BRIDGING THE GAP BETWEEN FASHION DESIGN CURRICULA AND INDUSTRY REQUIREMENTS

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CHAPTER I

INTRODUCTION

The fashion design industry is currently the fastest and largest growing industry globally, last valued at $317.6 billion in 2021 ("*Revenue of the Apparel Market Worldwide by Country 2021*," 2021). According to the Bureau of Labor Statistics (2022), there are 2300 opening fashion design positions in 2021. Compared to the 21,050 total employment in fashion design, the opening positions are only 11% of the total jobs, not to mention that not all positions are entry-level. The employment growth of the fashion industry (3%) is slower than the average growth of all occupations ("Fashion Designers," 2022), making this industry even more competitive for graduating fashion design students who seek to enter the labor market. To increase the chance of employment and excelling at the workplace, one must acquire the necessary information and skills, primarily through formal education, in order to make informed decisions and stay relevant in the workplace (Haddad et al., 2021). About 83% of current fashion designers reported having acquired an associate's or bachelor's degree in fashion (Fashion Designer Demographics and Statistics in the US, 2022). Fashion designers with a fashion degree are also reported to earn higher salaries than those without. Thus, fashion institutions are indispensable to the new generation of designers in achieving their transforming tasks. The curriculum provided by each school needs to align with the industry's requirements, as potential misalignment between students' Acquired knowledge and Required Skills can cause delays in students' employment after graduation. Therefore, curriculum developers need to find innovative ways to keep their curriculum up to date. Considering that the new generation (generation Z) entering the workforce now heavily relies on the internet and technology as a whole, reviewing online job postings is logically an effective tool for curriculum developers who seek to improve their curricula. Many studies have been done to bridge the gap from both academic and industry

perspectives in other industries, such as IT and Nursing (Aljohani et al., 2022; Gresty & Cotton, 2003; Kovacs & Davis, 2008), but there are few done on fashion design curriculum. This study aims to identify possible gaps between fashion design curricula and online job postings to provide recommendations for improving fashion design's current curricula.

Definition of Terms

Curriculum: a standards-based sequence of planned experiences where students practice and achieve proficiency in content and applied learning skills.

Fashion institution: a school that offers specialized degrees for students who plan on pursuing a career in the fashion industry.

Job postings: A written statement that describes the duties and responsibilities of an available position; the experience, education, skills, knowledge, and/or other attributes required for the job; and the hiring organization, salary range, and other benefits.

Acquired Skills: Skills that students acquired from the course of education that prepare them for employment ready.

Required Skills: Skills that employers expect from employees in order to succeed at the workplace.

Skill gap: Inadequate or unsatisfactory skill levels among recruits or employees to be in accord with the prerequisites of their current job (McGuinness & Ortiz, 2016).

CHAPTER II

LITERATURE REVIEW

The Role of Fashion Designers in the Industry

As society evolves, fashion has evolved with it. Fashion is now used to address many aspects of life other than simple bodily protection, such as function, status, and self-expression. The first fashion designer job dates back to the 19th Century with Charles Frederick Worth's original fashion house for custom clothing (The Metropolitan Museum of Art, n.d.). The tedium and expense of custom fashion at the time caused the primary responsibility of dressing people to fall on fashion designers. In the mid-20th Century, the Industrial Revolution introduced mass production, allowing fashion to become more affordable and accessible, enabling people to dress themselves. This ease of production and access eventually led to overproduction, with manufacturers and retailers now generating approximately 13 million tons of textile waste every year (Calpirg, 2021). Fashion is now the second-most polluting industry in the world ("Let's Take on Industry Polluter #2," 2018), and fashion designers have a new responsibility to protect the environment. The severe consequences of carbon emissions drive malignant climate change and spark ecological emergencies. It is a necessity to shift from a linear product life cycle to a circular product life cycle to close the production loop and eliminate waste. Adequate design practices that promote sustainability can be done by designers by consciously selecting materials, standardizing product design and modularizing components, creating purer material flows, and designing for easier disassembly (Gwilt, 2020; Muthu, 2018). These practices will help expand the garment's life span, recovering and recycling raw material in multiple rounds (Niinimäki, 2017; Muthu, 2018). The new generation of designers needs to be trained in sustainable practices to reduce the carbon footprint of their work. The growth of digital technology such as the use of 3D design programs during the design process is seen as an important emerging tool to reduce

production waste (McQuillan, 2020). Digital design helps minimize waste by allowing designers to visualize their designs without the use of physical textiles. Despite the vast advantage of 3D design, the spontaneous challenges of 3D design require repeated practice. Even fashion designers who have years of experience in the industry feel the need to be re-educated and trained in order to cope with the growing complexity of the industry (Dan & Østergaard, 2021). Hence, fashion institutions play an important role in updating their curriculum to develop future-oriented fashion designers (Leube and Walcher, 2017).

Fashion Education in the U.S. Overview

Aspiring fashion designers often consider pursuing higher education following high school. There are many elements to consider when choosing a school such as level of degree, campus culture, cost, lifestyle, and career focus. A common approach to search for fashion schools is to examine reputable ranking lists ("Fashion School Rankings Criteria," 2022). There are approximately 350 postsecondary institutions, with a combination of public and private schools, that provide curricula for fashion design, according to the National Association of Schools of Art and Design (2022), a notable organization that provides national standards for undergraduate and graduate degrees in art and design. To become a fashion designer, one will expect years of formal training and experience. Depending on the school, one can become a fashion designer after completing either a two-year program (AAS - Associate of Applied Science) or a four-year program to gain more specialized skills (BFA - Bachelor of Fine Arts or BA - Bachelor of Art). At an average fashion school, students will be able to develop technical knowledge and practical skills in specific fields such as drawing, fabric, computer-aided design, garment construction, internship, etc ("Fashion Degrees and Careers Guide," n.d.). Even though the universal goal of fashion curricula is to prepare students with skills and knowledge that align

with industry requirements, some schools offer more specialized degrees than others. While most schools offer general fashion BFA degrees, the Fashion Institute of Technology (FIT) in New York provides students with different BFA degree concentrations in specific sectors such as Children's wear, Intimate Apparel, and Knitwear ("Curriculum," 2022). About 80% of BFA graduates from the FIT class of 2021, found employment after graduation, with 62% reported finding jobs related to their degree ("Employment and Educational Status," 2022). The Fashion Institute of Design and Merchandising (FIDM) BFA class of 2019 had a much lower employment rate of 46.2% ("Institutional Effectiveness," 2022). FIT and FIDM are a few schools that publicly provide transparency about their program effectiveness with detailed reports, while other competitor institutions provide little to no reports on their performance. These two reports indicate a large discrepancy in employment rates among school graduates. Schools that briefly mention their graduates' employment rate usually have impressive employment rates of 80% and above, which is contradictory with research that suggests misalignments between fashion schools' curricula and industry expectations. As of now, there is no reliable way to analyze factors that contribute to this discrepancy in employment rates. For this reason, some schools successfully prepare their students to enter the workplace, while some struggle.

