I observed the teacher doing a PowerPoint to discuss where designers get their inspiration. She began the PowerPoint by asking students the question "where does your inspiration come from?"

Student 1:	For me, I'll just see an object. Sometimes, I see a really cool zipper, or really cool color or textile, and I think, oh, my gosh, I want that.
Teacher:	Ok, very good. So sometimes it's fashion and making something. But it's not just fashion, even authors, and painters; their ideas have to come from somewhere. They all have to get an idea from somewhere, and it's usually personal. So, inspiration is part of the design process, it's usually where the design process starts. This is how designers get new ideas.

The teacher added that "in fashion, not a lot is new. Every bit of fashion that you guys wear comes from another time period, probably." The teacher presented more examples, like riding boots, and talked about how designers look to other time periods for their inspiration. She discussed how technology also influenced fashion.

Teacher:	Leggings for example, although lulu lemon and spandex is kind of new thing, when did leggings first appear in fashion?"
Student 2:	the 80s?
Teacher:	Back further than that.
Student 3:	the 50s?
Teacher:	Back further than that.
Student 4:	During the medieval times when men were wearing them?
Teacher:	Very good. Leggings aren't new, but what about lulu lemon leggings makes them new?

[10] CROCIs are fashion figure templates used to facilitate creating fashion illustrations. They are usually none heads tall.

Student 3: The 8 way stretch.
Teacher: Exactly. It's the technology that makes them new.

The teacher discussed how inspiration can be used as a focal point or as an emphasis, reminding them of vocabulary terms and referencing the principles of design. She noted the influences fashion takes from visual culture, the internet, advertising media, theater and film. She showed more slides and asked students to try to guess where the inspiration came from. She showed a garment that has cherry blossoms on it and students discussed the Japanese influences behind it. She discussed how designers edit their designs to make them wearable for the public. She referenced the upcoming design project they were going to be doing that involved designing a dress to wear to the Oscars.

Teacher: So inspiration can be anything in your environment. Anything that you see, or feel, or smell or taste. Sometimes one designer can influence another designer.

She noted Chanel as someone who is copied a lot by other designers. For idea generation, she encouraged the students to look at magazines and look online. She emphasized that visual and popular culture play an important role in the fashion industry. "I tell them that's where it starts. It doesn't start in the store, it starts with one person wearing something different." Even still, *Downton Abbey* and *Catching Fire* are influencing fashion."

Classroom 2

In this classroom, the teacher used PowerPoint, field trips, guided practice, and experimentation to teach idea generation, conceptualization and craftsmanship. The student activities I observed in this classroom were CROCI sketches and finished garments. The teacher talked about how important experimentation is to the process. "Ideas are refined through experimentation" she says.

> They start very basic and as they sketch more, they add details. I tell them get all your ideas onto paper and never throw them away; you never know when you are going to need that idea again. So that's where the refinement by experimentation happens. Ideas are further refined by the choice of materials. "Part of their final project is having fabric and textile selections. Students need to incorporate these fabrics into their ideas.

In her class PowerPoint, she also discussed inspiration and where ideas come from. She noted that

> sometimes inspiration can come from artwork" and showed a picture of Degas's ballerina. "Oftentimes advertisers will get inspiration from these artworks. You saw how art influenced fashion in the fashion and modernity exhibit (2013) we saw at the Art Institute. We saw the Great Gatsby fashion that came from the film last spring. This is why fashion moves so quickly. Because we have global access to it. If I want to know what people are wearing in Japan, I can google it. Or if I want to know what students are wearing at the University of Michigan, I can look it up on a [college fashion] blog.

As she flipped through her slide deck, she specifically referenced a designer from *Project Runway* and talked about how the designer took her inspiration from Charlie Brown and personalized it.

> Student: What inspires you?
> Teacher: I love buying fabric when I travel, because you can get different textiles and different styles."

I started my interview with her by asking "How do you define creative process?" The teacher said she talks first about product development and then tells students to have in their heads an idea of what they want. She said she gets students to think about the inspiration behind their ideas and do some research on trends and what is popular. She tells them to think about "what colors, what textures and what fabrics they want to use." She emphasized that "you don't want to design what's already in style, you want to design for what's going to be next. You want to be the new product." She said she tells students they need to think about how much this is going to cost. Does it fit with your target audience, and does it fit with the designers' overall

concept? Is it going to look cohesive?" She said she starts off with that discussion and then students can start sketching.

The textbook used in this class was *In Fashion* (2002). Within this book, the design process was a separate unit and was titled as such. The teacher said she rarely used the textbook but instead uses articles found on the internet and activities that support the curriculum's daily objectives, essential questions, student learning outcomes, and assessments. Students use CROCIs (fashion design figures that are nine heads tall) to start sketching. The teacher said she has some students who draw bodies themselves, but she teaches the tracing method and most students use that. Students start by copying an existing garment from a magazine because "students don't really know how to draw yet. They don't know where the shadows are or how fabric looks when it falls. Then once they've mastered this, she has them add all the design details, then their shading and then their color, and [demonstrates on an ELMO how to add shadows, shades, and details]." The teacher said she uses completed worksheets to assess students' understanding of her daily objectives as well as rubrics for each major activity or project. While her rubrics do assess habits of mind, craftsmanship, and certain intelligences, she emphasized that this class is "not about how well they draw, but rather are they original?"

I asked the teacher how she helps students generate new ideas and refine those ideas. She said she encourages students to look at magazines and look online and emphasizes that visual and popular culture play an important role in the fashion industry. In another one of this teacher's sessions, I observed a scaffolding strategy in which the teacher conducted a Burn Lab activity to demonstrate the qualities of individual fabrics. In this particular lesson, the essential question was "What qualities do man-made and natural fibers have?" The teacher had prepared four bowls, each containing a fabric swatch of a man-made or natural fiber. She handed out a

worksheet on which students wrote down their predictions for what would happen to each of the swatches once they were set on fire. She explained how man-made fibers will usually burn and disintegrate, whereas natural fibers will not. Her first swatch was a piece of wool. Students first wrote down their predictions on what would happen to the swatch and watched as she lit each piece of fabric on fire. As expected, the first fabric, a woolen blend, did not burn at all, and several students commented on how they "would use a wool blanket should they ever be set on fire." She continued to light each fabric swatch on fire to demonstrate their qualities. One polyester swatch disintegrated to a single thread, which students pulled at. The teacher said that "most children's pajamas are made from fire retardant cotton and you should always check the label before you purchase these garments." Students learn how certain fabrics can influence their designs through this experimentation. After this demonstration, she collected the worksheets and students pulled out their bins to work on their garments. There was a fitting room with a mirror, and students went in and out of it trying on their garments and having other students pin them.

Classroom 3

The teacher used technology such as ELMOs and guided practice to teach technical skills. The student activities I observed in this classroom were CROCI sketches and Barbie dolls. To teach students how to use the CROCI sketches, the teacher used an ELMO to demonstrate how to create shading and values and how to sketch fabrics. In this class, the teacher used the 6th edition of *Fashion Sketching*. Over a period of several days, I observed the creative processes of the students. The students first created CROCI sketches. After this activity, the students began to think about designing the garments on CROCIs to be worn at the Oscars. They would be using small swatches of the fabrics to create the fashion their Barbie dolls would wear to the Oscars. I

observed students using CROCIs to sketch out their ideas for their garments and flipping through magazines for inspiration. The teacher had demonstrated in a previous lesson how to use CROCIs through the tracing method. Students were able to visually represent the technical aspects of their design (i.e., where zippers and darts went onto their designs) through their CROCIs. Some students did create fashion illustrations without the use of the CROCI, but no formal instruction was given for this. Students were told to use fabric swatches to create fashion for their Oscar fashion for Barbie dolls. The students worked first on finding images in magazines to create garments for their CROCIs. These preliminary ideas were transferred to illustration paper and were later created into the fashion that went onto the Barbie dolls. The students used swatches of fabric and hand sewed their creations onto the dolls.

Classroom 4

The teacher used field trips to a fashion show and a fabric store as well as guided practice to teach the technical skills of garment production. The student activities I observed in this classroom were students sewing garments for a student run fashion show. For this project, the students had to pick out commercial patterns, select appropriate fabrics, and determine fabric embellishments and appropriate fasteners (such as zippers and buttons). The teacher explained to me how important it was that the students understood how these fabrics would drape when they were in the finished stage. For this, the teacher explained she had them experiment with fabrics that they hung on the mannequins to watch it drape. The teacher picked up a piece of chiffon, pinned it to the wall and let it fall. She explained "you will not get the same effect with wool and students need to know that." The students learned that these choices in fabrication can influence their designs through this experimentation. I observed the students sitting at their sewing

machines sewing garments. One student said she "originally had chosen another fabric for her outfit, but when she started working on it, it wasn't doing what I thought it would do. I had to change the fabric so that's why I am still working on this." The students also learned how important fit is through this process. I observed the teacher individually discussing each garment with the students whenever they had a question, as students individually went to the teacher to ask questions about problems they were having.

