

EMPOWERING WOMEN: A GUIDE FOR THE DESIGN OF HAND AND POWER
TOOLS THAT ACCOMMODATE WOMEN'S NEEDS

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EMPOWERING WOMEN: A GUIDE FOR THE DESIGN OF HAND AND POWER
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VITA

Jacqueline Elaine Urda, daughter of Dr. Michael A. Urda and Mrs. Mary S. Urda, was born June 1, 1981 in Americus, Georgia. She spent the first eighteen years of her life there, with the exception of one adventurous year in Taiwan with her family at the age of four. She graduated with honors from Americus High School in 1999 and was named the salutatorian for her class. In the fall of 1999, Jacqueline enrolled at Agnes Scott College, an all-women's college located in Decatur, Georgia, where she spent much of her time in the printmaking and sculpture studios. Her junior year was spent abroad in Amiens and Angers, France, and was a time of study, cultural experiences, and travel. In May 2003, she graduated cum laude with a Bachelors of Arts in Art and French. In 2005, Jacqueline began the post-baccalaureate program in Industrial Design at Auburn University and received a Bachelors of Science in Environmental Design in May 2006. She was accepted to the graduate program in the spring of 2006 and entered the Masters of Industrial Design program in the summer of that year. Jacqueline has been a member of the Auburn Student Chapter of the Industrial Designer's Society of America for two years and has participated in corporate-sponsored studios for Emerson Tool Company and the Alabama Bureau of Tourism and Travel. Additionally, she served as the design intern for the Phi Kappa Phi Forum, a scholarly publication housed at Auburn University, for one academic year.

THESIS ABSTRACT

EMPOWERING WOMEN: A GUIDE FOR THE DESIGN OF HAND AND POWER TOOLS THAT ACCOMMODATE WOMEN'S NEEDS

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Women are the largest group of consumers in the United States and are involved in approximately eighty percent of consumer purchasing decisions. Traditionally, American women have been the major purchasing agents for their families, and today this still holds true. In recent years, women have been making more purchases in conventionally male-oriented markets such as consumer electronics and home improvement. Many companies that have traditionally catered to men, specifically home centers and tool companies, are altering their business and marketing strategies to meet the demands of their new customer base, women.

Traditionally a male-dominated, contractor market in the 1980s and early 1990s, home improvement today has become a mélange of professionals and Do-It-Yourselfers (DIYers), many of whom are women. The market's transformation is due in part to larger

numbers of female homeowners, to increased visibility of female carpenters and designers on home improvement television, and to changes in the social roles and the economic status of women.

Home centers such as Home Depot and Lowe's have modified their store interiors, including wider aisles, brighter lighting, and improved store organization, to better meet women's needs and shopping habits. Tool companies, such as Ryobi and Makita, have designed smaller and lighter versions of their power tools to accommodate women. Barbara K! and Tomboy Tools, women-owned tool companies, offer tools designed with the female user in mind and focus on educating women about home improvement.

The involvement of women in the home improvement industry is projected to increase steadily over the coming years as more single women purchase homes and become involved in the Do-It-Yourself (DIY) movement. Experts predict that home improvement stores and tool companies will continue to make their stores and products more comfortable and attractive to women in order to retain female consumers. This thesis establishes the need for hand and power tools designed specifically with women in mind and provides guidelines for designing such products.

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1. INTRODUCTION TO PROBLEM

1.1 Problem Statement

Marketing firms and large corporations are just beginning to focus on women as an important consumer group. Only in the last ten years have marketers and retailers recognized how crucial women are in purchasing decisions. Women are becoming equally important in traditionally male-dominated markets. The number of products being designed for women is small but increasing rapidly. According to Datamonitor, a well-known online data analysis company, “in 2001, 3.6% of all new products were specifically tailored to women. That number more than doubled to 7.9% in the first half of 2005 alone” (Korn, 2005). This data suggests that corporations want women’s business and are working to understand what female consumers want and how products might be designed more specifically for men or women.

This thesis details a design approach that would provide guidelines for the design of home improvement tools and products that accommodate women’s unique needs. Because women look for different things than men when buying merchandise, it is crucial to understand these differences in order to develop products that are designed for the female market.

Today, increasing numbers of women are purchasing goods such as power tools and home improvement products that have traditionally been associated with men and the

male consumer market. More and more single women are becoming homeowners, either due to divorce or delayed marriage, and are willing to tackle home repairs and enhancements by themselves. According to Barbara Kavovit, owner of Barbara K! tools, women are choosing to complete home improvement jobs primarily to save money, but also for self fulfillment and satisfaction (Specialists in Business, 2005). When taking on a project, most women seek guidance from hardware store employees or through television home improvement shows. Additionally, women also seek guidance from friends, home improvements books, and do it yourself workshops at local home improvement stores. (Specialists in Business, 2005).

Large home centers such as Lowe's and Home Depot have recognized that their female customer base has increased greatly and have responded in recent years by



Figure 1. Black & Decker Project Mate.

making their stores and their marketing more welcoming towards female customers. Additionally, Black and Decker tool company has recognized the importance of female consumers and recently introduced several tools to the market that were designed with women in mind, including a multipurpose power tool called the *Project Mate*

(Figure 1), a pair of cordless power scissors, and a cordless glue gun with heating base.

Companies such as Makita and Ryobi have also made their tools more accessible to women by offering lighter weight and smaller versions of some power tools.

Tomboy Tools and Barbara K! are women owned and operated companies that have been founded in response to the growing need for female-friendly home

improvement tools. These companies have designed tool kits specifically for women and are working to make hand and power tools more accessible to female consumers through better ergonomic design and education. Unfortunately, these companies do not have strong brand recognition and have limited availability and visibility, thus restricting these companies from meeting their target market's needs.

Despite the progress that has been made towards marketing to women by home centers such as Home Depot and Lowe's, home improvement retailers still have a strong fear of alienating men. Currently, no sections in these stores are specifically devoted to women. Tool lines that are for women are a rare commodity in these stores; in fact, Barbara K! tools for women are available only in-store at the Manhattan Home Depot location in New York City. Companies such as Ryobi and Makita, while introducing power tools that are more user friendly for women, have also avoided committing to designing products "for women." Only a few companies are willing to call attention to hand and power tools designed specifically for women; almost all of these, with the exception of Black and Decker, are owned and operated by women.

The information gained from studies of the increasing home improvement market reveals an unmet market opportunity for a well-designed, female-friendly line of power and hand tools associated with a well-known company or brand.

1.2 Need for Study

The roles of men and women have changed drastically over the last century. According to a Census analysis by *the New York Times*, today 51% of American women are “living without a spouse, up from 35 percent in 1950 and 49 percent in 2000” (Roberts, Sabar, Goodman, & Balleza, 2007). Another change is the number of women in the American labor force. Approximately 47 percent of women are a part of the American workforce and are earning their own income as opposed to 30 percent in 1950 (Borinstein & Meer, 1990).

“Working-age women now expect different things in life – from their jobs, from their spouses and from the products and services they buy. Businesses have made varied progress in catching up to their needs, and some have been more successful than others. In some cases, it is a matter of introducing or adapting products to women’s needs; in other cases, it is necessary only to present existing features in a different light” (Myers, 1996).

This study will examine what women are seeking when it comes to home improvement products, what tools they use, and what their needs are, as well as what they find problematic. This examination will lead to the development of a design approach based on women’s wants and needs. The approach will be applied to the design of a cordless power drill and its accessories (i.e., battery pack, charger, and tool bag/box). Because of the importance of brand recognition in the market, additional guidelines will be developed to create a graphic identity and packaging system. The redesigned cordless drill and its packaging will serve as an illustration of the proposed guidelines and will

demonstrate the changes that could be made to tools and branding in order to address the needs of women.