Industry Expectations (Required Skills) vs Fashion School Curricula (Acquired Skills)

Employers who hire entry-level design positions expect their new employees to have specialized skills such as patternmaking and sample machining (Tilson-Scoble, V. J.,2018). Data-science-related skill sets are also increasingly demanded as the fashion business becomes more data-driven (Silva et al., 2019). Surprisingly, design students lack garment construction

skills, which have long been an important requirement in the fashion and clothing industry (Allsop & Cassidy, 2018).

Current US fashion design curricula seem to heavily focus on traditional apparel design compared to the increasingly demanded data science skills (Merryman & Lu, 2021). Tilson-Scoble's (2018) study found that fashion schools produce too many graduates with general fashion design degrees and too few with high-level specialists such as computer skills and specialist machinery skills. As a result, only a minority of graduates managed to stay in the industry with a satisfying job, as the majority have needed additional extracurricular education to learn the Required Skills for their desired employment. The low rate of students pursuing the industry after graduation may be due to how the majority of students do not have a realistic understanding of the industry from the start of their academic programming. It is imperative that the curriculum developer provides students with relevant topics and lessons that will better prepare students for the workforce (Kaur Majithia, 2017; Leube and Walcher, 2017; Tran, 2014).

Online Job Requirements and Their Impact on Curriculum Development

The rapid growth of technology enables instant communication and access to multimedia. The internet has revolutionized the way people approach common tasks. Statistics have shown that 54% of Americans look for jobs online, making the online platform a universal resource among job seekers since 2015 (Smith, 2020). Industry employers are also leaning toward online job postings because it is more time and cost-effective than traditional job advertisements (Muller et al., 2016). The evolution of technology also demands the evolution of curricula, as now they need to meet the new demands of the brisk market changes influenced by trends such as globalization and demographic changes (Khaouja et al., 2021). As globalization causes fashion to be one of the most polluting industries, it is critical for fashion educators to invest in

sustainability training for the new generation of designers (Grose, 2017; Ledezma, 2017). Even industry employers are showing concern for this global issue as there is an increasing amount of sustainable job positions available (Grose, 2017). Collecting, filtering, and evaluating data from current job postings, specifically job requirements, is an appropriate tool for curriculum developers to design a more industry-oriented and up-to-date curriculum (Khaouja et al., 2021; Smith & Ali, 2014). Curriculum developers will be able to constantly and instantly examine the employment market to keep their curricula (Acquired Skills) aligned with industry requirements (Required Skills) (Aljohani et al., 2022). A curriculum that actively responds to the job market enhances the students' chance to find their first job (Khaouja et al., 2021). Therefore, not only does the industry need to focus on what the new generation of designers is learning, but also needs to make sure that these soon-to-be designers are aware and oriented to what the industry requires them to do.

Bridging the Gap Between Required Skills and Acquired Skills

Bridging the Gap Outside the Fashion Industry

Many prior studies have focused on bridging the gap between school curricula and industry expectations such as business, biology, and especially information technology. Some researchers approach the topic from an academic perspective, some from an industry perspective, while others look at it from both perspectives.

Research using academic perspectives provides insights into how fashion educators can improve the Acquired Skills through updating, improving, and modifying the current curriculum. Akhmetshin et al. (2019) aimed to improve entrepreneurial skills and competencies from the academic perspective by interviewing 513 fourth-year students in Economy and Management specialties at five universities on the acquired curriculum. These students were then filtered into

two focused groups: students with practical experience and students without practical experience. Students regardless of their practical experience believed that the curriculum (Acquired Skills) needs to incorporate more entrepreneurial skills into the current courses and potentially need to introduce new courses. The study also noted that the knowledge acquired from the curriculum was insufficient to meet the formation of entrepreneurial thinking. While Akhmetshin et al. chose to examine a skill acquired from the curriculum, Gresty & Cotton (2003) chose to study a specific course under the nursing curriculum. This study used a mixed-method approach with interviews and extended data analysis over a period of six years. There were four stages of combined surveys on students' needs and documentation analysis on a potential computer learning resource that could help students achieve their study goals. The findings of this study showed that the majority of nursing students feel that their biology knowledge is concerning and they are willing to use computer learning resources to boost their biology knowledge (Gresty & Cotton, 2003).

Research using online job postings on the other hand is seen as a valuable source for curriculum developers to tailor their curriculum content to meet employers' real-time demands (Kim & Angnakoon, 2016). Studies done in the IT sector by Kovacs & Davis (2008) and the Instructional Design sector done by Sugar et al. (2012), approach the gap from the industry perspective using data analysis of online job postings to provide insight into industry Required Skills. Both of these studies analyzed job skills required by the industry from online job postings that were provided by industry employers. Researchers counted the occurrence of keywords that suggest specific skills from employers' job postings. A higher prevalence of keywords indicates higher demand for related skills. Though each study used a different time frame and a slightly different analysis approach due to their field differences, both studies were able to accurately find the key skills that are most highly demanded by each field.

To bridge the gap from both academic perspectives and industry perspectives, Zeidan & Bishnoi (2020) assessed the gap by getting both last year's undergraduate students' and industry professionals' reviews on the current curriculum. Self-reporting questionnaires were carried out on last year's students in different specialties to identify their employability skills and workplace readiness. Most students agreed that the current curriculum is not preparing them to meet industry expectations and some existing courses need to be updated. The skills gap was reported in both Hard skills (78%) and Soft Skills (90%). Focused groups of students and professionals were assessed to identify future skills required and possible strategies to reduce the gap between academia and industry. The findings indicate that industry professionals seem to agree with students' views on the existing curriculum. These experts suggested Blockchain and AI technologies to be incorporated into the curriculum. Both students and industry professionals emphasized the importance of internships because these experiences provide students the employability skills. The comprehensive findings of this study suggest that using a dual perspective approach to both academic and industry provides more robust insight than either focused approach alone.

Bridging the Gap in the Fashion Industry and Fashion Curriculum

The existing studies on bridging the gap in the fashion design industry only focused on the academic perspective. Existing studies are looking to improve specific skills and issues in the fashion industry such as data science, sustainability, and inclusivity. Merryman & Lu (2021) aimed to evaluate the effectiveness of the current curricula from 21 fashion schools, that are part of the top 50 rankings, in preparing students in the new data-intensive industry. The insight into specific data-related courses provided by 45 students from these schools makes this analysis more reliable. The data analysis indicated that the current fashion curriculum provides too little room for data science courses, given that the industry is leaning toward this direction. A study by

Lim (2017) is looking to improve students' sustainability knowledge by incorporating problem-based learning (PBL) activities into existing courses in apparel design and merchandising programs. Due to the implementation of PBL, students' sustainability knowledge increased with the boost in analytical, problem-solving, and decision-making skills. Another study by Deborah (2015) also used PBL-incorporated courses to increase students' preparedness to cope with inclusivity issues in the industry. The report proved that the PBL-incorporated courses effectively helped students gain confidence in solving inclusivity issues in the industry.