Student 1 had an issue with her length. The teacher laid the garment out on the cutting board and explained to the student that "because they are shorts, the length in the back needs to be longer than the length in the front because of the curve of the body and butt." She helped the student pin the length, and the student went back to her sewing machine and finished the hem. Throughout the course of the semester, I observed each student working on garments that eventually were to appear in their student run fashion show.

I was in the classroom the week before the fashion show. The students were working on their final collections for the semester and had already finished their garments for the spring fashion show. The garments were 'show-ready' and were hanging on a rack pinned with the names of each of the student models who would wear them. The teacher smiled as I admired them. She picked up a pair of pants and chiffon blouse and spoke enthusiastically about the quality and care the student put into making this particular ensemble. As I took pictures of the garments, I was amazed at each garment's quality. The seams were perfectly aligned, the zippers were closing properly, and the hems and linings were finished professionally. I did one extra classroom visit to this class to photograph the student finished product for their fashion show.

Classroom 5

This teacher used technology, such as Pinterest, and visual culture references to teach idea generation and conceptualization in this classroom. Some of the scaffolding strategies used in this class were PowerPoint with academic language and visual aids to teach vocabulary, discussion activities and giving the students time to talk. The student activities I observed in this classroom were color boards and trend boards.

I first observed the teacher using magazines to help students look for new ideas for their projects. The students had already finished their color boards for this assignment. They were given an individual laptop to go to Pantone's website and find out what colors would be used for this season. Through the use of technology, students quickly found that the Pantone color for 2014 was Radiant Orchid. Students were then instructed to create color boards that combined this years' color with two schemes, which they could pick. Most students chose analogous and monochromatic schemes. The color wheel had been discussed in a previous class. Student color boards showed varying shades of yellow for the complementary color, varying shades of violet adjacent to the orchid color for the analogous color, and varying shades of orchid for the monochromatic scheme. Some students went to Pinterest to get more ideas and some just started chopping or adding to them. I was in the classroom for the final presentations. The students discussed how they found their examples of the color trends through the use of technology. From this assignment, student needed to create different color schemes; analogous, split-complementary and monochromatic were the predominant themes in the student illustration boards.

Classroom 6

In this classroom, the teacher used visual culture references, such as Pinterest, and laptop technology to teach idea generation and conceptualization and to help the students refine their ideas. The student activities I observed in this classroom were Trend boards. In one particular lesson, I observed the teacher helping students look on Pinterest for new ideas for their projects. The students were seated at their desks and had individual laptops because the district is moving toward the concept of "blended learning" an environment that combines digital content, collaboration and personalization in the learning environment (edvation, 2014). The students created trend boards that showcased some of their findings from Pinterest.

On day 2 of four visits to this classroom, I observed an activity that helped students discover what size they were and how to alter their patterns to fit their particular shape or build. For this particular lesson, the teacher used technology and YouTube videos to help explain this lesson on sizing and teach conceptualization. From there, the students were required to go to stores to buy commercial patterns that they used to create the foundation for their projects. The teacher explained,

> there are too many students to teach this to, and if they gather around a table, not everyone is going to be able to see the process; the video allows everyone to see the process and I can check to see if they get it, simply by looking around the room at their faces. The teacher discuses with me the importance of the design process and experimentation.
>
> Take t-shirt design. One of the projects we do in this class is re-purposing t-shirts, or shoes. They need to see how this fabric is going to lay. Another project is for their final, they need to create some sort of fitted garment. A fitted garment to me is a pencil skirt or a nice skirt but some of them are into cosplay[11] and they may create something more along the lines of a costume. As long as it fits the general requirements, I'm okay with that. So, overall, my role is to help them take that visual they have in their mind and

[11] Cosplay, short for costume play, is the "practice of dressing up as a character from a movie, book or video game from Japanese genres of manga and anime" (Urban dictionary, 2014).

> make it a project they can actually handle. They may love the dress on the pattern envelope but they don't understand it's a process. They need to experiment with the fabric; for some of them their best friend is their seam ripper.

Classroom 7

This teacher used references of visual culture reference; digital technology, specifically interMedia in the form of an embroidery machine; and guided practice to teach idea generation and conceptualization. The teacher used academic language and visual aids to teach vocabulary about interMedia and modeled open dialogue, giving students time to talk about the process among themselves and with the teacher. The student activities I observed in this classroom were avatar embroideries. Some of the scaffolding strategies the teacher used in this class to teach technical skills were guided practice and demonstrations.

On my third of four visits to this classroom, I observed the teacher instructing students on how to use the new interMedia (digital media combined with traditional art-making). She explained how she had just received this new piece of technology and was very excited to have it in her classroom. In this lesson, the teacher gave a brief demonstration to selected students on how to create an avatar on an iPad device that would then be transferred to an embroidery machine where the designs would be created in thread onto fabrics. She did this over a period of several days so small groups of students could ask questions during the demonstration. Her demonstration included showing students how to draw the avatar on the iPad and threading the embroidery machine with the colors they wanted their avatar to have. Students added colorful highlights to their hair as well as beaded necklaces, scarves and earrings as accessories. After her demonstration, I observed a student create her avatar and then email the avatar to the teacher. The teacher then downloaded it onto a flash drive, and this was connected to the embroidery

machine. Once that process was completed, I observed the avatar being created on the embroidery machine. This particular student had used several colors and had to change threads for each different color so the process took a while.

Another student created her avatar on her iPad and then emailed it to the teacher. The teacher then put it onto a flash drive and downloaded the image onto the embroidery machine. The embroidery machine identified the image, but students had to pick colors for each aspect of their avatar. In this case, the student chose brown for her hair but added highlights of yellow and purple. She then chose a medium rust for the necklace and a dark rust for the scarf. This process took most of the period, as the threads needed to be individually pulled through the embroidery machine when the colors were changed. The finished projects were individually framed and put into the display case in the hallway. I observed these on my last visit to the classroom.

In my interview with this teacher, she noted how the process of idea generation occurs through scaffolding and conceptualization.

> In the beginning stages I am the facilitator, but as they get into the process, I become more of a mentor, a guide for them because I don't want to give them parameters or restrictions to stifle their creative process. I may show them previous examples but I try to limit that because I don't want them to just copy what's been done before. Sometimes it is general for them. We cover color theory, the purpose of color, and we went through different color themes. They have to think through their process; it's more about problem solving and critical thinking.

This teacher helped them work through their color choices by draping fabrics across different skin tones. She used yellow as an example. "Here you can see, this color washes me out." And from there they have a discussion, about "how different colors look better with different skin tones." The teacher stressed how important the experimentation is to the process, especially through digital technology: "They can make a change in their color choice or their thread, and we've talked already about that color choice. For example, I draped yellow next to my face and

showed them how it made me pale. They have to think through their color choices, because not every color is going to work with every skin tone."

Classroom 8

The activities I observed in this class were student color boards, student inspiration boards, student finished garments, and a student organized fashion show. This students in this class were working on paper dresses when I visited their classroom. The teacher explained she did not do any instruction for this activity. She expected students to come to the class already with the knowledge needed to conceptualize a dress out of newspaper and duct tape. I first observed the teacher using magazines to help students look for new ideas for their projects. Students were still working on their color boards for this assignment. Students were given an individual laptop to start searching for this year's fashion color. Like Classroom 5, students were instructed to go Pantone's website and find out what colors would be used for this season. Students quickly found that Pantone's color for 2014 was Radiant Orchid. Students were then instructed to create color boards that combined this year's color with three schemes: a complementary color, an analogous color, and finally a split-complementary color. There was some discussion among students about the split-complementary colors but eventually students used colors on either side of the orchid to come up with their split-complementary scheme. Students created their color boards that showcased some of their findings from magazine pictures. Those students who had finished their color boards continued working on finding images to create garments for their CROCIs. Students were designing garments on CROCIs to be worn at the Oscars. These designs were transferred to illustration paper.