1.3 Definition of Terms

Common terms used in the home improvement industry and marketing to women needing clarification follow:

ABS (acrylonitrile butadiene styrene) – a common thermoplastic used to make light, rigid, molded products.

Big-Box Stores – a superstore that is often a single story building located in suburban areas of the United States and carries a large volume of merchandise. (e.g. Target or Lowe's).

Brand Loyalty – feeling an allegiance to a brand or company and its products.

CNC (computer numerical control) – a computer operated machine that reads code from 3D models and translates them into a tool path, which then cuts out the desired object.

Commodity – a good or service whose wide availability typically leads to smaller profit margins and diminishes the importance of factors (as brand name) other than price.

Design – the creative art of executing aesthetic or functional designs.

Do-It-Yourselfer (DIYer) – a person who works on home improvement projects rather than hiring a professional.

Do-It-Herselfer – a woman who works on home improvement projects herself rather than hiring a professional to complete the task.

Empower – to promote the self-actualization or influence of; to provide with the means or opportunity

Feminism – the theory of the political, economic, and social equality of the sexes; organized activity on behalf of women's rights and interests.

Feminine – characteristic of or appropriate or unique to women

Gender – the behavioral, cultural, or psychological traits typically associated with one sex.

Home Buyer – a person who has recently purchased a place of residence

Home Improvement – the act of repairing, renovating, or decorating one's home

Home Owner – a person who owns his or her place of residence (i.e., a house, a condominium, an apartment, a mobile home, etc.)

Hotspots – areas on a tool handle that can create friction which in turn can irritate the user's hand

Identity – the distinguishing character or personality of an individual.

Infotainment – television that is both entertaining and educational.

Lifestyle brands – a brand that reflects an image that is the way of life of an individual, group, or culture.

OEM (Original equipment manufacturer) – when one company purchases a manufactured product from another company and resells the product as its own, usually as a part of a larger product it sells.

Market – a specified category of potential buyers.

Modern – of, relating to, or characteristic of the present or the immediate past

Niche Market – a very small segment of potential buyers.

Pocketbook Power – the power and influence of women in making purchases for their families; power gained by women’s control of her family’s money and purchasing decisions.

POP (Point of Purchase) – a freestanding display or stand that is used to promote a product for purchase

Purchasing Agent – one that acts or exerts power to make consumer or purchasing decisions.

Renshape – a plastic composite material that is used for high quality models and prototypes

Rubber overmold – an elastomer that is often used on handles to give it a tactile softness and a non-slip surface

Segment – one of the constituent parts into which a body, entity, or quantity is divided or marked off by or as if by natural boundaries.

1.4 Assumptions

For this research study, data and information from secondary sources, such as scholarly journals, books, magazines, and the Internet, will be used. It will be assumed that the facts and information given by these sources are accurate and based on factual information. It will also be understood that the authors of such studies are experts in their respective fields and are credible individuals.

The social beliefs, world view, and personal philosophy of the researcher and author of this study may influence the outcome of this study. The person responsible for this study is a feminist and an activist for women; her purpose in researching this area

was to help meet an unmet need of women pertaining to home repairs and home improvement. The goal of this thesis is to create a design approach that will help designers, both female and male, to develop home improvement products to meet women's needs and help empower them to be independent and to try home improvement projects by themselves.

This study aims to benefit as many types of women as possible and meet their many different needs. Realistically, this study will help define the needs of middle class American women who are interested in home improvement and who share a common background with the author of this study. Despite differences between women including class, race, age, education, and ability, this study will aim to be as inclusive as possible and to address the needs of women from all realms of life who are looking to improve their homes.

1.5 Scope and Limits

This thesis study will focus on American women consumers living in the Southeast, specifically in Alabama and Georgia. Due to the physical location of Auburn, Alabama, the author of this study will have access to a diverse population of women. The majority of women in Auburn are traditional white, middle to upper middle class, educated American women from Alabama who may or may not know how to use hand and power tools. This type of subject will limit results of the study to what this group of women wants, though it will be supplemented through the literature review and interviews with industry experts.

1.6 Anticipated Outcome

It can be expected that this study will show the depth of women's involvement in the home improvement industry and their need for a specialized, more accommodating line of tools. This study will highlight the increase of women home buyers and the expanding number of Do-It-Herselfers. Because women are more frequently becoming home owners and choosing to make repairs or enhancements to their homes, their needs regarding proper and suitable tools for women are becoming more and more apparent. This study seeks to provide a guideline to help designers understand some of the differences between men's and women's unique needs. This design approach will serve as an example to aid others in designing home improvement tools for women.

1.7 Literature Review

Home Improvement is a rapidly growing movement in the United States. Many Americans are becoming involved as Do-It-Yourselfers in an effort to save money and to increase the values of their homes. Others have begun doing home repairs and enhancements themselves to gain new skills and self-confidence, while using it as a source of entertainment. This trend has caught the interest of many women, both married and single, looking to improve the appearance of their home and the quality of their lives.

The home improvement trend is reflected in the American culture and the media. Numerous television shows now focus on home décor and home improvement; in fact, several network cable channels are devoted to the DIY movement. Home improvement books and magazines are widely available. Additionally, the internet has become a huge resource for those completing home projects without the help of professionals. Today,

television shows, home repair guides, decorating magazines, and Internet sites focus on the growing numbers of women involved in home improvement.

Home stores and home improvement product manufacturers have taken notice that many of their customers are now women. Home improvement stores have changed the interiors of their stores to better accommodate women and their shopping behavior. Tool companies are producing tools that are more ergonomically correct for women. Still other companies are creating innovative packaging solutions to attract women. Companies in the home improvement industry are making considerable changes to win the loyalty and the business of their growing customer segment, women.

1.7.1 Home Improvement Television

Home Improvement Television has opened up the world of home repair and home décor to millions of Americans and is a driving force in the popularity of the Do-It-Yourself movement (Dyer, 2003). Home Improvement is more popular today than ever before, and this is evident by the number of DIY oriented television programs available to the public. According to a 2006 Neilson Media report, Home and Garden Television (HGTV) ranked thirteenth out of twenty cable networks for the number of viewers during peak evening hours (Hill, 2006). Currently, several television stations are devoted solely to DIY television, such as HGTV and the DIY Network; however, more and more network television channels are jumping on the bandwagon to join this ever-growing trend by creating their own versions of do-it-yourself (DIY) television.

First popularized in the 1980s by PBS's *This Old House*, home improvement television has become as entertaining as it is informative. Today, HGTV dominates

“infotainment” television with its full line of home repair and home decorating shows that take viewers through the world of home improvement in thirty minutes, transforming outdated or worn rooms into beautiful modern masterpieces. Viewers get drawn into the shows by the promise of something better and more beautiful. Robert Thompson, director of the Bleir Center for Television and Popular Culture at Syracuse University in New York suggests that, “HGTV is to [PBS’s] ‘*This Old House*’ what Nickelodeon was to ‘*Sesame Street*.’ *This Old House* ... was instruction that you hoped was entertaining. [HGTV is] entertainment that you hope is instructional” (Hill, 2006).

The personalities of the designers, carpenters, and hosts play a huge part in the appeal of home improvement television. The shows give viewers an opportunity to learn how to improve their homes from these experts and tradesmen, while being entertained by familiar faces. Many of these recognizable visages belong to women, female carpenters and designers, who now serve as role models for women and girls interested in completing home repair and décor projects by themselves. The females on television help other women to view themselves as capable individuals who can complete projects around the home that once may have seemed daunting and impossible.

Women often seek information before tackling a home repair project and are using DIY television for educational and instructional purposes. Home improvement television is becoming a source of education and a project reference for many, including many women. Approximately half of women who plan to undertake a home improvement project seek guidance from home improvement shows or from someone at their local home improvement store (www.bejane.com). “Emboldened by redo shows like TLC’s ‘Trading Spaces,’ and Discovery Home Channel’s ‘Tool belt Diva,’ [on which] girls do

drywall, women made 43 percent of purchases in the \$215 billion home improvement market last year” (Furman, 2006).