Significance and Purpose of the Study

Other industries have been doing extensive studies on aligning students' Acquired Skills and industries' Required Skills. These studies have shown that bridging the gap from both perspectives will ensure a comprehensive curriculum that better prepares students for employment (Kim & Angnakoon, 2016; Zeidan & Bishnoi, 2020). The previous studies in the fashion industry mainly used the academic perspective to address specific skills or specific courses in the curriculum. There have been few studies done in the fashion industry that truly address the gap from both perspectives. This study will be the dist study that analyzes job postings to find Required Skills and reflect these skills on the Acquired Skills from the curriculum. Addressing the misalignment from both perspectives will provide a more intuitive look into the current state of the fashion industry. Therefore, this study aims to bridge the gap in the fashion industry by providing a qualitative data analysis on both school curricula and job postings. The finding of the current study addressed the potential misalignment between the students' Acquired Skills and the industry's Required Skills within the fashion industry. The research questions are to determine the following:

1. What knowledge and skills do current Fashion Design Employers expect of their entry-level employees?

2. What knowledge and skills do current Fashion Design Programs in the US cover in their curriculum?
3. How are the knowledge and skills in the US fashion programs curricula different or similar to fashion employers' expectations?

This study answered the three above questions independently using objective data analysis and then synthesize the implications of the findings for all three questions to provide a more comprehensive level of insight into the gap between school curricula and job postings.

CHAPTER III

RESEARCH METHODS

To answer the first research question, "What knowledge and skills do current Fashion Design Employers expect of their entry-level employees?", Required Skills required by the industry were extracted from the "Job Requirements" section in current online industry job postings. The search term used was "Fashion Design Assistant" because these positions are particularly seeking entry-level applicants, typically with 0 to 2 years of work experience, and who have had formal training in fashion, most likely through education. Additionally, it is the most common entry-level position currently available on the job market (Firsthand, n.d.).

The job posting data were collected only from websites that are notable for providing the most up-to-date fashion jobs among fashion design job seekers: Fashionjobs, Stylecareers, BOFcareer, and Indeed. The data were collected over a period of 2 months of December 2022 and January 2023. A total of 143 jobs were found across five websites that match our search term. These job positions are all Fashion Design Assistant positions, regardless of concentration. To ensure data accuracy, these postings were then filtered to satisfy the following criteria:

- The posting must be fashion-related
- The posting must be a full-time position
- The posting only requires 0-2 years of experience
- The posting must have detailed descriptions of experience requirements

After a thorough filtration process, 80 job postings were selected and saved in a document. Keywords that represent industries' required skills and knowledge were extracted from each posting. Manual searches for unique keywords in each posting were conducted until no new unique keywords were found. After 15 postings, 63 unique keywords were found. Using a thematic review, keywords that represent the same set of skills were grouped into one category. Keywords and their occurrences were captured using the keyword search function in Microsoft Word. The 63 keywords were then classified into 10 categories as shown in Table 1.

Table 1

Required Skill Categories' Keywords

Category	Keywords
Construction	Construction, Finishes, Pattern Making, Sewing, Trim
Drawing	Sketching, Flat
Fabric	Fabric, Trim, Material
Print	Print
Product Development	Product Development
Design Research	Brand, Trend, Style, Color, Shape, Concept, Material, Trim, Market
Soft Skill	Written, Verbal, Follow-up, Presentation, Timely, Organize, Multitask, Team Player, Self-motivated, Problem-Solver, Communication, Interpersonal, Collaborative, Energetic, Creative, Note-taking, Eager to learn, Detail-oriented, Listening, Fast-paced
Technical Design	Fit, Bill of Materials, Tech Packs, Measurement, Grading
Technology	3D, Adobe Photoshop, Adobe Illustrator, Indesign, XD, Word, PowerPoint, Microsoft Outlook. Centric System, PLM, Web Pdm, Ned Graphic, Kaledo, Point Carre, CAD
Work Experience	Years

To answer the second research question, "What knowledge and skills do current Fashion Design Programs in the US cover in their curriculum?", the fashion design schools were chosen from the most recent and reputable fashion design school rankings. To avoid bias and ambiguity, only rankings from websites that provide their specific ranking criteria were used. The three ranking systems that satisfy these requirements are "Business of Fashion's Top Undergraduate Fashion Design Schools" (The Best Fashion Schools in the World 2019- Undergraduate - Fashion Design, 2019), "Fashionista's The top 20 fashion schools in the US: The Fashionista Ranking" (Wischhover, 2022), and "Fashion Schools' Top 50 Fashion Design Schools and Colleges in the US - 2022 Rankings" (Staff, n.d.). The criteria for selecting schools from these rankings include:

- The school must be U.S based
- The school must have at least one 4-year program in fashion design
- The school must provide a detailed curriculum that includes online course descriptions
- The school must be on at least 2 out of 3 rankings

Detailed curricula were collected from 8 different top fashion schools that met the criteria. The analysis of fashion design schools' curricula was based on the identified categories from job postings as fashion educators should design their curricula based on industry requirements to equip students with the necessary employability skills. Through thematic review and categorization, classes offered by each school were grouped into 9 categories representing specific skill sets or fields of knowledge that students can acquire from the class. The Acquired Skill categories in the curriculum are: Construction, Drawing, Fabric, Print, Research, Sustainability, Technical Design, Technology, and Work Experience.

In order to address the final research question, which explores the similarities and differences between the skills and knowledge taught in US fashion programs and those expected by employers, a comparison was conducted between the Acquired Skills reflected in the curricula and the Required Skills listed by the industry. The purpose of this comparison was to identify any potential gaps or mismatches between the skills taught to students and those demanded by the fashion job market. By examining the courses with the highest percentages in the school curriculum, it is possible to determine the areas of concentration within fashion institutions, while analyzing the top percentage of skills listed as industry job requirements reveals the most critical skills needed in the field.

CHAPTER IV

RESULTS

Required Skills from the industry

Table 2 displays the total number of occurrences and the percentage of each keyword in each Required Skill Category. A total of 60 unique keywords were condensed into 10 Required Skill categories. Soft Skill (553) constituted the largest proportion (27.68%) of all Required Skill keywords. Following Soft Skill, the next top five Required Skills were Design Research, Technology, Technical Design, Construction, and Drawing. Design Research (399) accounted for 19.97% of the total, while Technology (307) and Technical Design (245) contributed 15.37% and 12.26%, respectively. Construction (217) and Drawing (83) comprised 10.86% and 4.15%, respectively. Notably, there was a significant difference between the top five Required Skill categories and the remaining categories (Figure 1), with the percentage decreasing from 10.86% to 4.15% from Construction to Drawing. Moreover, the top five Required Skill categories jointly constituted 86.14% of the total category.