Classroom 9

This teacher used guided practice as an instructional strategy to help students create projects. The activities I observed in this class were finished garments for a student produced fashion show. Students started this assignment by drawing their ideas for the garments onto paper. Inspiration boards were created, and students used CROCIs to sketch out their ideas for their garments. Throughout the class, I observed students sitting at the sewing machines working on their garments. Students individually went up to the teacher to ask questions about problems they were having. Within the classroom, students were finishing up their garments for the show. In this classroom, no formal instruction had been given to students about how to create their sketches, but I assumed students already had a basic knowledge of drawing and sewing since students are required to take Fashion 1 (the prerequisite for this class) prior to the Fashion 2 class. Students were able to visually represent the technical aspects of their design (i.e., where zippers and darts went onto their designs) through their sketches.

In this class, I observed the teacher helping the students finish their garments for their upcoming annual fashion show. To start this process, the teacher had already created dresses made from newspaper. This allowed them to understand the pattern making process. Students used scissors and colored duct tape to manufacture these paper garments. I did not observe this activity, but I did see the paper dresses that were still hanging on mannequins when I first observed in this classroom. The garments for the fashion show were in various stages of production: most students had already finished their projects since the fashion show was the next week, but some were still putting in zippers.

The students shared their creative process with me: how they first created CROCIs of the garment, then went to the fabric store to find appropriate fabrics to use for their final product,

and finally, completed the sewing process. Their fabric choices were based on drape and personal color choices. I asked students how they chose their fabrics, and all of them said they had purchased commercial patterns and just "followed the instructions for suggested fabrics." They also felt that because they already had taken the "prerequisite class for this class where they learned about fabrics and textiles, they were prepared to make these decisions." Additionally, several of them had added design elements of whimsy within their designs. One student chose a heavy gold metallic zipper in her cotton seersucker dress because she "liked the idea of it standing out, even though the pattern called for an invisible zipper." Another had found a pleated ribboning that embellished the neckline and hem of the garment, a design element she "just really loved and had to have on the dress." The teacher also talked about experimentation with both design and fabrics. She said she just let them go. She did not want to stifle their imagination, but she reined them in "if there was a fabric that I knew wasn't going to work with the design of the garment."

I also observed the student-produced fashion show that featured the works created and sewn by the students in the class. For this fashion show, the teacher used guided practice to aid students in manufacturing their finished products. The garments were modelled by classmates chosen by the students who were creating them. In the weeks leading up to the fashion show, students had fittings with their models. The teacher explained that fittings were very important to the success of the garment. "The students need to know that their closures like a zipper work, for example, so things don't fall off the models during the show or so they don't have problems putting the clothes on back stage, when things are so hectic." The teacher used guided practice to ensure these garments worked properly.

Classroom 10

This teacher used guided practice as an instructional strategy for creating student projects. The student activity I observed in this classroom was the creation of tailored jackets or shirts. The room was set up much like a designer's atelier. There were several fitting rooms and cutting and sewing stations. I followed the students' design process for several days while they created the tailored jackets or shirts.

The activity started out with a class field trip to Hart Shaffner Marx, a local company known for creating well-made tailored jackets for men. The company donated all the fabric for this project, so students did not have to buy anything. This was their final project for the class and, therefore, students were in various stages of the design process. Only two students had completed their jackets. Nevertheless, the process the students and teacher followed is important to note here. The students experimented with techniques needed to create lapels, pockets, and closures such as button holes and plackets. One student was laying out the paper pattern on the fabric. I asked the student if she had any frustrations. She showed me the pattern and said she had purchased it at a fabric store. The pattern had suggested the fabric she should use for this particular pattern, and the student admitted that she had followed the recommendation. She said she had a difficult time with it though, since it "was the first time she had worked with the fabric." Some students were working on lapels, while others were ripping out seams and re-doing some of the things that caused problems in their garments.

The teacher said she used guided practice to help each student with his/her garment. She answered questions as the students laid out their garments onto production tables and told each student how to achieve the desired result. This guided practice was important to the students' creative process. I observed students fitting each other and the teacher walking around to each

student checking final fit. Student 1 had an issue with her lapels. They were not laying properly, and the teacher told her to turn it inside out to find the problem. Upon further inspection, the teacher recognized that the student had not cut her notches out and, therefore, the seams were not matching properly causing a bulkiness in the garment. Because of this, the collar would not roll properly. She instructed the student to rip out her seams in that one area and re-stitch them.

Classroom 11

The teacher used visual culture references to teach idea generation. The teacher began the day's lesson with a bell ringer. The bell ringer as well as the day's activities were displayed on a PowerPoint screen shot behind her. Since this observation was conducted the day after St. Patrick's Day, the bell ringer asked students to reflect on how they celebrated St. Patrick's Day with their families. The class was comprised of 18 students, of whom were two were males. Students got into pairs and chatted for about three minutes and then discussed the findings as a group. Most of the students had participated in some form of shopping adventure for St. Patrick's Day and that was discussed.

On this day, students presented Client Illustration Boards. The students had been given the problem of designing for a specific client's body type and had to choose a silhouette that would hide any flaws of that particular body type. Students then created fashion sketches and fabric mock-ups for the silhouette and presented their ideas to the class. I observed three student presentations. Student 1 had chosen the actress Jennifer Aniston as her client. She explained how Jennifer Aniston was soon to be married and how she had designed a dress for her. She explained her search for a simple A-line silhouette that would take emphasis off her hips. Her display included a PowerPoint that showed her creative process and how she experimented with three

different designs before she landed on the A-line silhouette. She addressed Aniston's body flaws and showed her inspiration for her piece. Inspiration came from several different sources, but mostly the internet. The teacher explained to the class that this project would help them in their job search.

Classroom 12

This teacher used PowerPoint, YouTube videos, worksheets, and "giving students the time to talk" to teach idea generation and conceptualization. Garments were not produced in this class; however, some of the finished student activities included compiling a swatch book of textiles and creating Fashion Trend Boards and a final project that consisted of 3-D Retail Stores made from shoeboxes and cardboard to promote idea generation. The room was decorated with past student work that included the retail stores and trend boards. There were no mannequins, sewing machines or dressing rooms within the classroom, as this class was used to teach more about merchandising methods than idea generation. The teacher used a book called *Fashion Marketing* (2002). Within the book, there is a unit on design process. For the purpose of this research, I observed the projects done in connection with this unit as well as some done in connection with their retail store project.

On Day 1 of four visits to this classroom, I observed the teacher greeting students at the door and handing out copies of the PowerPoint and a chapter study guide for the new unit they were starting that day. Once students were seated, the teacher allowed the students who had not yet presented their Trend Boards of fads in fashion extra class time to do so. In this project, the students researched the latest trends in fashion and discussed where these trends came from. Several students presented trends that had come back in style, such as the fanny pack that "peaked in popularity during the 80s, as people used them mostly for carrying important items

like keys and money to the gym. They recently showed up again on the runways as fashion accessories in 2012." Other styles presented were the flapper style of the 1920s "and students referenced these styles seen in TV shows, such as the PBS series, *Downton Abbey* (2010-present) and the movie, *The Great Gatsby* (2013)" as well as backpacks, Poodle skirts from the 1950s, leggings form the 1980s and crocs from 2000. For creating their trend boards, the students had used the internet and social media networks such as blogs and Pinterest to research trends that appeared in the past and have come back into style. Most students found fashion websites and then searched for images to paste onto their boards. The classroom was equipped with its own laptop cart. Laptops were provided to each student, and the teacher policed their websites to make sure they stayed on task.

After students finished presenting their trend boards, the teacher had them "open their books to page 118" and had individual students read aloud paragraphs from the textbook. This particular unit focused on textiles in fashion. I observed the teacher doing a PowerPoint talk about where textiles come from and how garments are created. In this PowerPoint, there was a video on natural fibers. The teacher explained where these fibers come from and passed around swatches for students to see and feel. She talked about how each textile created different drapes. For this unit, students were assigned to create a swatch book of fibers. The PowerPoint was long and the class ended with only half of the slide deck reviewed. The teacher told the students they would finish the PowerPoint after their upcoming field trip to "The Store."

In creating their retail boxes, the teacher explained how visual merchandising is "intended to attract customers to the merchandise for closer examination and as a way to increase sales." Students were placed into teams of five; there were four groups. At the start of this project, the teacher handed out instructions to the students and discussed how the objective for

this project was to "create a diorama for a business." The diorama could be for a window display or a store layout, but each retail store should have three elements: store image, merchandise presentation, and display. For this assignment, the students needed to bring in a large cardboard box, fabric/cloth, small miniatures for store displays, and props for the exterior window display or store front layout. The teacher discussed the parameters of the assignment in more detail. "Once you choose your business, you need to purchase or find supplies to build your diorama. To build a diorama, use a large cardboard box, with the opening at one side. The display may depict either a window display or a store layout." This display should have an attractive background and floor covering. Your store name should be clearly identified. You should use a variety of props in your project (small miniatures can be purchased a local craft store in your area or you might have supplies at your homes). She explained that extra credit would be given for sound and light. If desired, she said it could be illuminated by a small electric light. Students used the technology to search store images, merchandise presentation and visual display.