Figure 2. Norma Valley, the *Tool belt Diva* on the Discovery Channel

Home improvement television will continue to grow in popularity as greater numbers of Americans see that they can beautify their homes without the help of a professional. Television shows make home improvement approachable and reachable to the masses. Not only does it educate those who are novices, it also sparks people’s imaginations and their creativity to conceive of what their homes could become.

1.7.2 Home Improvement Books for Women

In addition to a growth in the number of home improvement television shows targeting women, an increasing number of home improvement books have been published with women in mind. Currently numerous books, which target women who are interested in home improvement or home décor are on the market. Many of the books cover general home improvement topics such as tiling, rewiring lamps, and gardening, to name just a few, and are written for both female and male consumers. Lowe’s and Home Depot have published their own lines of how-to books.

In recent years, larger numbers of home improvement books have been written by female authors for a female audience. Several of these are written by female carpenters

and designers from home improvement television shows who are familiar to many women and who are deemed trustworthy professionals. Other references have been developed by online gurus Be Jane and tool entrepreneur Barbara K! All of the books claim to make home improvement more approachable and manageable for women through better instructions and clearer visuals (Appendix A). These references promise step-by-step instructions through common home repairs and project the message that women are capable of doing-it-themselves. Many books targeting a female audience focus on the outcome of completing a home project by including inspirational photographs of beautiful interiors. Emphasis is on including more visuals and less text.

1.7.3 Home Improvement Magazines

Magazines are another common source of home improvement information for women. Home décor and home improvement magazines are often located in the women's magazine section in bookstores and supermarkets. Women's magazines such as *Martha Stewart Living* and *Better Homes and Gardens* are featuring home improvement and home décor projects as regular columns in their magazines. Women's magazines devoted to home projects tend to be oriented towards decorating interiors, refinishing furniture, and painting techniques. These magazines focus on the end result of a project and explain how to achieve the look that has been shown. Often, before and after pictures are compared to illustrate the difference a little work can make to the appearance of a room, which ultimately can improve the person's quality of life. Glossy pictures, beautiful interiors, and creative ideas help sell many home oriented magazines to women in search of ideas to improve their homes.

1.7.4 Home Improvement Websites and Online Communities for Women

Home improvement information is widely available online for DIYers and includes websites specifically devoted to the Do-It-Herselfer. The Internet has revolutionized the way in which people seek information, as well as how they make purchases. Within the home improvement industry, the Internet has given millions of Americans the ability to find resources to help them through the challenges of home projects. Additionally, websites available to the public often have project pages that inspire the viewers' creativity and their desire to change their environment by doing-it-themselves.

Both Home Depot and Lowe's have sections on their website devoted to planning projects. Home Depot's project planning section is called "Get Inspired" and is devoted to beautifying one's home through a variety of projects, from outdoor patios and gardening to trendy interiors influenced by other cultures. This section of the website has a similar feel to a home décor magazine but allows customers to be inspired and then to achieve that look in their own homes by buying the products.

Lowe's project-focused website page is called the "Project Center." It includes extensive information regarding a variety of home projects and a very useful interactive design tool, which allows the user to design room plans and to choose paint colors, among other things. The website also has printable questionnaires that help homeowners find their design style and plan for their upcoming renovations. It asks important questions about the user's preference in style, material, color, and so on, and gives examples of products that are available to complete the desired home project. Lowe's

“Project Center” web page does an excellent job helping homeowners establish their home improvement goals and gives them the tools they need to redesign their home.

The Internet has a plethora of home improvement resources that are not associated with home centers. Home and Garden Television, the DIY Network, and Fine Living, all channels owned by Scripps network, have extensive websites that give their viewers design and décor ideas to improve their homes. These websites are extensions of their television programs and offer their fans a broad source of information. Additionally, these websites include practical information about home repair projects and give the necessary information to teach the user to do-it-themselves. Often, these websites have online videos that give step-by-step instructions on specific projects. The sites are well organized and are easy to navigate, making it possible for users to easily find the desired instructions they need in order to complete their DIY project.

BeJane is an online resource designed specifically to teach women how to complete DIY projects on their own. The company BeJane was founded by two young professional women who, through their own experiences as single home buyers, recognized that other American women needed an accessible resource to help educate them about home improvement. The website offers how-to project information, a community forum, and videos that demonstrate how to improve one’s home. Additionally, BeJane.com has a page devoted to a featured member, or “featured Jane,” who is very active in home improvement and very proficient with power tools. This section is inspirational and encourages BeJane viewers to see themselves as skilled women who can tackle home repair projects.

There are numerous home improvement and decor websites, some that target women, and others that are general resources. The Internet has made finding information on regarding home improvement and home décor very easy and accessible to millions.

1.7.5 Tools as Gifts: Holiday Gifts and Bridal Registries

The Internet's influence has made gift giving much easier. Today, many large retailers, including home stores such as Lowe's and Ace Hardware, have online gift registries to help customers find the perfect gift for their loved ones.

Giving tools to women is another growing trend. According to Move.com, an



online real estate information and support company, gifting moms with tools on Mother's Day is now nearly as popular as giving tools to dads on Father's Day (King, 2007). In fact, *Good Housekeeping* reports that "more gifts are purchased at [Home Depot] for Mother's Day than for any other holiday" (Meyers, 1998).

For Mother's Day 2007, Tomboy Tools introduced a tool bouquet as an alternative to traditional gifts (Figure 3). "What better way to introduce our all-pink line of tools than with a special Mother's Day

Figure 3. Tomboy Tools Mother's Day Gift Bouquet

Bouquet to replace the perennial gifts such as flowers, candy or in some cases, lobster-shaped earrings," said Janet Rickstrew, Tomboy Tools CEO and co-founder (AOL Money & Finance online).

Another growing trend in home improvement is the popularity of including home improvement products on bridal registries. Couples more and more are adding hand and power tools to their wedding registries (Magiera, 1993) and are registering for these products online using the websites of stores such as Home Depot, Lowe's, and Target. Home Depot's bridal registry, established in 1992, accounts for 72 percent of its total gift registries (Chen, 1997). According to *Modern Bride* magazine, the trend for wedding presents is buying gifts that are sensible and are things that the couple would use such as, furniture, sports gear, and tools (Granfield, 1991). With the increase in the age of those marrying, tools and other home maintenance products are becoming the practical gifts for those couples who have already established their households. Gift registries are helping those engaged to determine what they want and need; for wedding guests, online and in-store registries such as those of Home Depot and Ace Hardware are helping them find suitable gifts for the bride and groom-to-be.

1.7.6 Single Women and Home Buying

While some women are marrying and setting up homes with their husbands, many others are not. The number of single women in America continues to rise and is projected to increase further as more and more women delay marriage, get divorced, decide not to remarry, live longer, and are widowed. In fact, today there are more unmarried women than ever before (Drew, 2006). According to *The State of the Nation's Housing 2004*, a report published by Harvard University's Joint Center for Housing Studies, 75 percent of single or unmarried women are classified as single mothers, young women on their own, middle aged singles, and seniors living alone. The other 25 percent of single women are

women living with roommates and other adult family members or unwed women living with their partners.

Today, many single women are buying homes. According to the National Association of Realtors® 2004 Survey of Home Buyers and Sellers, “the share of single female homebuyers increased from 14 percent in 1995 to 21 percent in 2003” (Drew, 2006), making single women the second-largest group of home buyers in America, just behind married couples.

A study by Fannie Mae projects that by 2010, women-headed households will represent approximately 28% of the U.S. total or about 31 million American households (Tsao, 2005). Even married women are more frequently naming themselves as the head of their household, from 11 percent in 1993 to 26 percent in 2003 (Drew, 2006).