Table 2

Industry Required Skills

Rank	Required Skill Category	Count	Percentage
1	Soft Skill	553	27.68%
2	Design Research	399	19.97%
3	Technology	307	15.37%
4	Technical Design	245	12.26%
5	Construction	217	10.86%
6	Drawing	83	4.15%
7	Fabric	76	3.80%
8	Work Experience	55	2.75%
9	Print	33	1.65%
10	Product Development	30	1.50%
	Total	**1998**	**100.00%**

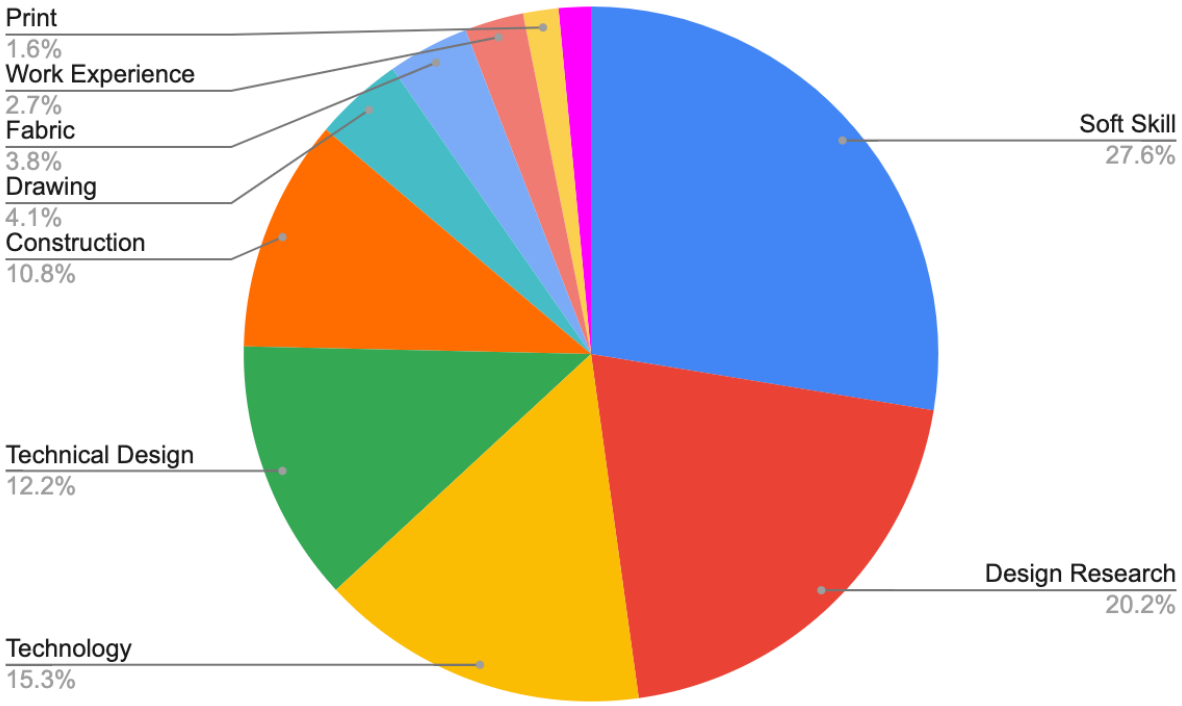

Figure 1
Industry Required Skills Chart

Acquired Skills from the curriculum

Table 3 displays the distribution of Acquired Skills among students, which were extracted from detailed course descriptions of 487 fashion-related courses offered by the schools under consideration. The top five Acquired Skills are Construction, Technology, Technical Design, Drawing, and Design Research, with a particularly high concentration on Construction (115), accounting for 23.61% of all courses. Technology (90) and Technical Design (80) made up 18.48% and 16.43% of the total Acquired Skill keywords, respectively. Students' competence in Drawing (77) and Design Research (67) accounted for 15.81% and 13.76%, respectively. Similar to the Required Skill Category data, there is a significant difference between the top five Acquired Skill categories and the remaining categories (Figure 2). The percentage dropped from 13.76% to 4.93% from Design Research to Fabric. Collectively, the top five Acquired Skill

categories accounted for 88.09% of the total. These findings highlight the need for a more comprehensive and balanced approach to curriculum development in fashion education.

Table 3
Curriculum Acquired Skills

Rank	Acquired Skill Category	Count	Percentage
1	Construction	115	23.61%
2	Technology	90	18.48%
3	Technical Design	80	16.43%
4	Drawing	77	15.81%
5	Design Research	67	13.76%
6	Fabric	24	4.93%
7	Work Experience	19	3.90%
8	Sustainability	13	2.67%
9	Print	2	0.41%
	Total	**487**	**100%**

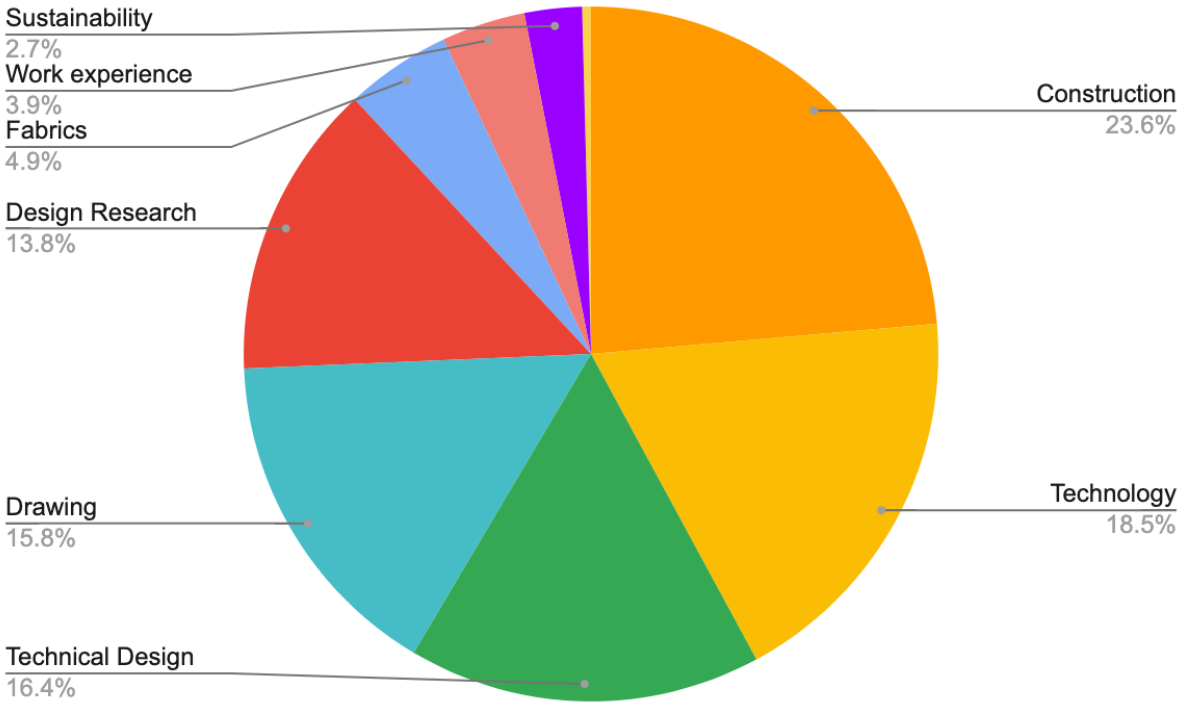

Figure 2
Curriculum Acquired Skills Chart

Comparing Required Skills and Acquired Skills

Upon examining Table 2 and Table 3 it was observed that Soft Skills and Product Development were the independent categories identified from job posting data, while Sustainability was the independent category identified from curricula. Alongside these independent categories, the skill categories that the industry required that are taught in school curricula are Construction, Design Research, Drawing, Fabric, Print, Technical Design, Technology, and Work Experience. Design Research is the topmost Required Skill, while Construction is the most emphasized area of teaching in schools. However, both industry and fashion schools equally value Technology and Technical Design, as they are ranked second and third respectively.