I was in the classroom for the final activity day. Students were busy finishing up their display boxes. The teacher reminded them about the extra credit component of the boxes. "What are those?" The students shouted out "sound and light." The teacher wrote the words on the board and said, "Yes, if you use sound and light, you will receive extra credit." Students were very engaged in the process and were busy discussing the design elements of each store. I walked around the room and took pictures of each of the boxes. In my interview with this teacher, she talked about the importance of technology and visual culture. "Students spend the majority of their weekends shopping either online or at the local mall, so it's important to know how visual merchandising is used to create excitement and buzz for that retailer. It's something they don't think about, but it is part of their everyday experience, every day visual culture."

For both Research Question 2 and Sub-Question 2a, Table 6 was created to summarize the instruction strategies, student activities and learning outcomes for each classroom. This table also shows the number of hours I observed each of the teachers. The teachers used a variety of instructional strategies that included visual culture references, technology and guided practice to teach idea generation, conceptualization, and craftsmanship. Only three of the 8 observed teachers taught formal qualities of design. Four of the teachers used visual culture references to teach idea generation and conceptualization, and this instruction strategy was represented in 8 of the 12 classrooms. Four of the teachers used guided practice to teach technical skills and craftsmanship. The students created a variety of activities, which included CROCI sketches, Inspiration or Trend Boards, finished garments, Barbie doll fashions, AVATAR embroideries, student run fashion shows, key holder fabric chains patchwork garments as well as tailored jackets in these classes. These projects provided evidence of student understanding of the tasks at hand. The learning outcomes varied, but all of the classrooms observed had some form of successful learning outcomes for idea generation, craftsmanship and formal qualities.

This table helped to illuminate that teachers used instruction strategies that facilitated learning outcomes of idea generation, conceptualization and technical skills or craftsmanship in the individual classrooms similar to the fashion design professionals.

Table 6

Classroom Instruction Strategies, Student Activities and Learning Outcomes

Classroom	Hours Observed	Instruction Strategies	Student Activities	Learning Outcomes
1	10	Visual Culture references; PowerPoint; Laptops, Modeling, Open dialogue; Guided practice	CROCI sketches, Inspiration boards, Barbie dolls	Idea generation, conceptualization; Design resolution
2	14	PowerPoint technology; Visual culture reference; Field trips; Guided practice;	CROCI sketches	Idea generalization; Craftsmanship
3	10	Visual culture reference: PowerPoint; guided practice	Barbie dolls	Idea generation; conceptualization; design resolution
4	5	Visual culture reference: field trips to fashion shows; Guided practice	Finished garments	Idea generation; Technical skills; Craftsmanship
5	14	Visual Culture references: PowerPoint; Pinterest; Open dialogue	Color boards, Trend Boards	Idea generation
6	4	Visual culture reference: Pinterest, laptop technology	Trend boards	Idea generation
7	14	Visual culture reference: Pinterest; InterMedia technology; Guided practice	Avatar embroideries	Idea generation; Formal qualities; Craftsmanship
8	4	No instruction	Paper dresses	Conceptualization
9	6	Guided practice Visual culture reference: fashion show; technology	Finished garments	Technical skills; Craftsmanship
10	5	Field trip to Manufacturer; Guided practice	Tailored jackets	Technical skills; Craftsmanship
11	10	Visual culture reference: Pinterest technology	Client mock-up Illustration boards;	Idea generation; Conceptualization
12	8	Technology: PowerPoints, YouTube videos; visual culture reference: field trips to stores	Visual merchandising boxes	Idea generation; conceptualization

Teacher Background Data

For Question 2b and Sub-Question 2c, I conducted surveys that provided their background information. A total of nine teachers were surveyed regarding their education, background and experiences in teaching fashion at the secondary school level. The data collected showed that all of the teachers had prepared for teaching fashion at secondary schools by becoming certified first to teach Family and Consumer Sciences at secondary schools, which then led to endorsements for teaching fashion and apparel for grades 7-12.

Eight of the teachers said they had prepared for their teaching career by working first in the fashion industry. Only one teacher who participated in this study did not work in the fashion industry prior to teaching fashion design; all of the others had experience in working in the fashion industry in various capacities. Two of the teachers had owned fashion businesses prior to teaching at the high school where they now worked, and six of the teachers had worked as buyers for major fashion retailer, or selling designer brands to major retailers. Two of the teachers interviewed had taught fashion for more than 15 years. One teacher worked first in the fashion industry and then went back to school to receive her teaching degree in Home Economics. This discipline is now known as Family and Consumer Sciences at most universities and by most districts as the name was changed in 1993. It is also referred to Human Ecology by some universities.

All eight of the teachers held undergraduate degrees in Family and Consumer Sciences, previously known as Home Economics, and one of the teachers had some training in art and design and taught design related classes at a nearby university as an adjunct professor. Of the eight teachers surveyed, four of the teachers held Master's degrees in Education, and two held

Master's degrees in Curriculum and Instruction. One of the eight teachers held a doctorate. This doctorate was in Curriculum and Instruction.

For Research Question 3, (What relationship exists between design methodologies employed by fashion designers in the U.S. fashion industry and design methodologies taught by fashion teachers in select Illinois secondary schools?) I used the Constant Comparative Method to analyze the collected data in order to develop grounded theory. This process involved "breaking down the significant events" of the education and experiences of the designers and teachers and categorizing the data into categories (Glaser & Strauss, 1967, p. 28). Table 7 shows the similarities and differences between the education, backgrounds and experiences of the fashion design professionals and the teachers who taught fashion design in the secondary school classroom. As the data were collected, it became apparent that a fourth research question was needed to analyze the relationship between the design methods used by fashion professionals to create new fashion and the instruction methods used by teachers to teach design process and idea generation. Therefore, this component is discussed in greater detail in Research Question 4.

Table 7

Education, Background and Experiences of Fashion Design Professionals and Teachers

	Fashion Designers	**Teachers**
Education	Formal training in art and/or design; includes art classes that focused on creativity and effectively applying the formal qualities (elements and principles of design)	Formal training in Family and Consumer Sciences; Home Economics (this includes classes craftsmanship of fashion design or clothing construction; Includes Certification and endorsements in fashion design
Backgrounds	All of the designers had some interest in fashion throughout their lives, or for "as long as they could remember"	Teachers concentrated on curriculum and instruction and their backgrounds included preparing to teach classes that taught life skills over teaching design process
Experiences	Worked in fashion or design related industry before starting career as a fashion designer	All but one teacher had worked in the fashion industry prior to starting their teacher training as a fashion teacher

The table reveals that all of the fashion design professionals who participated in this study had formal training in art, while none of the secondary school fashion design teachers who participated in this study had formal training in art or design. While the fashion design professionals studied the elements and principles of design and learned how to effectively apply those to achieve resolution of a design problem, the teachers did not have this training. The teachers were instead trained in the discipline of Family and Consumer Sciences/Home Economics, and their training only included classes that pertained to the technical skills or craftsmanship needed to produce fashion garments. An analysis of the professional experiences revealed there were similarities in professional experience among the two groups. The collected data revealed that all of the fashion design professionals had worked in a fashion or design related industry before starting their current career as a fashion designer and all but one teacher had worked in a fashion related industry before starting their careers as teachers teaching fashion in secondary schools.

In this study, I was also interested in the overall quality of the student produced design work. For Research Question 4 and Sub-Question 4a, (Is there a measurable difference in the level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?), Sub-Question 4b, (Is there a measurable difference in the quality of the craftsmanship of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?), and Sub-Question 4c, (Is there a measureable difference of the effective application of formal qualities to the design problem of student design projects when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not?), two variables were identified and were

categorized: the independent variables—the teachers and the instruction strategies they used to teach design process in the classroom—and the dependent variables of the quality of the student activities. The collected data were further separated into classroom sets of student design works. Members of the panel of experts, which included an art teacher, a fashion professor, and a professor of art education, were each given a slide deck of images that included class sets of each of the projects students completed during this study as well as a matrix to assign scores for each of the individual projects. The panel graded each of the images and filled in the matrices. The criteria judges evaluated student work on the criteria of 1) creativity, 2) craftsmanship, or technical skills, and 3) effective application of the formal qualities to design resolution. While class sizes varied between 9-22 students, the panel of experts graded only completed student work for each class, for a total of 124 images.