Women in the U.S. have more spending power and financial wealth than ever before. “It would be difficult to find a group of working people in all of history that has improved its position as dramatically or in as short a period of time as American women have during the past two or three decades” (Borinstein & Meer, 1990). Modern women are in greater control of their economic futures and do not have to wait until marriage to invest in a home. In fact, buying a home is now viewed as a smart financial decision and a better option than renting for many single women, especially by young, financially independent women (Drew, 2006).

Buying for Themselves: An Analysis of Unmarried Female Home Buyers, a report published by Harvard University’s Joint Center for Housing Studies, states that young single female home buyers tend to prefer condos located in urban areas that frequently include extra amenities and added security. More than 40 percent of these condos were

built before 1970; 15 percent were built after 2000 (Drew, 2006). Single mothers, on the other hand, often choose to purchase single family homes over condominiums (Drew, 2006).

Single women tend to have less purchasing power when buying a house and less money to spend on home improvement and repair projects than married couples or unmarried men. “Unless they benefited from equity appreciation in a previous home, most [unmarried female home buyers] face the housing market with less purchasing power than other types of buyers” (Drew, 2006). “Married couples, who were 63 percent of all recent buyers, accounted for 75 percent of remodeling spending by this group in 2002-3, with over \$58.2 million spent. Unmarried men were second with \$10 million, while unmarried women spent a total of \$9.3 million, or an average of just under \$5,000 per household with a remodeling project during this period” (Drew, 2006).

While some women are comfortable with the idea of maintaining their homes themselves, others are not. A Sears study of female homeowners found that many “women are worried about being responsible for their home on their own” (Tsao, 2005). Owning a home and maintaining it are big responsibilities, especially for singles.

1.7.7 Marketing to Women

Managing the American home has traditionally been the job of women, whereas maintaining it has been the responsibility of the men. However, the social roles of American women have changed significantly since the middle of the twentieth century. Much of this change started during WWII as women helped keep the U.S. economy afloat by going to work in factories as their male counterparts went to war. For many

women, this was their first opportunity to earn their own income. Following the war, many women continued to work, while others returned to their traditional position as keepers of the home. “Since the onset of the feminist movement, female roles have undergone considerable change. Decades later, further social and economic changes ... cemented the importance of the female [consumer] segment” (Hupfer, 2002). Today, women have considerable “pocketbook power” and influence well over half of all purchases made by their families (Johnson & Learned, 2004, pg.ix).

Marketers and big business have recognized the strength of the female consumer only in the last ten to fifteen years and now see this market as a huge business opportunity. Women are earning more money and are continuing to make the majority of purchasing decisions for their families, which more frequently are products in traditionally male-oriented markets. “Government agencies do not break spending down by gender. But market researchers in specific segments estimate that women are driving most retail purchases, even in categories traditionally considered to be dominated by men” (Ecklebecker, 2005).

The home improvement industry traditionally has been a male-dominated, contractor-based market and has had to change its business and marketing strategies in the last ten years to accommodate women. As marketing expert Lisa Johnson observed in 2005, the home improvement segment has approached female consumers through transparent marketing. Using this method of marketing, companies are targeting women indirectly through advertising and merchandising and avoid labeling products or services as “for women.”

Home improvement retailers have developed subtle ways to make female shoppers feel more comfortable in their stores, without alienating men (Johnson, 2005). Lowe's was the first home store retailer to recognize women's influence in regards to which home improvement projects were pursued by a household. Even though men often were doing the work, Lowe's saw that women controlled "the design schemes, and consequently, the purse strings" (Facenda, 2003). After realizing the importance of the female consumer, Lowe's took steps to research women's shopping habits and determined that the established warehouse atmosphere needed to be made more female-friendly. Lowe's, followed by Home Depot, widened shopping aisles, installed brighter lighting, and set up display vignettes; they even changed the way products were arranged and grouped to better suit women and the way they shop. Additionally, both added high-end, designer brand products, such as Ralph Lauren paints and Bosch appliances, to appeal to women and to win their business.

Many of the big box retailers have added design centers focusing on home décor products such as interior paint and wallpaper. Home Depot introduced the Design Place into many of its stores as a means to attract female customers (Home Channel News, 2003, March). Ace Hardware followed suit by offering "a new in-store décor package" which is more female-friendly. According to Ace's marketing manager, John Venhuizen, women are an asset to Ace because they are good customers and spend approximately fifty percent more than male customers in one shopping excursion (Home Channel News, 2003, March).

Female consumers prefer big box stores for their shopping, including for their home improvement needs (Allen, 2005). Home Depot, Lowe's, and others will continue

to make modifications to their stores, product lines, and overall image in order to retain their female patrons.

1.7.8. Commercials and Advertisements Targeting Women

Home stores, tool companies, and home improvement product suppliers are reaching out to the growing number of women in the home improvement movement through print and television campaigns.

Home Depot's current True Stories Campaign tells the stories of women who have transformed their homes and the quality of their lives through home improvement and gardening projects. In one of these advertisements, a middle-aged single mother with high school aged children discusses her journey into homeownership, as well as the process she went through to renovate her home and to make it a beautiful, comfortable space for her family. Another commercial is about a single woman who turns her apartment building into a community of friends through gardening and improving the shared outdoor space. The True Stories Campaign strives to convince women that they too can take on household repair projects and be successful in doing so.

Lowe's current commercials sell home improvement as a way to build communities and strengthen families. According to Lowe's spokeswoman, Chris Ahearn, the North Carolina retailer seeks to make "an emotional connection with homeowners, because people's homes are still the most important things to them" (Caulfield, 2001). In one commercial, a husband and wife are shopping in Lowe's. When they go to the garden section, the wife imagines that she is gardening and picking flowers with her future daughter. The father, in turn, imagines playing in the family yard with his future son.

Lowe's illustrates home projects as a way to improve one's quality of life and to build one's future.

Home improvement supply companies, such as Dutch Boy and Einstone, are also seeking to make home improvement appealing to women through strong marketing and advertising campaigns. In 2003, Dutch Boy released a series of female-friendly commercials and promotional ads of its revolutionary *Twist n' Pour* container (Kern, 2003). Robert Falls & Co., a Cleveland-based PR firm, led this promotion and successfully placed product advertisements of the *Twist n' Pour* in thirty mainstream consumer magazines and sixty major newspapers. Additionally, the product received coverage on *Good Morning America* and on Home and Garden Television (www.robertfalls.com).

Einstone, like Dutch Boy, desires the attention and the business of female consumers and is working to reinvent concrete as a product for sophisticated women. Through its advertising campaign, in which the concrete bag is carried by a well-dressed woman who appears to be coming from a chic boutique (Kern, 2003), Einstone seeks to change the public's perception that concrete is messy and unmanageable; the concrete company has reinvented itself in an effort to create a new market and a new clientele. According to Ms. Sampson, the director for the Prince Program in Retail Management at Simmons College, many traditional markets are oversaturated; as a result, companies and marketers have to seek out new business opportunities, such as the female consumer market, in order to gain sales growth (Ecklebecker, 2005).

1.7.9 Branding: Connecting with the Female Consumer

A company's brand and brand message is key when trying to connect with consumers. According to *Home Channel News*, a news and analysis publication for the home improvement retail industry, tool companies and home improvement retailers will best attract the female consumer by creating product brands that focus on the end result or present a "solution-oriented story" (2003, June 16). Tapping into women's emotions is a key way to connect with the female DIYer.

"Meaningful brands exist to provide those consumers with the associations, experiences and community in which they desire to participate" (Arnell, 2006). Modern women want to be able to relate to the brands that they are buying and what the brands stand for. Today, consumers are more invested in the brands of products they use and use these brands as a means to express who they are (Arnell, 2006). Brands are not just about what products a company sells but what lifestyle and qualities they project.