Post-hoc analyses

To further analyze the data, the four Required Skills categories (in terms of keyword occurrence) were examined in more detail. In Particular, the occurrences were computed for each of the following categories: Design Research (399), Technical Design (245), Technology (307), and Soft Skill (553). Acquired skills were not examined because fashion institutions need to align their curricula with industry requirements.

Table 4 shows keywords occurrence for the job posting's Design Research category. As shown, the keyword Brand made up the highest percentage (20.30%) of the Design Research category. The keyword Style was the second most occurring keyword (79), comprising 19.8% of the total for the Design Research category. Finally, the keyword Color was the third most prevalent Design Research keyword (65), constituting 16.29%. All nine unique job posting's Design Research keywords are listed in Table 3, along with the corresponding counts and percentages.

Table 4
Job posting's Design Research keywords

Design Research	**Count**	**Percentage**
Brand	81	20.30%
Style	79	19.80%
Color	65	16.29%
Concept	54	13.53%
Market	42	10.53%
Trim	31	7.77%
Material	29	7.27%
Trend	15	3.76%
Shape	3	0.75%
Total	**399**	**100.00%**

Table 5 shows keywords occurrence for job posting's Technical Design category. As shown, the keyword Fit (162) represented the highest percentage (66.12%) of the Technical Design category. The second most popular keyword, Tech Packs (59), made up 24.08% of the Technical Design category. More specifically, the Technical Design keywords Fit and Tech Packs combined accounted for 86.20% of all keywords in the category Technical Design. In contrast, the keywords Grading, Measurement, and Bill of Materials comprised a very small percentage of the Technical Design category total, with 4.49%, 3.27%, and 2.04%, respectively. All five unique job posting's Technical Design keywords are listed in Table 4, along with the corresponding counts and percentages.

Table 5
Job posting's Technical Design keywords

Technical Design	**Count**	**Percentage**
Fit	162	66.12%
Tech Packs	59	24.08%
Grading	11	4.49%
Measurement	8	3.27%
Bill of Materials	5	2.04%
Total	**245**	**100.00%**

Table 6 shows keywords occurrence for job posting's Technology category. As shown, Adobe Illustrator (88) comprised the Technology category's highest percentage (27.16%). CAD (Computer Aided Design) was the second highest occurring keyword (59) in the Technology category, at 18.21% of the category total. The third most popular keyword, Adobe Photoshop (54), comprised 16.67% of the Technology category. PLM (26) follows right after Adobe Photoshop with a percentage of 8.02%. All 15 unique keywords in the Technology category are displayed in Table 5, along with the associated counts and the percentage of the total. All 15

unique job posting's Technology keywords are listed in Table 5, along with the corresponding counts and percentages.

Table 6
Job posting's Technology keywords

Technology	Count	Percentage
Adobe Illustrator	88	27.16%
CAD	59	18.21%
Adobe Photoshop	54	16.67%
PLM	26	8.02%
Microsoft Words	20	6.17%
Microsoft Outlook	16	4.94%
Indesign	15	4.63%
Microsoft PowerPoint	12	3.70%
Centric System	12	3.70%
Web Pdm	7	2.16%
Ned Graphic	5	1.54%
Kaledo	5	1.54%
3D software	3	0.93%
Experience design/XD	1	0.31%
Point Carre	1	0.31%
Total	**324**	**100.00%**

Table 7 shows keywords occurrence for job posting's Soft Skill category. As shown, the keyword Detailed-oriented made up the highest percentage (19.35%) of the Soft Skill category. The keyword Communication was the second most occurring keyword (82), making up 14.83% of the total for the Soft Skill category. Finally, the keyword Presentation was the third most prevalent Soft Skill keyword (46), constituting 8.32%. All 20 unique job posting's Soft Skill keywords are listed in Table 6, along with the corresponding counts and percentages.

Table 7
Job posting's Soft Skill keywords

Soft Skill	Count	Percentage
Detailed-oriented	107	19.35%
Communication	82	14.83%
Presentation	46	8.32%
Collaborative	44	7.96%
Creative	41	7.41%
Organizational	40	7.23%
Written	34	6.15%
Verbal	32	5.79%
Follow up	21	3.80%
Problem Solver	19	3.44%
Note-taking	17	3.07%
Fast-paced	15	2.71%
Time efficiency	12	2.17%
Teamwork	12	2.17%
Multitask	10	1.81%
Interpersonal	6	1.08%
Energetic	5	0.90%
Self-motivated	4	0.72%
Eager to learn	4	0.72%
Listening	2	0.36%
Total	**553**	**100.00%**

CHAPTER V

DISCUSSION

This study provides insight into the prevalent knowledge and skills that Fashion Design Employers demand from their novice employees, the knowledge and skills that Fashion Design Programs in the US impart in their curricula, and the extent to which students' Acquired Skills align with industry's Required Skills. After accounting for the independent "Soft Skill" category from job postings, the top 5 categories in both Required Skills and Acquired Skills were exactly the same and collectively constitute a much higher proportion than the remaining categories. However, there is some significant variation in order: job postings prioritize (in descending order) Design Research, Technology, Technical Design, Construction, and Drawing; while curricula prioritize (in descending order) Construction, Technology, Technical Design, Drawing, and Design Research. These data suggest that skills taught by fashion design curricula currently align well with the skills emphasized in job postings, with some variations in order.

These data demonstrate that Design Research is highly valued as a crucial skill for success in the fashion industry. Employers seek candidates with strong research abilities and knowledge about brand aesthetics, style, color, and concept, and the ability to adapt new trends to an existing brand is highly desirable for permanent employment. However, the proportion of study dedicated to Design Research in curricula is only 5th on the list despite its importance, which may suggest that the current fashion curricula do not place as much gravity on research skills as the industry. This discrepancy of emphasis on research skills can be a disadvantage for fashion students, as it may hinder their ability to meet industry demands and expectations. Therefore, fashion schools may better serve their students' future interests by increasing the

integration of Design Research training into their curriculum to ensure that students are equipped with the necessary skills for success in the industry.

Fashion schools appear to prioritize Construction Skills, which are taught across all levels of study. These courses focus on teaching students how to sew and manipulate patterns from 2D to 3D. However, industry employers place less emphasis on these Construction Skills such as sewing and pattern making, and instead, they seek new employees with proficient Technical Design skills such as Fitting, Tech Pack, and Grading. This finding contrasts with a previous study done by Tilson-Scoble, V. J (2018) which found that the industry seeks employees with more specialized skills in pattern-making and sample machining. A potential explanation for this difference lies within the value of effective communication with industry partners, as a means to delegate construction-related tasks to those partners. For example, Technical Design skills (such as the ability to generate a tech pack) can be used to efficiently communicate a fashion designer's vision with industry partners within a product development supply chain. Technical Design is one of the two heavily demanded skills by the industry, and it is equally prioritized in design schools. Although construction is not highly demanded by industry employers, the acquired construction knowledge during students' course of study can be a fundamental foundation for fitting and tech pack knowledge that are required by the industry. Fashion institutions can incorporate more fitting and tech pack-related exercises into the current curriculum.