The judges viewed the student work and ranked the projects for their overall success based on each of these criteria. Using averaging as a statistical analysis of variance, the graded classroom sets were each given individual mean scores for creativity, craftsmanship and effective application of formal qualities to achieve design resolution. The mean average scores in the following chart demonstrated that teachers using instructional strategies following the same steps fashion professionals used in their design process resulted in better quality of student produced work in the categories of Creativity' and 'Craftsmanship but not in the Effective Application of Formal Qualities To Achieve Design Resolution category.

ANOVA tests were performed to analyze the effect specific instruction strategies had on the quality of the student design work and specifically for each of the dependent variables of creativity, craftsmanship and design resolution. The results show the power of visual culture

reference as an instruction strategy as a way to improve creative output in the secondary school classroom.

Table 8 shows the results on the quality of creativity on student produced design work when an instruction strategy of visual culture reference is used to teach idea generation. The panel of judges ranked student design work higher, showing a mean score of 4.38 when visual culture reference was used as an instruction strategy to teach idea generation. When visual culture reference was not used, the mean score was 2.66. The significance level is .000, (p = .000) which is lower than .05, and therefore, there is a statistically significant difference in the mean scores of the student design work.

Table 8

ANOVA Test – Instruction Strategy of Visual Culture Reference on Creativity

Descriptives

Creativity

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	1	2.6600	.	.	.	.	2.66	2.66
yes	11	4.3873	.32726	.09867	4.1674	4.6071	3.50	4.71
Total	12	4.2433	.58821	.16980	3.8696	4.6171	2.66	4.71

ANOVA

Creativity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.735	1	2.735	25.535	.000
Within Groups	1.071	10	.107		
Total	3.806	11			

Table 9 shows the results on the quality of creativity of student produced design work when an instruction strategy of technology is used to teach idea generation. The panel of judges ranked student design work higher, showing a mean score of 4.49 when technology was used as

an instruction strategy to teach idea generation. When technology was not used, the mean score was lower at 3.49. The significance level is .004, (p = .004), which is lower than .05, and therefore, there is a statistically significant difference in the mean scores of the student design work.

Table 9

ANOVA Test - Instruction Strategy of Technology on Creativity

Descriptives

Creativity

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	3	3.4967	.83500	.48209	1.4224	5.5709	2.66	4.33
yes	9	4.4922	.15056	.05019	4.3765	4.6080	4.28	4.71
Total	12	4.2433	.58821	.16980	3.8696	4.6171	2.66	4.71

ANOVA

Creativity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.230	1	2.230	14.152	.004
Within Groups	1.576	10	.158		
Total	3.806	11			

Table 10 shows the results on the quality of creativity on student produced design work when an instruction strategy of guided practice is used to teach idea generation. The panel of judges ranked student design work only slightly higher, showing a mean score of 4.28 when guided practice was used as an instruction strategy to teach idea generation. When guided practice was not used, the mean score was lower at 4.21. The significance level is .843, (p = .843), which is higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 10

ANOVA Test - Instruction Strategy of Guided Practice on Creativity

Descriptives

Creativity

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	7	4.2129	.70417	.26615	3.5616	4.8641	2.66	4.71
yes	5	4.2860	.45142	.20188	3.7255	4.8465	3.50	4.63
Total	12	4.2433	.58821	.16980	3.8696	4.6171	2.66	4.71

ANOVA

Creativity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.016	1	.016	.041	.843
Within Groups	3.790	10	.379		
Total	3.806	11			

Table 11 shows the results on the quality of craftsmanship on student produced design work when an instruction strategy of visual culture reference is used to teach technical skills or craftsmanship. The panel of judges ranked student design work slightly higher, showing a mean score of 3.10 when visual culture reference was used as an instruction strategy to teach craftsmanship. When visual culture reference was not used, the mean score was lower at 2.66. The significance level is .523, (p = .523), which is higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 11

ANOVA Test - Instruction Strategy of Visual Culture Reference on Craftsmanship

Descriptives

Craftsmanship

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	1	2.6600	.	.	.	.	2.66	2.66
yes	11	3.1091	.64930	.19577	2.6729	3.5453	2.40	4.33
Total	12	3.0717	.63251	.18259	2.6698	3.4735	2.40	4.33

ANOVA

Craftsmanship

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.185	1	.185	.439	.523
Within Groups	4.216	10	.422		
Total	4.401	11			

Table 12 shows the results on the quality of craftsmanship on student produced design work when an instruction strategy of technology is used to teach technical skills or craftsmanship. The panel of judges ranked student design work slightly higher, showing a mean score of 3.14 when technology was used as an instruction strategy to teach craftsmanship. When technology was not used, the mean score was lower at 2.866. The significance level is .543, (p = .543), which is higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 12

ANOVA Test - Instruction Strategy of Technology on Craftsmanship

Descriptives

Craftsmanship

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	3	2.8667	.18148	.10477	2.4159	3.3175	2.66	3.00
yes	9	3.1400	.72170	.24057	2.5853	3.6947	2.40	4.33
Total	12	3.0717	.63251	.18259	2.6698	3.4735	2.40	4.33

ANOVA

Craftsmanship

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.168	1	.168	.397	.543
Within Groups	4.233	10	.423		
Total	4.401	11			

Table 13 shows the results on the quality of craftsmanship of student produced design work when an instruction strategy of guided practice is used to teach technical skills or craftsmanship. The panel of judges ranked student design work higher, showing a mean score of 3.40 when guided practice was used as an instruction strategy to teach technical skills or craftsmanship. When guided practice was not used, the mean score was lower at 2.83. The significance level is .129, (p = .129), which is higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 13

ANOVA Test - Instruction Strategy of Guided Practice on Craftsmanship

Descriptives

Craftsmanship

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	7	2.8343	.31015	.11723	2.5474	3.1211	2.41	3.33
yes	5	3.4040	.84807	.37927	2.3510	4.4570	2.40	4.33
Total	12	3.0717	.63251	.18259	2.6698	3.4735	2.40	4.33

ANOVA

Craftsmanship

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.947	1	.947	2.741	.129
Within Groups	3.454	10	.345		
Total	4.401	11			

Table 14 shows the results of the quality of creativity on student produced design work when an instruction strategy of visual culture reference is used to teach Design Resolution. The panel of judges ranked the student design work higher, showing a mean score of 3.40 when visual culture reference was used as an instruction strategy to teach Design Resolution. When visual culture reference was not used, the mean score was slightly lower at 2.75. The significance level is .382, (p = .382), which is higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 14

ANOVA Test - Instruction Strategy of Visual Culture Reference on Design Resolution

Descriptives

FormalQual

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	1	2.7500	.	.	.	.	2.75	2.75
yes	11	3.4064	.68738	.20725	2.9446	3.8681	2.33	4.52
Total	12	3.3517	.68223	.19694	2.9182	3.7851	2.33	4.52

ANOVA

FormalQual

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.395	1	.395	.836	.382
Within Groups	4.725	10	.472		
Total	5.120	11			

Table 15 shows the results of the quality of design resolution on student produced design work when an instruction strategy of technology is used to teach Design Resolution. The panel of judges ranked student design work higher, showing a mean score of 3.56 when technology was used as an instruction strategy to teach Design Resolution. When technology was not used, the mean score was slightly lower at 2.72. The significance level is .059, (p = .059), which is slightly higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 15

ANOVA Test - Instruction Strategy of Technology on Design Resolution

Descriptives

FormalQual

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	3	2.7200	.37590	.21703	1.7862	3.6538	2.33	3.08
yes	9	3.5622	.63651	.21217	3.0730	4.0515	2.60	4.52
Total	12	3.3517	.68223	.19694	2.9182	3.7851	2.33	4.52

ANOVA

FormalQual

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.596	1	1.596	4.529	.059
Within Groups	3.524	10	.352		
Total	5.120	11			

Table 16 shows the results on the quality of design resolution on student produced design work when an instruction strategy of guided practice was used to teach the formal qualities. The panel of judges ranked student design work higher, showing a mean score of 3.68 when technology was used as an instruction strategy to teach idea generation. When technology was not used, the mean score was lower at 3.11. The significance level is .157, (p = .157), which is higher than .05, and therefore, there is not a statistically significant difference in the mean scores of the student design work.