In the home improvement industry, this means that home centers and tool companies must have an image to which women can relate. In recent years, home improvement retailers, Home Depot and Lowe's, have changed their brand identity to reflect their shifting clientele, now more Do-It-Yourselfer and female oriented, and their attitude towards these consumers. Since 2003, Home Depot's tagline has been "You can do it, We can help" and sends a message of self-reliance and customer service. Its previous tagline, used from 1999-2003, was "The Home Depot: First In Home Improvement!" Lowe's current slogan, "Let's build it together," is very community oriented and evokes a sense of camaraderie and companionship. Before 2006, "Improving Home Improvement" was synonymous with Lowe's. Ace's existing tagline

“Ace, the Helpful Place” reflects the company’s commitment to its customers and to great customer service, a key characteristic to win women’s loyalty.

The taglines of major home stores reflect the influence of the Do-It-Yourselfer in the home improvement movement. Home improvement is now about empowering people to make changes in their homes and communities themselves. These messages of inclusion and community appeal to a growing female audience of DIYers.

1.7.10 Women in the Do-It-Yourself (DIY) Movement

Women from a variety of backgrounds and ages are involved in the DIY movement. While home improvement was once a contractor-based, male-oriented market, today this is no longer true. Female DIYers have become more visible in this sector and are initiating more projects than ever before. “While women have traditionally been keepers of the home, the housing boom of recent years, gradual shifts in gender roles, and an increasing number of households headed by single females have helped boost women’s interest and involvement in home projects” (Tsao, 2005).

Multiple studies have shown that women are influential in the home improvement market as consumers, decision makers, and project initiators. “Women initiate more project ideas themselves than men: 43 percent compared with 38 percent” (Clough, 2005). According to a Lowe’s study, women have input in four out of every five home improvement decisions. An Ace Hardware survey revealed that sixty-two percent of American women are completing DIY projects on their own. Additionally, it has been reported that at least half of Home Depot and Lowe’s customers are women (Howell, 2002). “Another major survey, recently conducted by market researchers ACNeilson

PanelTrack and Hardlines, an electronic news service for the home improvement industry, indicates that women now make 80 percent of the decisions about where to go shopping and 94 percent of the decisions about which home improvement projects to pursue” (Allen, 2005).

Women are completing home projects often because many live alone and are unable to find reliable help or afford professional work. Frequently, women are choosing to complete home improvement projects to save money, gain a sense of independence, have fun, and improve their quality of life. According to Melissa Birdsong, director of trend forecasting and design for Lowe’s, many women find DIY projects fulfilling and empowering due to the money they save and the sense of self accomplishment they gain (Home Channel News, 2003, June). For others, undertaking home improvement projects and using tools make them feel powerful and independent. In fact, a 2004 Sears study found that 83 percent of participants, all of whom were women, stated that working with tools made them feel empowered and independent (Tsao, 2005). Another study found that home improvement and home décor projects are a means for creative self-expression. “49 percent [of women surveyed] say that they enjoy expressing themselves creatively through home improvement and 36 percent through home decorating” (Taylor-Smith, 2006).

In *Impact in Household Composition on Home Improvement Decisions*, a study by the Joint Center for Housing Studies, Harvard University, Bogdon (1996) found that household characteristics such as income, education, and number of residents help determine whether a household will complete home improvement projects themselves or will hire outside help (Baker & Kaul, 2000). Home improvement retailers and tool

companies would benefit from marketing to young, professional women who are often single and have disposable income to spend. By gaining their attention early on, companies could gain a group of brand loyalists and lifetime customers.

1.7.11 Educating Women through Workshops and How-To Clinics

Teaching women about tools and how to complete home projects is another trend in the home improvement and tool industry. In the late 1990s and early 2000s, Home Depot and Lowe's began offering general DIY clinics to the public, covering topics from floor and wall tiling to preparing for a hurricane. On May 14, 2003, Home Depot launched its Do-It-Yourself workshops which are held quarterly. In a friendly environment, women learn home improvement skills and get advice pertaining to home improvement products. As John Costello, Home Depot's executive vice-president of merchandising and marketing, points out, the Do-It-Yourself workshops provide women with education, which in turn leads to sales opportunities and helps build the Home Depot brand (Tsao, 2005). Following the workshops, many women are eager to purchase the tools and products that were demonstrated. "When the lessons stop, the students often shop" (Ridge, 2002). According to *NBC Nightly News*, the Home Depot's Do-It-Yourself workshops have done extremely well since they were introduced, increasing from 43,000 participants in 2003 to 370,000 in 2007 (Burkey, 2007).

Lowe's, like Home Depot, offers how-to clinics which teach basic home improvement skills. In recent years, Lowe's has partnered with Habitat for Humanity's Women's Build and offers specialized clinics to teach female volunteers basic home improvement skills. According to Chris Ahearn, Lowe's director for public relations,

Women's Build clinics provide volunteers with "two very important tools for success: how-to knowledge and the opportunity to practice new skills. These projects also have a ripple effect—individually they strengthen a woman's confidence in her construction know-how, and collectively they reinforce the importance of working together to build stronger communities" (www.habitat.org). Lowe's sponsorship of Habitat for Humanity's Women's Build reinforces its commitment to women and bettering communities throughout the United States.

Both Home Depot and Lowe's are committed to educating women about home improvement and recognize the strength of this consumer segment. Home Depot's Do-It-Yourself clinics and Lowe's Women's Build workshops are unique ways to educate women and to build their involvement in home improvement.

1.7.12 Tool Parties as a Source of Education

Tool parties are another approach to educating women about tools and home improvement; they are offered by Tomboy Tools, a women-owned and operated company founded in 2000. The Tomboy Tools parties are similar to Tupperware or Pampered Chef parties, but the Tomboy Tools consultants focus on selling tools and teaching women how to use them. Sue Wilson, co-founder and former CEO of Tomboy Tools explained that "it doesn't do us any good to just put tools into a woman's hands. We want them to know how to use them, and we want them to know how to complete projects" (Evans, 2002). Women are more willing to purchase tools if they know how to use them, and this shows the importance of including an educational component to win women's business in the home improvement industry.

Tomboy Tools has a comprehensive training program to teach its consultants, who are women, how to teach other women “to become confident and competent DIYers” (Tomboy Tools promotional flyer). Consultants begin by purchasing a tool kit with essential tools, a training DVD, and other business materials. They are trained to teach women about specific beginner projects. An online message board is available for sharing ideas with other consultants, for support, and for networking. Tomboy Tools’ consultants are located in many states across the U.S. and are now in Canada and the United Kingdom.

In the words of Sue Wilson, “Sometimes it’s intimidating for a woman to go to a hardware store when she really doesn’t know where to begin, and she feels stupid because she doesn’t know. So our whole point is that that’s okay with us because we all started there” (Evans, 2002). Tomboy Tools has made the home improvement experience better for many women through its educational tool parties and website. Women in need of basic tools no longer need to go to the hardware store; they can go on-line or contact their nearest Tomboy Tool consultant.

1.7.13 Products and Packaging that Target Women

The number of products made specifically for women is increasing. “In 2001, 3.6% of all new products were specifically tailored to women. That number more than doubled to 7.9% in the first half of 2005 alone, according to Datamonitor’s Productscan Online new-product database” (Korn, 2005). During the *Home Channel News Marketing to Women* conference, female home improvement industry experts suggested that “when repackaging and redesigning a home improvement product to appeal to women, make it

lightweight, functional, and stylish, and provide clear and concise instructions (Home Channel News, 2003, March).

In the past, products marketed towards women have often been a feminized version of a man's product. A good example of this is the razor; until recently, a woman's razor was a differently colored version but the same design as a man's razor. With the introduction of the Venus razor in the early 2000s, the status quo in the shaving market changed, and companies began to study how men and women shave (Bittar, 2002). This example shows the value of researching the ways in which men and women use products.