Technology is another skill that is equally important to both industry practice and fashion school curriculum. Technology skill courses are widely offered throughout different levels in fashion school curricula, given that they are highly desired by industry employers. Schools adequately provide courses on fashion technology software such as Adobe Photoshop and Adobe

Illustrator. Industry Employers are looking for prospective employees in Adobe Suite, Computer-Aided Design (CAD), and PLM. In particular, there is a great emphasis on the proficiency in Adobe Illustrator of incoming employees. Given that this software allows for the generation of Computer-Aided Design (CAD) as part of the design process, it is no surprise that CAD ranks as the second highest keyword in the technology section of job postings. Moreover, employers consider the use of PLM, a software that is an integrated approach to product creation, organization, and management across a company's entire enterprise and its suppliers, to be highly important. This software is used by most apparel companies to remain competitive in the face of global supply chain fragmentation, market competition, shorter product life cycles, and unpredictable consumer demand (Frame et al., 2004; Mora-Orozco et al., 2016; Mullon, 2015), yet there are no courses in fashion design curricula that teach students about this program. By getting hands-on experience with PLM during internships, students can acquire valuable insights into product creation, organization, and management processes that span an entire enterprise and its network of suppliers (Conlon, 2020). This experience can be highly beneficial for their future careers in the fashion industry.

Fashion schools appear to emphasize Drawing Skills more than industry employers do. Throughout the different levels of courses offered in fashion schools' curricula, students are provided with training that ranges from basic to advanced techniques in drawing, sketching, and rendering. The goal of this training is to prepare students to become proficient in visual communication and to develop a personal aesthetic (Huffman Engineering, n.d.). The curriculum offers more training in Drawing Skills than in Design Research, which may not align with the skills that employers seek in entry-level fashion designers. While Drawing Skills are undoubtedly essential in the design process, a heavier focus on other skills such as Design Research may better prepare students for success in the industry.

Soft Skill was the most commonly mentioned competency in fashion industry job descriptions but had no dedicated coursework in design school curricula. Candidates who possess attention to detail, effective communication, and excellent presentation skills are highly sought after by employers. Effective communication is especially crucial in fashion, as it is a highly collaborative industry that requires building relationships with clients, suppliers, and colleagues. Fashion designers also require strong presentation skills to effectively showcase their ideas to stakeholders. While hard skills are undoubtedly essential, the crucial role of Soft Skills in determining success cannot be overstated. Fashion schools must prioritize the teaching of both hard and Soft Skills in parallel to prepare graduates for success in the industry (Reddy et al., 2019). This study is unable to identify the degree of education in Soft Skills as curricula do not have dedicated coursework for them, though instruction in Soft Skills may be integrated into almost all other disciplines within the fashion design curricula. In addition, Product development is another important skill that is not taught in fashion design curricula but is still required in the industry despite not being a top priority for employers due to the limited experience of recent graduates. While the specifics of Product Development processes can vary between companies, it is still important for students to have some knowledge of this skill in order to stand out as candidates.

With the growing need for designers to be trained in sustainable practices to reduce the carbon footprint of their work, there still may not be enough courses providing knowledge in this area in schools, and the industry does not currently have a significant demand for sustainability knowledge. Therefore, it is suggested that employers and curriculum developers alike should work harder toward addressing sustainability issues in the fashion industry and finding ways to implement sustainable practices into fashion courses. It is essential to integrate the concept of sustainability across all levels of courses, from introductory to advanced levels. Students should

learn about the importance of environmental and social sustainability and how to incorporate sustainable practices into their future careers (Murzyn-Kupisz & Hołuj, 2021). Additionally, if schools continue to provide consistent instruction in sustainable practices, the culture of the entire fashion industry can evolve with the upcoming generations to become more sustainable.

The utilization of digital design programs, such as Clo3D, during the design process, is regarded as a significant and emerging approach to diminish production waste, according to McQuillan (2020). More recently, there is an increasing number of courses on digital design programs following the effect of the Pandemic (Kumar et al., 2022). However, students find that obtaining mastery of these skills demands rigorous practice outside of the curricular learning environment, as the system can be challenging and time-consuming (Huang & Huang, 2022; Kumar et al., 2022). In the current state of fashion design, 3D design remains a fairly novel skill set with a limited number of courses offered at fashion institutions, and this skill is not commonly mentioned in job descriptions by industry employers. As this technology continues to develop and more schools and employers begin to standardize its use, we may expect an increase in both the amount of its instruction from schools and its applicability to the industry.

Conclusions

Beside Soft Skills and Product Development Skills, fashion schools appear to equip students with the essential skills that the industry demands. However, curricula may be better optimized by focusing more on the areas that are highest in demand by the industry, such as Design Research skills, particularly in the areas of brand, style, and color research. Technical Design skills, such as Fitting, Tech Pack, and Grading, are also in high demand by employers and could be integrated into construction courses or related coursework. Although the study showed that Fashion Curricula adequately teach Technology skills, it is worth considering the

industry's expectations that students are competent in Adobe Suite, particularly Illustrator and Computer-Aided design software. Soft Skills and Product Development skills are challenging to incorporate formally into the curriculum, as they require actual industry practice to become competent. Sustainability, being a critical issue in the industry, is an area that both schools and industry need to work on, perhaps collaboratively. To better promote a realistic understanding of the fashion industry and addressing these gaps, it is recommended that fashion educators and industry practitioners form partnerships (Butler-Young, 2023). Fashion industry practitioners can contribute to training and education programs, collaborate with Fashion institutions, and create apprenticeships and mentorship opportunities. This would help address the skills gap and make the fashion industry as a whole more competitive, innovative, and sustainable in the long term.

Implications

This study aimed to bridge the skills gap between fashion design students' Acquired Skills from fashion institutions and the Required Skills from the industry by comprehensively analyzing both fashion school curricula and the industry job requirements. The result of this study provided an intuitive review of whether fashion design schools in the United States adequately provided students with the skills and knowledge most applicable to the industry. By reviewing job requirements from job postings, the results of this study enumerated the current most desirable skills from the fashion industry. By looking at the student's skill gaps from both academic and industry perspectives, we were able to assess our current academic performance. If there were skill differences, we were able to provide the possible reasons why the current fashion design education was inadequately prepared. This study further looked into ways in which these skills could be reformed. The recommendations aimed to increase the ties and understanding between educators and fashion designer employment.

The result of this study is beneficial to fashion educators, industry employers, and graduating students. Fashion institutions may find this information useful when designing their curricula to better prepare their students to enter the workforce. As for the industry, the reformation of curricula can better prepare students for the workplace, and therefore provides the industry with more competent workers. Recent graduates who sought to advance their skills found this study resourceful for better employment opportunities. By understanding the desired knowledge and skills that employers are looking for, we can better educate students on how to prepare themselves to be ideal and marketable candidates with the highest-yield skills.