Table 16

ANOVA Test - Instruction Strategy of Guided Practice on Design Resolution

Descriptives

FormalQual

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no	7	3.1114	.64478	.24371	2.5151	3.7078	2.33	4.00
yes	5	3.6880	.64337	.28772	2.8892	4.4868	3.00	4.52
Total	12	3.3517	.68223	.19694	2.9182	3.7851	2.33	4.52

ANOVA

FormalQual

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.970	1	.970	2.336	.157
Within Groups	4.150	10	.415		
Total	5.120	11			

Table 17 shows the instructional strategies teachers used in each classroom, the student design work produced within that classroom and the grades the panel of experts assigned to each of the student produced design works. ANOVA tests were used to test the quality of the student work against the rankings of three judges by criterion (creativity; craftsmanship and effective application of formal qualities to achieve design resolution), and classroom sets were assigned an overall grade for each from the panel of judges. The rankings were then placed into the columns aligned with the instruction strategies the teachers used to teach idea generation, conceptualization, refinement of ideas, and technical skills. This was done for each classroom.

The collected data suggested that teachers who used instruction strategies that included visual culture reference to teach idea generation and conceptualization generated higher quality student design work than those who did not. Classrooms 1-7 and Classrooms 10-12, which used visual culture reference and technology to teach idea generation and conceptualization achieved

scores of 4.28 or higher in creativity whereas Classroom 8 where no instruction was used to teach idea generation and conceptualization, achieved scores of 2.66 in creativity.

The collected data suggested that teachers who used instruction strategies that included guided practice to teach craftsmanship or technical skills generated higher quality student design work than those who did not. Classroom 5 and Classroom 7, which used guided practice to teach craftsmanship achieved scores of 4.33 and 4.25, respectively whereas Classrooms 2, 3, 6, 8 and 11 received lower scores ranging from 2.4 – 2.94 in craftsmanship. The collected data also suggested that teachers who used instruction strategies that included all three instruction strategies of visual culture reference, technology and guided practice generated higher quality student work than those who did not for all three criteria, as indicated in Classrooms 5 and 7.

Table 17

Instructional Strategies and Classroom Sets of Student Design Work

Classroom	Instruction Strategies	Student Activities	Learning Outcomes	Creativity Scale 1-5	Craftsmanship Scale 1-5	Formal Qualities[12] Scale 1-5
1	PowerPoint technology, Modeling, Visual Culture, Open dialogue	CROCI sketches	Idea generation, conceptualization; Formal Qualities	4.6	3.33	2.6/4.5
2	PowerPoint technology, Field trips;	CROCI sketches	Idea generalization; Conceptualization	4.46	2.4	3.0/4.6
3	ELMO technology; Burn Lab; Draping; Formal Qualities	Barbie dolls	Conceptualization; Experimentation	4.33	2.66	4.0
4	Field trips to fashion shows; Guided practice	Finished garments	Technical skills; Craftsmanship	4.34	3.04	3.84
5	Visual culture references; PowerPoint Open dialogue; Guided practice	Trend Boards	Idea generation; Conceptualization; Technical skills; Formal Qualities	4.5	4.33	4.0

Continued on next page

[12] The number on the left indicates an average score of two art educator raters. The score on the right is the score given by the fashion educator. These two were separated to show the difference in scores.

Table 17 cont. from previous page

6	Pinterest, laptop technology	Inspiration journals	Idea generation	4.58	2.41	2.56/4.5
7	Visual culture; InterMedia technology; Guided practice	Self-identity Avatar embroideries	Idea generation; Formal qualities; Craftsmanship	4.63	4.25	4.52
8	No instruction	Paper dresses	Conceptualization	2.66	2.66	2.5/3
9	Guided practice	Finished garments: Key holders	Technical skills; Craftsmanship	4.71	2.74	2.9/4.6
10	Field trip to Manufacturer; Guided practice	Tailored jackets (unfinished)	Technical skills; Craftsmanship	3.5	3.0	3.08
11	Instructional strategy not observed	Client mock-up Illustration boards;	Idea generation; Conceptualization	4.33	2.94	2.33
12	PowerPoints, YouTube videos; visual culture; Field trips to stores	Visual merchandising boxes	Idea generation; conceptualization	4.28	3.1	3.7/4.3

For Research Question 4 and to determine Inter-rater Reliability of the judges, a Pearson Correlations test was performed on the overall agreement among the three raters of all three criteria categories and then on the overall agreement of the three raters on each of the individual criteria categories. In Table 18, Correlations to the Means Score, it is implied that there is high agreement between the three raters when it comes to creativity, craftsmanship, and effective resolution of formal qualities of design. The following printout revealed that the strength of association among the variables was high ($r = .748$ for Creativity; $r = .723$ for Craftsmanship and $r = .699$ for Effective Application of the Formal Qualities to Design Resolution) and that the correlation coefficient was significant where $p < 0.01$.

Table 18

Correlations to the Mean Scores

		AveCreate	AveCraft	AveRes
AveCreate	Pearson Correlation	1	.748**	.699**
	Sig. (2-tailed)		.000	.000
	N	124	124	124
AveCraft	Pearson Correlation	.748**	1	.723**
	Sig. (2-tailed)	.000		.000
	N	124	124	124
AveRes	Pearson Correlation	.699**	.723**	1
	Sig. (2-tailed)	.000	.000	
	N	124	124	124

**Correlation is significant at the 0.01 level (2-tailed).

For Research Question 4a, a separate Pearson Correlations test was conducted on completed student design works to determine whether there was a measurable difference in the level of Creativity in student design products when teachers use instruction strategies that followed the design methodology of fashion professionals compared to those who do not.

In Table 19, Pearson Correlations of Creativity, it is also implied that there is high agreement among the three raters when it comes to creativity. The printout revealed that the strength of association among the variables is high ($r = .781$) and that the correlation coefficient is significant where $p < 0.01$.

Table 19

Pearson Correlations of Creativity

		CreativityA	CreativityB	CreativityC
CreativityA	Pearson Correlation	1	.638**	.615**
	Sig. (2-tailed)		.000	.000
	N	119	119	119
CreativityB	Pearson Correlation	.638**	1	.781**
	Sig. (2-tailed)	.000		.000
	N	119	119	119
CreativityC	Pearson Correlation	.615**	.781**	1
	Sig. (2-tailed)	.000	.000	
	N	119	119	119

**Correlation is significant at the 0.01 level (2-tailed).

For Research Question 4b, a separate Pearson Correlations test was conducted on completed student design works to determine whether there was a measurable difference in the level of craftsmanship in student design products when teachers use instruction strategies that followed the design methodology of fashion professionals compared to those who do not. In Table 20, Pearson Correlations of Craftsmanship, it is also implied that there is high agreement among the three raters when it comes to craftsmanship. The printout reveals that the strength of association among the variables is high ($r = .762$) and that the correlation coefficient is significant where $p < 0.01$.

Table 20

Pearson Correlations of Craftsmanship

		CraftA	CraftB	CraftC
CraftA	Pearson Correlation	1	.678**	.670**
	Sig. (2-tailed)		.000	.000
	N	123	123	123
CraftB	Pearson Correlation	.678**	1	.762**
	Sig. (2-tailed)	.000		.000
	N	123	123	123
CraftC	Pearson Correlation	.670**	.762**	1
	Sig. (2-tailed)	.000	.000	
	N	123	123	123

**. Correlation is significant at the 0.01 level (2-tailed).

For Sub-Question 4c, a separate Pearson Correlations test was conducted on completed student design works to determine whether there was a measurable difference in the level of effective application of formal qualities to achieve design resolution in student design products. Table 21, Pearson Correlations on Effective Application of Formal Qualities to Design Resolution, reveals that art educators, where r = .400 and .446, ranked the effective application of the formal qualities to achieve design resolution much lower than the fashion professor judge where r = .714. This implies that the experience of the expert panel leads to an explanation of the variances in the different perceptions of student designed work, especially when it comes to effective resolution of the formal qualities since a fashion professor would not have the same training in the formal qualities of design as an art educator or a professor.

Table 21

Pearson Correlations of Effective Application of the Formal Qualities to Achieve Design Resolution

		ResolutionA	ResolutionB	ResolutionC	AverageRes
ResolutionA	Pearson Correlation	1	.611**	.276**	.400**
	Sig. (2-tailed)		.000	.002	.000
	N	123	123	123	122
ResolutionB	Pearson Correlation	.611**	1	.333**	.446**
	Sig. (2-tailed)	.000		.000	.000
	N	123	123	123	122
ResolutionC	Pearson Correlation	.276**	.333**	1	.714**
	Sig. (2-tailed)	.002	.000		.000
	N	123	123	123	122
AverageRes	Pearson Correlation	.400**	.446**	.714**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	122	122	122	124

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 5 further illuminates the disparity among raters when it comes to the effective application of the formal qualities to achieve design resolution, showing there is greater Inter-Rater agreement among the three raters on Creativity and Craftsmanship but lower agreement among the art educators and fashion educator when it comes to Effective Application of The Formal Qualities to Achieve Design Resolution.