More than ever before, companies are producing lifestyle brands and products. As a result, consumers are buying into the idea that a specific brand or product is a statement of who they are. Peter Arnell, a regular columnist for *Advertising Age*, suggests that "Consumers not only buy your products, they buy into them" (Arnell, 2006). This statement suggests companies who understand their target market and project a lifestyle image might be successful in gaining extremely loyal customers because the brand or product is part of who the customers are and what they do, or even who the customers imagine themselves to be.

Many women interested in home improvement and DIY projects take on such work often to feel independent and capable; thus, the products and brands targeting women should embody these feelings. Existing companies such as Tomboy Tools and Barbara K! connect emotionally with women by offering tools and education for women. They are creating a community of women who are either strong, independent women looking to do work on their own, or women who want to become that woman. They ultimately are selling confidence and knowledge. "It's not just the tools that are drawing

women – it’s the help the company provides in using the tools,” says Sue Wilson of Tomboy Tools (Evans, 2002).

Many retailers are hesitant to develop and to market products for women, especially within the tool and home improvement market. The influence and visibility of women as a strong customer base is still relatively new in these markets. However, ignoring women’s needs or not investigating them thoroughly may be a mistake because women are purchasing more home improvement equipment than ever before (Kern, 2003). Several large retailers, such as Lowe’s and Target, are expanding their product lines to include more merchandise that focuses on women’s needs: lighter, scaled-down tools and beautiful packaging that focuses on selling the end result through pristine photographs (Arnell, 2006).

1.7.13.1 Educational Component and Ease of Use

Ease of use is a strong factor that designers should consider when creating products for women. Women want information that is straightforward and easy to understand. The technical jargon is best when omitted or scaled-back. Zircon, a Californian company that makes stud finders, has spent a great deal of time and resources developing products that are easy to use. “We feel strongly that people, particularly women, are concerned with ease of use,” said Dan Harrell, director of communications for Zircon. “All of our products are rigorously designed to be as simple as possible to understand and to use” (Kern, 2003). Their iSensor, a small stud finder available in candy colored translucent plastics, has been successful with women; in fact, approximately three-quarters of this product have been sold to women (Kern, 2003). Of all the stud

finders offered at Lowe's, Zircon was the only company to offer an educational DVD to teach customers the proper way to use the tool.

1.7.13.2 Packaging: Making DIY Projects More Convenient



Figure 4. Einstone Concrete Package.

Another way to appeal to women is to make home improvement projects more convenient and less messy. Einstone, a Miami-based company, has reinvented how concrete is sold. Packages of this company's concrete come in manageable 40-pound bags, 40 pounds less than standard bags that include premixed concrete and an activator. The redesigned packaging (Figure 4), inspired by ready-to-eat lettuce bags, has been updated to

make the dirty task of using concrete more appealing (Kern, 2003 & Home Channel News, 2003, March). By making concrete more manageable and less messy, Einstone has reinvented its product as a creative medium for craft and small home décor projects and is now selling it in craft stores, a place where concrete had never previously been sold (Kern, 2003).

Dutch Boy is a company that has also made great strides to better home improvement. The *Twist and Pour* paint container was developed to make the painting process less messy and the paint can easier to use and to store. The change in packaging makes the overall product more appealing and has resolved many of the problems with

the old metal paint cans. By using features similar to a laundry detergent bottle (i.e., easy pour spout and blow molded handle), Dutch Boy, a division of Sherwin Williams, reinvented the paint can and in the process won over many women.

Following its great success with the *Twist and Pour* paint can, Dutch Boy introduced the *Ready to Roll* (Figure 5), a two-and-a-half gallon paint container with a built-in roller tray and easy opening lid. According to Adam Chafe, Dutch Boy’s vice president of marketing, consumer research conducted by Dutch Boy showed that



Figure 5. Dutch Boy Ready to Roll.

“when it came to painting, the *Ready to Roll* paint container was far neater and far easier to use, transport, open and close, and more secure for storage than any of the other project-sized alternatives, such as three- or five-gallon buckets, or separate, one-gallon metal paint cans” (Packaging Digest, 2005). The innovative *Ready to Roll* is a product that makes painting, a favorite project of Do-It-Herselfers, simpler and less messy.

Einstone and Dutch Boy’s innovative packaging benefits the consumer and helps make DIY projects more manageable and more appealing. By solving the problems of the existing packaging, both companies created products that make home improvement easier.

1.7.13.3 Ergonomic Adjustments

When designing tools and tool handles, it is important to consider the hand size differences between men and women. Ames True Temper created a line of gardening tools called Earth Tools that were designed with women in mind. The tools are “25

percent lighter and 20 percent smaller than full-sized tools [as] women tend to have a smaller hand size [but still] want real tools that work and fit them” (Kern, 2003).

Female-friendly tool companies, Barbara K! and Tomboy Tools, both offer lines of tools that are marketed as ergonomically correct (i.e., lighter weight and smaller handle diameter).



Figure 6. OXO Hardware Tools.

and gardening tools (Figure 6) and thus has given its loyal customers ergonomic tools for other areas of their lives.

OXO International has taken a different approach to gaining the trust and business of female customers in the home improvement industry. Many women know the OXO Good Grips brand but associate it with ergonomic kitchen utensils. OXO has expanded its product line by adding hardware

1.7.13.4 Emphasis on the End Result

Home improvement product manufacturers and tools companies are altering the manner in which they market and sell their products. They are reinventing their products by thinking how and why women might use them.

Campbell Hausfeld has marketed its paint sprayer to women, a product traditionally used by professional painters. The company discovered that the sprayer worked well for faux finish paint jobs and created a “Custom Decorating Kit” for women.

Instead of emphasizing the utility of the sprayer in its packaging, the company focused on the end results of a beautiful room to connect with women's emotions (Kern, 2003).

According to Pam Melton, senior product manager at Campbell Hausfeld, it is more important to focus on "the emotion of getting the project done" than on the tool or product. Consumers are more interested in product performance and project results than product specifications (Home Channel News, 2003, June).

According to Barbara Kavovit, owner of Barbara K! tools, "it's not about the tool, it's about the whole packaging of the tools combined as one to enable you to accomplish the things around the home that you need to get done" (Rusch, 2005). Women's focus when it comes to home improvement is the overall picture and how her life can be changed by the products she purchases.

1.7.13.5 Avoid Gender Stereotyping

Currently on the market, there is an overabundance of pink tool kits that are being sold as "tools for women." In American culture, pink is commonly considered a feminine color and is often associated with girls and women. In fact, apparel for infants begins this gender stereotype; blue clothing is typically for boys, and pink is for girls. This color trend continues to womanhood as many "feminine" products are pink.

Pink is a topic of contention for many women. Some women love it, while others dislike it and find pink products condescending. In the razor industry, razors were generally designed for men and then later offered in feminine colors such as pink and sold as "women's razors." Gillette's Venus razor changed this cycle and revolutionized the woman's razor. It was designed for the way women shave their underarms and legs

and was initially only offered in turquoise. In the words of Michele Szynal, Gillette's director of Global Communications, "We really wanted something that women wouldn't think was offensive" (Korn, 2005).

After being on the market for some time and proving its value, a pink version of



Figure 7. Tomboy Tools "Pink for a Purpose" Hammer.

the Venus was introduced (Korn, 2005). This example shows the importance of researching the consumer and understanding their needs. Producing a product that is pink does not automatically make it a woman's product; the design of the product is the critical part.

"No Pink Tools" was Denver-based

Tomboy Tools' motto for its first six years of operation. In 2000, when Tomboy Tools was

founded, the pink tools being sold to women were of poor quality and badly designed.