Limitations

The nature of the study and the methodological choices made prior to and during the research study determined not only the strength and validity of the results but also necessarily some of its limitations. This study used a small sample size (job postings, n = 80; curricula, n = 8); a future study with a large sample size may have more power to detect any significant differences. A major limitation of this study is that it may misclassify the abundance or scarcity of a class depending on its complexity. For example, if "Construction" skills are far more complex than "Technical Design" skills, and therefore warrant more education to properly address that skill, a higher amount of "Construction" classes is necessary to achieve the same level of competence as fewer "Technical Design" classes. This means that while one skill may appear over-abundant or too scarce based on this study's comparison of percentages of classes vs. job requirements, that discrepancy may be a function of each skill's inherent level of complexity rather than a function of that curriculum's adequacy in teaching the skill. Additionally, some schools provide more detailed curricula than others, leaving the appropriate categorization of courses up to the researcher's subjective discretion. This is also a suggestion

for fashion schools to make sure that their online curriculum postings are as detailed as possible because the published curriculum is an important decision-making tool for incoming freshmen and parents. The job postings' listed characteristics of skills could change over time and there is no guarantee that the employer identifies and hires the "ideal" job candidate. This study, being entirely data-driven, raises the opportunity for future research to elaborate on the data by gathering curriculum reviews as well as interviews with industry professionals.

References

Akhmetshin, E. M., Mueller, J. E., Yumashev, A. V., Kozachek, A. V., Prikhodko, A. N., & Safonova, E. E. (2019). Acquisition of entrepreneurial skills and competences: Curriculum development and evaluation for higher education. Journal of Entrepreneurship Education, 22(1), 1-12.

Aljohani, N. R., Aslam, A., Khadidos, A. O., & Hassan, S. U. (2022, July). Bridging the skill gap between the acquired university curriculum and the requirements of the job market: A data-driven analysis of scientific literature. *Journal of Innovation &Amp; Knowledge*, *7*(3), 100190. https://doi.org/10.1016/j.jik.2022.100190

Allsop, D., & Cassidy, T. D. (2018b, May 25). Revitalising and enhancing sewing skills and expertise. *International Journal of Fashion Design, Technology and Education*, *12*(1), 65–75. https://doi.org/10.1080/17543266.2018.1477997

Butler-Young, S. (2023, March 03). How Fashion Can Close Its Skills Gap. Business of Fashion. https://www.businessoffashion.com/articles/workplace-talent/how-fashion-can-close-its-skills-gap/

Calpirg. (2021, March 9). *The Fashion Industry Waste Is Drastically Contributing To Climate Change*. https://pirg.org/california/articles/the-fashion-industry-waste-is-drastically-contributing-to-climate-change/

CareerExplorer. (2019b, November 14). *The job market for fashion designers in the United States*. Retrieved September 25, 2022, from https://www.careerexplorer.com/careers/fashion-designer/job-market/

Conlon, J. (2020). From PLM 1.0 to PLM 2.0: The evolving role of product lifecycle management (PLM) in the textile and apparel industries. Journal of Fashion Marketing and Management: An International Journal, 24(4), 533-553.

Curriculum. (2022). https://www.fitnyc.edu/academics/academic-divisions/art-and-design/fashion-design/degree-details/curriculum.php

Dan, M. C., & Østergaard, T. (2021, July 1). Circular Fashion: The New Roles of Designers in Organizations Transitioning to a Circular Economy. *The Design Journal*, *24*(6), 1001–1021. https://doi.org/10.1080/14606925.2021.1936748

Deborah A. Christel (2015): The efficacy of problem-based learning of plussize design in the fashion curriculum, International Journal of Fashion Design, Technology and Education, DOI: 10.1080/17543266.2015.1094518

Employment and Educational Status. (2022, July 19). https://www.fitnyc.edu/about/required-information/right-to-know/status.php

Fashion Designer Demographics and Statistics [2022]: Number Of Fashion Designers In The US. (2022, September 9). Retrieved September 21, 2022, from https://www.zippia.com/fashion-designer-jobs/demographics/

Fashion Designers : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics. (2022b, September 8). Retrieved September 24, 2022, from https://www.bls.gov/ooh/arts-and-design/fashion-designers.htm#tab-1

Fashion School Rankings Criteria | Fashion Schools. (2022). https://www.fashion-schools.org/fashion-school-rankings-criteria

Fashion School Rankings Criteria | Fashion Schools. (n.d.). Retrieved September 25, 2022, from https://www.fashion-schools.org/fashion-school-rankings-criteria

Firsthand. (n.d.). Outlook for Fashion Designers. Retrieved March 25, 2023, from https://firsthand.co/professions/fashion-designers/outlook

Frame, R. T., Pezeshki, C., & Norton, M. G. (2004). Integrating PLM methods into the undergraduate curriculum. Proceedings of the 2014 American Society for Engineering Education Annual Conference & Exposition, session 2125, 1-15.

Gresty, K. A., & Cotton, D. R. (2003). Supporting biosciences in the nursing curriculum: development and evaluation of an online resource. Journal of advanced nursing, 44(4), 339-349.

Grose, L. (2017). Fashion design education for sustainability practice: Reflections on undergraduate level teaching. In *Sustainability in fashion and Textiles* (pp. 134-147). Routledge.

Gwilt, A. (2020). A practical guide to sustainable fashion. Bloomsbury Publishing.

Haddad, G., Haddad, G., & Nagpal, G. (2021, July). Can students' perception of the diverse learning environment affect their intentions toward entrepreneurship? *Journal of Innovation &Amp; Knowledge*, *6*(3), 167–176. https://doi.org/10.1016/j.jik.2021.04.002

Home. (2022, September 1). National Association of Schools of Art and Design. Retrieved September 24, 2022, from https://nasad.arts-accredit.org/

Huang, S., & Huang, L. (2022). CLO3D-Based 3D Virtual Fitting Technology of Down Jacket and Simulation Research on Dynamic Effect of Cloth. Wireless Communications and

Mobile Computing, 2022, Article ID 5835026, 11 pages. https://doi.org/10.1155/2022/5835026

Huffman Engineering. (n.d.). Drawings Considered Important Part Project Documentation. Retrieved from https://huffmaneng.com/drawings-considered-important-part-project-documentation/#:~:text=Drawings%20are%20important%20because%20they,and%20cost%20savings%20for%20customers

Institutional Effectiveness | About | FIDM.edu. (2022). FIDM. https://fidm.edu/en/about/institutional+effectiveness/

Kaur Majithia, R. (2017, July 28). What's Next in Design Education? Transforming role of a designer and its implications in preparing youth for an ambiguous and volatile future. *The Design Journal*, *20*(sup1), S1521–S1529. https://doi.org/10.1080/14606925.2017.1352676

Khaouja, I., Kassou, I., & Ghogho, M. (2021). A Survey on Skill Identification From Online Job Ads. *IEEE Access*, *9*, 118134–118153. https://doi.org/10.1109/access.2021.3106120

Khaouja, I., Kassou, I., & Ghogho, M. (2021). A survey on skill identification from online job ads. IEEE Access, 9, 118134-118153.