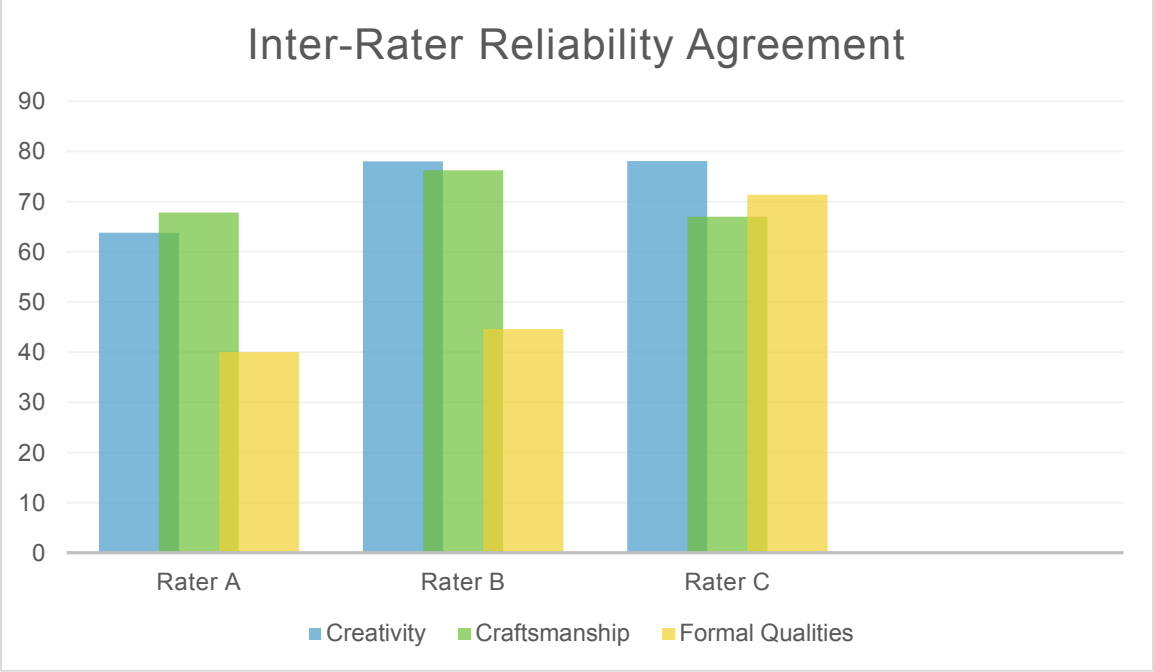

Figure 5. Inter-rater reliability agreement.

Summary and Connections with Other Data

The teachers used idea generation strategies that took into account visual culture references, technology and personal and every day experiences for inspiration. These instruction strategies appeared to foster greater creativity in the classroom. The teachers used guided practice to teach craftsmanship and technical skills. The teachers who use guided practice and experimentation as instruction strategies to teach craftsmanship fostered greater evidence of technical skills in their student work. The descriptive data were analyzed by conducting an inter-rater reliability test in which a panel of judges rated student work based on craftsmanship.

Much like the design process of the fashion design professionals, the data collected from the classrooms suggested that visual culture reference, technology, experimentation and guided practice play important roles in student understanding of design process. The teachers who

employed instruction strategies of visual culture reference, technology and guided practice enabled students to generate ideas, conceptualize, and test their design ideas and appeared to suggest a greater evidence of higher quality student produced work.

CHAPTER 5

DISCUSSION OF THE FINDINGS

The purpose of this research was to determine whether the practice and knowledge of fashion design professionals could inform secondary school art curriculum and enhance the teaching practices of secondary school design educators. A summary of the findings, interpretation of the findings, implications for educational practice and suggestions for further research are presented in this chapter.

Summary of the Findings

From the research questions, the following themes emerged:

The practice and knowledge of fashion design professionals can enhance the teaching practice of secondary school design educators. The collected data suggested that teachers who used instruction strategies following the design methodologies of fashion design professionals appeared to foster greater evidence of higher quality student produced design work. The collected data supported how this theory was formulated through a mixed methods approach using both qualitative and quantitative data.

For question 1, (what design methodologies do selected fashion designers follow in the conceptualization, production, and refinement of their fashion designs), my findings appear to suggest that *fashion professionals generate and conceptualize their ideas through visual culture references.* And while the field of art education has always heavily relied on a design process

model that is somewhat linear in its approach, my research indicates a different and more dynamic Design Process Model that is more closely aligned with real world practice. While previous design process models have been revised over the past few decades to include design thinking, empathy and reflection, the overall approach continues to use the same linear visual representation of its predecessors. My research showed that fashion designers take inspiration for their innovative fashion from visual culture reference, their personal experiences, and the world around them. The specific design process fashion design professionals employed is not found in these traditional design process models. And while most design process models follow specific steps for idea generation that include brainstorming, testing and problem solving, my research did not show that. On the contrary, fashion designers generated their ideas through everyday personal experiences and specific visual culture references. Design process models clearly need to be updated to include visual culture reference.

For question 1 b, (how do fashion designers refine, test, and judge their design ideas), my findings appeared to suggest that fashion designers refine their ideas through experimentation with techniques, fabrics and human form. Ideas are refined through pattern making and technical skills that involve the designer's personal knowledge of artistic practice, craftsmanship, fabrics and materials and the formal qualities of art and design. Human form plays an active role in design conceptualization as the designer works through the manufacturing process on human form of individual clients. It appears again that Design Process Models need to be revised to include visual culture reference since ideas are generated through visual culture reference. Traditional design process models in my literature review do not acknowledge visual culture.

For research question 1c, (what backgrounds and experiences do fashion designers need to achieve success in the fashion industry), my findings show that fashion design professionals

have formal training in art and design and the technical skills needed to produce highly crafted fashion garments.

For research question 2, (what instruction methods do selected Illinois fashion and art teachers employ to teach fashion design in secondary school classrooms), and question 2a, (how do fashion and art teachers teach idea generation in fashion design), my findings showed that not all teachers who teach fashion design in Illinois secondary school classrooms use instruction strategies that include visual culture reference, technology and guided practice to teach idea generation, craftsmanship and design resolution.

For research question 2b, (how do fashion and art teachers help students to refine, test, and evaluate their ideas), my findings appear to suggest that teachers use a variety of instruction strategies that employ visual culture reference, technology and guided practice to help students refine and test their ideas. Ideas are refined through guided practice and experimentation with materials and techniques in the design process. These instructional strategies expose students to a variety of tools, techniques, and materials so new ideas can be developed. By using visual culture reference and technology, students found things that interested them and generated new ideas.

For research question 2c, (what backgrounds and experiences do fashion teachers need to achieve successful student learning outcomes), my findings appear to suggest that fashion teachers did not have the same formal art and design training that fashion designers had but had equal training when it came to craftsmanship and technical skills needed to produce fashion garments as the fashion designers did.

For question 3, (what relationship exists between the design methods used by selected fashion design professionals and the design methodologies taught by art and fashion teachers in selected Illinois secondary school classrooms), the collected data showed there is a range of

differences between the education of fashion design professionals and teachers who teach fashion design within Illinois secondary schools. My collected data appeared to suggest that some teachers lacked the formal training in art and design and lacked the necessary training to teach design resolution in the secondary school classroom. Fashion design professionals clearly had formal training in art and design, yet teachers who taught fashion design in secondary school classrooms did not. The teachers did not have formal training in art and design, but instead prepared for teaching fashion design at the secondary school level by following coursework within Family and Consumer Sciences programs at select universities. A constant comparative analysis of the two groups implied that teachers lacked the knowledge and skill set needed to teach the formal qualities of design to secondary school students. The art and design training helped fashion design professionals to acquire the skill set and knowledge they needed to succeed in the fashion industry.

For question 4, (do instruction strategies employed by secondary school fashion design teachers, who follow the design methodology used by fashion professionals, produce higher quality student design projects than those who do not), the collected data suggested that teachers who were using instructional strategies using similar design methods fashion design professionals appeared to foster greater evidence of better quality student design work than those who did not. The collected data appeared to suggest that teachers who used instructional strategies following the design process of fashion professionals to teach craftsmanship and technical skills have students who produce better quality student design work. The collected data showed that teachers who were using instructional strategies of guided practice and technology similar to the design methods fashion design professionals used appeared to foster greater evidence of better quality student design work than those who did not.