Thus, the motto, "No Pink Tools," was developed. According to Janet Rickstrew, co-founder and current CEO, the female founders of the company viewed pink tools as

condescending and offensive. Recently, however, the company has changed its standing

on the issue of pink tools. In 2006, Tomboy Tools developed a pink hammer (Figure 7) as a fundraiser for the Susan G. Komen Foundation. Following the fundraiser, requests for

pink tools skyrocketed, and afterwards, the company launched a line of quality tools

available in pink. According to Ms. Rickstrew, the company wants to dismantle the

stereotype that pink tools are poor quality. Overall, the tool company created pink tools to

meet the demands of its customers, who now have a choice of pink or blue tools.

2. INTRODUCTION TO RESEARCH

This report is a compilation of research from a series of product feedback research, user surveys, and interviews with industry professionals in an investigation of tool design and designing for women. This summary of the research supports the need for specialized hand and power tools designed with women in mind. The work for this study is broken down into the three main categories mentioned above: product feedback research, user surveys and interviews with industry professionals.

In each phase, the goal was to gain information about whether there is a need for tools designed to better accommodate women and whether this line of products would have a place in the mainstream tool and home improvement markets.

It must be clarified that currently on the market several tool lines are devoted to women; however, the questions that arise are whether these tools are designed for women or if they are marketed in a manner to attract female consumers? The difference between the two is vast, as the second is almost a disservice to the idea of tools for women.

Another question that continues to surface is whether tools for women are really necessary and what, exactly, defines a “woman’s tool.” Because of pink tool kits and other non-professional tools on the market geared toward women, some female consumers have a negative perception of what tools for women means.

The climate is changing in the home improvement industry as the number of female consumers increases. Despite the changing client base, tool companies and home

improvement retailers are reluctant to design products for women and, even more, to visibly market these products directly to women; there is a strong fear of alienating men and possibly even women. Additionally, no large tool company has taken steps to create a full line of tools for women, as it is seen as a risk too big to take.

This study, however, supports a case for the design of tools modified to better accommodate women's physiology, as well as to meet their product feature demands. During user surveys, numerous women expressed interest in this topic and were curious to know how a drill designed for women might differ from the ones currently on the market.

2.1. Investigation 1: Product Feedback Sessions and User Surveys

2.1.1 Method

Seventy-four women, all members of the Agnes Scott College community, many of whom were undergraduate students, served as subjects. They participated in the study on an individual and voluntarily basis outside of any classes, during two on-campus events.

The research included two product feedback sessions, in which six drills/drivers were examined, and a short user survey. Overall, seven drills were studied; however, one in each session was not included in the other study. This difference was due to human error and shipping delays. In regards to the survey, it was deemed necessary to make revisions to clarify information that seemed confusing to participants of the first study session. Additional questions were asked in the second session to gain more knowledge about user preference relating to color and product features.

The drills varied in size, shape, voltage, and color; the intention was to better understand what combination of these factors would be most preferred by women. All brand names were covered to keep participants from being unduly influenced. Additionally, each drill was numbered for response purposes (Appendices B & C).

Participants were asked to examine and to handle six drills that ranged from a 6 volt screwdriver to an 18 volt cordless driver/drill. The women were encouraged to analyze the features that they liked or disliked and to choose a favorite drill following their



Figure 8. Barbara K! Power Lite Drill.

examination of all six drill/drivers. Subjects based their opinions on how the drill felt in their hands, not how well it worked, as they did not actually use it to drill or drive.

Immediately following product testing, each subject was given a user survey that asked a series of questions, which varied in format from multiple-choice to open-ended questions (Appendices B &

C). The design of the questionnaire was intended to allow subjects to participate in the study in an efficient manner. Those who were more interested in the study or who had more free time were allowed to spend as much time as they needed to answer questions. There was no minimum or maximum time limit set for responses.

2.1.2 Anticipated Outcome

It can be expected that female survey participants will prefer the cordless drills that have smaller handles and are lighter weight, such as the 12 volt cordless drills by Barbara K! and Tomboy Tools, as well as the 9 volt drill by Black & Decker. One can assume that the subjects of this session will prefer the cordless drills over the one corded drill. Additionally, it can be anticipated that color and marketing features (i.e., bubble levels, magnetic trays, and bit holders) will be important to women.

2.1.3 Outcome

Among the six driver/drill choices, the 12 volt drills scored the highest. Participants remarked that the 12 volt drills had enough power while not being too heavy. In the first testing, the Barbara K! *Power Lite* 12 volt drill (Figure 8), a drill designed for women, was the most favored, followed by a 14.8 volt Black & Decker drill. The preferred drill of subjects participating in the second testing was the Tomboy Tools 12 volt drill (Figure 9), which was not a part of the initial study; the runner-up was the Barbara K! drill. The added features such as the bubble levels, the magnetic strip, and the built-in bit holders pushed the Tomboy Tools drill into first place. The female participants liked the convenience of these organizational tools.

The questionnaires from participants resulted in a variety of answers, though there was enough feedback to draw some conclusions. Approximately 90 percent of the women surveyed had held a drill prior to the day of testing. The majority of women responded that they knew how to use a drill and most had learned this skill from their father. When asked what features were most important when purchasing a drill, the top two answers

were price and overall design. Weight and handle size were the next considerations. Surprisingly, color was not an overriding consideration for many women purchasing a drill.

In the study, participants were asked how they would imagine using a drill. Study subjects overwhelmingly stated that they would use a cordless drill most often for home improvement projects, followed by home décor and craft projects.

The survey asked if there were any feature that the women respondents would like to see on a drill. The top answers were that the drill should be lightweight, well-balanced, and have a small handle.

Color was an interesting topic for those participating in the survey. A variety of answers was given to the question: What color would you imagine a cordless drill for women to be? The top colors chosen were pink, black, blue, and purple. However, pink was a subject of contention; though it was popular with some women, it was very unpopular with others, who even responded “not pink.”

A question was added to the second survey to learn more about colors that surround women in their everyday lives. Women were asked to think about the accessories, cosmetics, and products that they use as a part of their daily lives. They then were asked to record the colors that are most prevalent. Blue, pink, and green were the high scorers among the many varied answers.



Figure 9. Tomboy Tools Current Drill.

Finally, part of the user survey included comments and suggestions. The majority of respondents did not prepare an answer for this question. Those who did respond made comments about the importance of making the drill lightweight with good balance and a small handle. Others emphasized that the drill should be good quality and easy to use. Several women felt that drills should not be gendered and that there should be a universal drill, instead of a woman's drill. Overall, the survey participants felt that the idea of women's tools was a good one, but many made it clear that the drill should not be of poor quality or a stereotypically feminine color.

2.1.4 Discussion

According to this study, color was not a top consideration when women are purchasing tools. This information attained from the survey is interesting but shows that there is a need for more conclusive research. On one hand, women suggest that color is not important; however, when given the chance to make a suggestion for the color of the drill, the female participants were very specific, suggesting colors such as ochre and lipstick red. From these disparities, it must be advised that a further color study be done in order to better understand what women really prefer.

2.2 Interview with Darwin Keith-Lucas

2.2.1 Method

Darwin Keith-Lucas, a professional industrial designer who has 3 years of industry experience working specifically with power tools at Porter Cable in Jackson, Tennessee, was interviewed for approximately an hour. His graduate research was a study

on tool handles and if there needed to be more than one to accommodate both men and women. The complete interview can be viewed in Appendix B.

2.2.2 Outcome

Taking from his past research and professional work in the tool industry, Mr. Keith-Lucas felt that there is room for gender-specific tools in the home improvement and tool markets. He suggested that the main reasons companies have not explored this area more is due to distribution issues and the fear of alienating men. He tended to think that a smaller company or a company producing consumer grade tools might be able to break into this market, as it would have less to lose.

When asked about what important considerations to make when designing tools, Keith-Lucas suggested paying close attention to the diameter of the handle, the shape of



Figure 10. Dewalt “Caution Yellow” Tools.

the grip, and the button placement. He recommended references on human factors and ergonomics as good sources for understanding the user’s needs. Form language with soft lines was suggested to make tools female-friendly.