Kim, J., & Angnakoon, P. (2016, October). Research using job advertisements: A methodological assessment. *Library &Amp; Information Science Research*, *38*(4), 327–335. https://doi.org/10.1016/j.lisr.2016.11.006

Kovacs, P. J., & Davis, G. A. (2008). Determining critical skills and knowledge requirements of it professionals by analysing keywords in job posting. Issues in Information Systems, 9(1), 95-100.

Kumar, R., Shukla, A., & Barwal, V. (2022). Efficient data offloading scheme in HetNet using machine learning for QoS provisioning. Wireless Communications and Mobile Computing, 2022, 5835026. https://doi.org/10.1155/2022/5835026

Ledezma, V. (2017). Globalization and fashion: Too fast, too furious. Laurier Undergraduate Journal of the Arts, 4(1), 9.

Let's Take on Industry Polluter #2. (2018, January 2). Northeast Recycling Council. https://nerc.org/news-and-updates/blog/nerc-blog/2018/01/02/lets-take-on-industry-polluter-2?gclid=CjwKCAjw-rOaBhA9EiwAUkLV4tHWKGVnLrx9qyVWkdljvEOHqqdAYhGrCVFXp3fQSPJSOU9QJX9SvBoCNWQQAvD_BwE

Lim, C., (2017) “Not by making things better but by playing the game differently: Business Models Innovation course for fashion curriculum,” International Textile and Apparel Association Annual Conference Proceedings 74(1).

McGuinness, S., & Ortiz, L. (2016). Skill gaps in the workplace: Measurement, determinants and impacts. Industrial Relations Journal, 47(3), 253-278.

McQuillan, H. (2020). Digital 3D design as a tool for augmenting zero-waste fashion design practice. International Journal of Fashion Design, Technology and Education, 13(1), 89-100.

Merryman, L., & Lu, S. (2021, February 15). Are fashion majors ready for the era of data science? A study on the fashion undergraduate curriculums in U.S. institutions. *International Journal of Fashion Design, Technology and Education*, *14*(2), 139–150. https://doi.org/10.1080/17543266.2021.1884752

Michael Leube & Dominik Walcher (2017) Designing for the next (Circular) Economy. An appeal to renew the Curricula of Design Schools, The Design Journal, 20:sup1, S492-S501, DOI: 10.1080/14606925.2017.1352999

Murzyn-Kupisz, M., & Hołuj, D. (2021). Fashion Design Education and Sustainability: Towards an Equilibrium between Craftsmanship and Artistic and Business Skills? Education Sciences, 11(9), 531. MDPI AG. Retrieved from http://dx.doi.org/10.3390/educsci11090531

Mora-Orozco, J., Guarin-Grisales, A., Suaza-Bedolla, J., D'Antonio, G., & Chiabert, P. (2016). PLM in a didactic environment: The path to smart factory. International Federation for Information Processing, 467, 640-648.

Müller, O., Schmiedel, T., Gorbacheva, E., & Vom Brocke, J. (2016). Towards a typology of business process management professionals: identifying patterns of competences through latent semantic analysis. Enterprise Information Systems, 10(1), 50-80.

Mullon, E. (2015). Technology can transform the backbone of fashion. Business of Fashion. https://www.businessoffashion.com/opinions/technology/technology-can-transform-theoperational-backbone-of-fashion/

Muthu, S. S. (Ed.). (2018). Circular Economy in Textiles and Apparel: Processing, Manufacturing, and Design. Woodhead publishing.

National Association of Schools of Art and Design. (2022). *Home*. https://nasad.arts-accredit.org/

Niinimäki, K. (2017). Fashion in a circular economy. In Sustainability in fashion (pp. 151-169). Palgrave Macmillan, Cham.

Reddy-Best, K., Payne-Purvis, C., & Montano-Sanchez, N. (2019). Soft Skills for Success in the Fashion Industry: The Perspectives of Educators, Industry Professionals, and Students. Clothing and Textiles Research Journal, 37(1), 55-72.

Revenue of the apparel market worldwide by country 2021. (2021, December 16). Statista. Retrieved September 21, 2022, from https://www.statista.com/forecasts/758683/revenue-of-the-apparel-market-worldwide-by-country

Silva, E., Hassani, H., Madsen, D., & Gee, L. (2019, April 4). Googling Fashion: Forecasting Fashion Consumer Behaviour Using Google Trends. *Social Sciences*, *8*(4), 111. https://doi.org/10.3390/socsci8040111

Smith, A. (2020, May 30). *1. The internet and job seeking*. Pew Research Center: Internet, Science & Tech. Retrieved September 24, 2022, from https://www.pewresearch.org/internet/2015/11/19/1-the-internet-and-job-seeking/

Smith, D., & Ali, A. (2014). Analyzing computer programming job trend using web data mining. Issues in Informing Science and Information Technology, 11(1), 203-214.

Staff, F. S. (2022). *Top 50 Fashion Design Schools and Colleges in the US - 2022 Rankings | Fashion Schools*. Retrieved September 25, 2022, from https://www.fashion-schools.org/articles/top-50-fashion-design-schools-and-colleges-us-2022-rankings

Sugar, W., Hoard, B., Brown, A., & Daniels, L. (2012, March). Identifying Multimedia Production Competencies and Skills of Instructional Design and Technology Professionals: An Analysis of Recent Job Postings. Journal of Educational Technology Systems, 40(3), 227–249. https://doi.org/10.2190/et.40.3.b

The Best Fashion Schools in the World 2019- Undergraduate - Fashion design. (2019). The Business of Fashion. https://www.businessoffashion.com/education/best-schools/undergraduate/fashion-design

The Metropolitan Museum of Art. (n.d.). Worth: Haute Couture. Retrieved March 21, 2023, from https://www.metmuseum.org/toah/hd/wrth/hd_wrth.htm

Tilson-Scoble, V. J. (2018). The misalignment between the expectations of fashion students, fashion tertiary educators, and the fashion industry (Thesis, Master of Arts). The University of Otago. Retrieved from http://hdl.handle.net/10523/8013

Top 50 Fashion Design Schools and Colleges in the US - 2022 Rankings | Fashion Schools. (2019). https://www.fashion-schools.org/articles/top-50-fashion-design-schools-and-colleges-us-2022-rankings

Tran, T. T. (2014). Is graduate employability the 'whole-of-higher-education-issue'? Journal of Education and Work, 28(3), 207-227. doi:10.1080/13639080.2014.900167

Wischhover, C. (2022, June 6). *The Top 20 Fashion Schools in the US: The Fashionista Ranking*. Fashionista. https://fashionista.com/2011/07/the-top-20-fashion-schools-in-the-united-states-the-fashionista-ranking

Zeidan, S., & Bishnoi, M. M. (2020). An effective framework for bridging the gap between industry and academia. International Journal on Emerging Technologies, 11(3), 454-461.