For question 4a, (is there a measurable difference in the level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not), my findings appeared to suggest that there was a greater level of creativity in student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who did not.

For question 4b, (is there a measurable difference in the quality of the craftsmanship of student design products when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not), my findings appeared to suggest that there was a greater level of craftsmanship in student design products when teachers used instruction strategies that followed the design methodology of fashion professionals compared to those who did not.

For question 4c, (is there a measureable difference of the effective application of formal qualities to the design problem of student design projects when teachers use instruction strategies that follow the design methodology of fashion professionals compared to those who do not), my findings appeared to suggest that there was an overall greater level of design resolution in student design products when teachers used instruction strategies that followed the design methodology of fashion professionals compared to those who did not. There was overall inter-rater reliability agreement among the three raters on the quality of student produced design work when it came to creativity, craftsmanship and design resolution but there were variances between the three rater on inter-rater reliability among each of the separate classrooms. This raised the question of whether the experience of the panel of experts would explain variances in the different perceptions of student design work when it comes especially to design resolution since

the art educators will have different training from a fashion professor with regards to formal training of the formal qualities of the elements and principles of design. The population of judges used in this study is obviously very small so no conclusions can be drawn here, but this question is mentioned because it has potential for future research.

Implications of the Findings

Within this sample, it can be implied that

1. Fashion design professionals use visual culture references and experimentation in the generation and conceptualization of their fashion ideas. Ideas are generated through inspiration that comes through visual culture reference and their own personal experiences. Fashion designers also use historical, cultural and social references to generate ideas. Ideas are refined through experimentation of materials and through experimentation on the human form.
2. Fashion designers prepared for their fashion careers by studying art and design. My findings suggested that formal training in art and design provide fashion professionals with the practical knowledge and skill set needed to succeed in their chosen field.
3. Teachers use visual culture reference and students' personal experiences to help students generate new ideas. Ideas are refined through guided practice and experimentation with materials and techniques in the design process. Instructional strategies expose students to a variety of tools, techniques, and materials so new ideas can be developed. By using visual culture reference and technology, students found things that interested them and generated new ideas.

4. Teachers who used instructional strategies that included visual culture references and technology to teach idea generation appear to foster greater evidence of creativity in their student works. The descriptive data were analyzed by conducting an inter-rater reliability test in which a panel of judges rated creativity of student work. My findings suggested that teachers who were using instructional strategies to teach the design methods fashion design professionals used to create innovative fashion had student projects that scored higher in creativity than those who did not.
5. Guided practice is important for student success because students need to understand how to visually represent their ideas once they are generated. My findings suggest that teachers who use technology to teach craftsmanship appear too foster slightly higher quality student design work than those who did not use those instruction strategies.
6. Teachers who teach design-related curriculum in the secondary school classroom need to have more formal training in art and design. To teach fashion design at the secondary school level, teachers may need to have some formal type of training in art and design to ensure achieving greater student understanding of the formal qualities needed for effectively resolving design problems.
7. The teachers who used instructional strategies that included technology and guided practice to teach idea generation, craftsmanship or technical skills, and formal qualities fostered greater evidence of creative and technically crafted student projects.

Implications for Educational Research

This study contains implications that extend beyond fashion design and to all genres of design practices. Design education is interdisciplinary in nature as it is already finding a home in Next Generation Science and Common Core Math Standards ("Common Core," 2014). While Art education has been struggling with the balance between craft and creative concept development, we need to shift our thinking in this field and focus more on designed objects and material culture and thus position design more prominently in the national art curriculum. This research challenged the effectiveness of traditional instructional strategies used to teach design process within secondary school classrooms and demonstrates why teaching design process is important to promoting creative thought in the secondary school classroom. We need to rethink and revise teacher education to improve design teaching by paying attention to the practice of professional designers and rethink the traditional design models used in education.

Creating a culture of well-informed consumers and producers, who can consider the economic, social and environmental impact of their decisions, will be crucial to the success of our global economy. Research on fashion design offers students an additional way to understand the human experience, develop ideas, create solutions and become members of a community of decision-makers who will advance the continuing prosperity of global economic sectors. The arts help students develop capabilities for creating, understanding, deciphering, and appreciating an image- and symbol-laden world while bringing a cadre of expressive, analytical, and developmental tools that can be used in their daily lives, both now and for the future.

Schools and their communities need to strengthen design education as a content area and integrate all aspects of the arts into the secondary art curriculum to ensure that today's young

people become knowledgeable and skillful in a new visual and material culture age (Freedman, 2007). Because real-life problems have contexts that may differ from the learning context, students should also be able to transfer knowledge and skills they learned at school to new situations and become competent in applying the knowledge in their worlds beyond the school walls (Dijkstra, 2001). Design education allows for that process. Does fashion really belong in Family and Consumer Sciences? If we are trying to educate students to become design professionals, they need to do more than just operate a sewing machine. In secondary schools, educators are teaching students to learn about the process of making, and this in turn develops the habit of mind needed to become designers. The quality of learning will be better if students learn to think like a designer.

It is through fashion that students can understand the human experience, express their personal identities, communicate through creative expression, problem solve and make decisions in situations in which there are no standard answers. Whether fashion is used as a means for displaying beauty, provoking meaning, or creating controversy, fashion, as a form of art, is everywhere and is worth investigating for art and design's sake. By looking at the knowledge and skill set of fashion designers, the findings suggest there is power to the argument to include visual culture reference, as well as technology and guided practice when teaching design process. These strategies will provide the secondary art educator with improved teaching strategies to enhance student learning outcomes and assist with the promotion of creative thought in the secondary school classroom.

Suggestions for Future Research

The following studies are suggested for future research:

1. A study to investigate the reasons why secondary school students cannot effectively apply the formal qualities of design to resolve design problems in their design work resulting in a tendency to produce lower quality design work.
2. A study to investigate the training that design teachers are given when teaching secondary school students the formal qualities of the principles and elements of design.
3. A study to investigate the difficulties students have during the idea generation development stage of design.
4. A study investigating new ways to solve existing design problems. Most of the studies to date have focused on design methodologies within industrial design, in architecture, or at the built environment. This is largely due to the requirements of societies after World War II. However, due to a newfound shortage of resources since this time, studies have given way to the creation of new ways for solving existing problems. Future studies in other design disciplines may benefit from the experience and progress made from these previous discussions.
5. A study to investigate the difference between the traditional design process models used to teach design process and new design process models that can be used to teach design process to secondary school students.

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APPENDIX A

FASHION DESIGNER SURVEY

FASHION DESIGNER #_____

YOUR GENDER?

- ☐ Male
- ☐ Female

YOUR BACKGROUND:

How did you study to become a fashion designer?

Did you attend any schools for your training? Where? And what did you specifically study?

What classes did you take to prepare for your career in fashion?

What professional organizations do you belong to?

How many years have you been a fashion designer?

Have you always been a fashion designer or have you had other careers or jobs?

What experiences do you feel you have had that have helped you in being a fashion designer?

YOUR IDEA GENERATION PROCESS:

Where does your inspiration come from?

What do you specifically do to generate new ideas for your fashions?

Are films, history or visual culture important to your design process?

How do you define creative process?

How do you refine your ideas? Do you experiment with fabrics?

Do you collaborate with others in creating your fashion?

YOUR ROLE(S) IN CREATING FASHION GARMENTS:

What are your specific roles in creating your fashion collections?

Do any of your jobs include pattern-making, sewing, finishing skills, or are you strictly the designer who designs the garments?

What role do your clients play in your garment creation?

APPENDIX B

SECONDARY SCHOOL TEACHER SURVEY

Teacher #_____

1. Your gender:
   - Male
   - Female
2. What degrees do you currently hold?
3. What classes did you take to prepare for teaching the courses you currently teach?
4. What schools did you attend for your training? List all that apply.
5. What professional organizations do you belong to?
6. What extracurricular activities are you engaged in? List only those that support your curriculum.
7. How many years have you been a teacher?
8. How many years have you taught in your current position?
9. What classes do you now teach?
10. What are your specific duties in teaching this class? How did you prepare for specifically teaching this class?
11. What experiences do you feel you have had that have helped you for teaching this class?
12. Do you collaborate with any others (teachers or administration) in developing your curricula?
13. **How do you define creative process?**
14. **What do you do to help your students in idea generation?**
15. **How do students in your class refine their ideas?**

What is your role in helping students generate and refine their ideas?

APPENDIX C

SLIDE DECK OF STUDENT DESIGN WORKS