According to Mr. Keith-Lucas, color is very influential in tool design, and he gave the example of DeWalt’s “caution yellow” (Figure 10). Regarding the tool material, it was concluded that a transparent plastic would perform poorly as a material for a cordless drill and that glass-filled nylon was the common industry standard for tools. Additional information about the thickness of the housing and the size of the bosses was given. The

housing is 3mm thick; bosses are 10mm in diameter, and screws are thread forming. Overall, Keith-Lucas made the suggestion to study right angle drills and battery technology.

2.2.3 Discussion

The interview with Mr. Keith-Lucas was very informative and helped the researcher gain a deeper understanding of the tool industry. Additionally, the interviewee shared important industry information regarding specific tool dimensions and characteristics, helpful information for design considerations.

2.3 Interview with Daily Gist

2.3.1 Method

A one-and-a half-hour telephone interview was given to Daily Gist, a ten year veteran in the tool industry, who has worked for Porter Cable and currently works for Irwin Tools. She is also friends with Sue Wilson, one of the founders of Tomboy Tools, and did some initial design work for them in the early 2000s. Ms. Gist discussed many aspects of tool design, from the quality of internal components in power tools to her own experience designing tools with women in mind.

2.3.2 Outcome

One of Ms. Gist's strongest points was that tools vary quite a bit in quality and that the better the internal components, the better the power tool. As an example, she compared getting a hamburger at McDonald's to ordering a gourmet burger at a high-end

restaurant. She was trying to make the point that the consumer will get the kind of drill that she pays for and that there is a huge difference in quality between professional and consumer grade tools.

In regards to designing tools for women, Ms. Gist had done several concept ideation sketches for tool design for Tomboy Tools. She had also tried to push the idea at Porter Cable without any success. At Irwin Tools, she took part in the Tough Tools



Figure 11. Tough Tools by Newell Rubbermaid.

design process, which were tools designed with women in mind but were not marketed as tools for women (Figure 11). The hand tools were given a soft look with cobalt and gray rubber over mold, as well as soft lined form language. Unfortunately, the Tough Tools line did not do well on the market and was pulled off of retail shelves.

Ms. Gist speculates that in order for tools for women to be successful, a large well-known company with a big financial backing will have to undertake this project. She also believes that the company will have to commit to the idea completely and will need to follow through by spending lots of money on branding and advertising. She gave the example of DeWalt entering the tool market with “caution yellow” tools in a time when tools had traditionally been black. She also mentioned Lenox tools, which are white. Speculation surrounded this company until people made the connection that many items surrounding construction sites are white, and that the white tools fit right in. Ms. Gist believes that tools designed and marketed towards women can be successful in the home

improvement arena; it will just take a lot of money and advertising, and the tools will need to be released at the right time, during the right social climate.

Ms. Gist suggests finding a niche with women and understanding what they need outside of tools, such as education or help with measurements. She also mentioned teaching women how to begin a project by suggesting the tools one would need to complete the project. Finally, Daily talked about seeking endorsements from well-known women, such as Martha Stewart or Oprah, who have gained the trust of American women. Again, this effort would require a large financial backing to pay the celebrity but would be a possible way to earn the confidence of women in the company.

Overall, Ms. Gist felt that it would be best for a large, mature company to initiate a line of tools for women. She mentioned that it is hard to break into the tool industry and that there is “no money in power tools.” Companies such as Barbara K! and Tomboy Tools are inexperienced in tools and are not mature companies, which Ms. Gist says makes them inconsistent.

2.3.3. Discussion

Ms. Gist was extremely helpful in regards to sharing industry knowledge of tool companies. Her experience with tools and desire to see a line of tools designed with women in mind made her a great source of information. She was able to share her own experience regarding the barriers of getting tools for women produced.

Following the interview, Ms. Gist provided the researcher with several hand tools from the Tough Tool line, designed by Newell Rubbermaid. These tools had been designed with women in mind but were not marketed as “for women.” After reviewing

the tools, the researcher feels that this tool line may have failed due to branding issues. The name of the tool line is very masculine, as is the chosen font and graphics. The tools, however, convey a feminine quality with smooth, rounded lines and a soft tactile material. It can be suggested that the tool design and the logo design did not work well together and thus possibly missed catching the attention of the intended market.

2.4 Interview with Janet Rickstrew

2.4.1 Method

Janet Rickstrew, co-founder of Tomboy Tools, gave a consultant recruitment lecture to approximately fifteen women in a private meeting room at the *Gwinnett Daily Times* Women's Expo. She demonstrated methods and projects that consultants use to teach other women home improvement skills.

During intermission, the CEO was interviewed briefly. Ms. Rickstrew was available for a ten minute meeting in between the tool demonstration lectures to answer a few questions regarding the Tomboy Tools cordless drill, the company's business history, and Tomboy Tool identity.

2.4.2 Outcome

Janet Rickstrew's motto when teaching female consultants to instruct other women how to use tools is: "Make it Fun. Keep it Simple." Throughout her tool demonstration to potential Tomboy Tool consultants, the CEO emphasized that education is crucial when helping women new to home improvement become confident DIYers. Ms. Rickstrew summarized that Tomboy Tools is a way for women to "find friends and

community” and that it is much like a buddy system where everyone helps and supports each other.

During the interview with the CEO, the first topic of conversation was the Tomboy Tools cordless 12V drill, which had placed as a favorite during the previous



Figure 12. Tomboy Tools Original Drill

product testing at Agnes Scott College. Ms. Rickstrew revealed that the cordless drill is an outsourced product that is manufactured by Campbell Hausfeld, a Harrison, Ohio, based company. According to Janet, this drill was chosen because it is well-suited for the DIY consumer and is ergonomically correct for women. Additionally, the Tomboy Tools’ co-founder feels that Campbell Hausfeld is a reputable company that is known for

manufacturing well-made tools. Ms. Rickstrew mentioned that Tomboy Tools had been launched in January 2000 and that power tools were not introduced until two or three years after the company was started. The drill that they carried earlier differs from the one they currently sell (Figure 12).

Tomboy Tools was founded to give women well-made tools designed with the female user in mind. According to Rickstrew, the tools offered by Tomboy Tools are the antithesis of traditional stereotypical “women’s tools,” which often are poor quality tools that are available in pink or floral patterns. To avoid any association with badly made tools, the founders of Tomboy Tools decided to use blue, a more “neutral” color with wide appeal, as the color for their company’s logo and tool line.

After six years in business, Tomboy Tools has changed its view of pink tools following the success of the Susan G. Koman breast cancer hammer. Apparently, many “Tomboys” wanted pink tools so that their husbands or boyfriends would not use them and so that they would have access to their tools when they needed them. From Janet Rickstrew’s perspective, Tomboy Tools changed to meet the demands of its female client base and is trying to change the stereotype of cheaply made, pink plastic tools.

Following the end of the interview, Ms. Rickstrew continued her consultant recruitment presentation. She discussed Tomboy Tools partnerships with LP Molding, the Susan G. Komen foundation, Habitat for Humanity’s Women’s Build, and the Girl Scouts of America. Tomboy Tools’ goal is to create a customized tool kit for the Women’s Build project and is working with the Girl Scouts to create a “Miss Fix-It” Badge. Their goal is to get tool kits into the hands of as many women and girls as possible and to help empower them and build their confidence. Overall, they want women to be self-reliant and knowledgeable enough to complete home repairs by themselves.

2.4.3 Discussion

Tomboy Tools should be commended for their effort to educate women about tools and home improvement products. However, they are incorrectly marketing their tools as ergonomic tools designed for women. The tools that they carry are OEM tools that in some cases may fit a woman’s hand properly. The tools, conversely, are not “designed for women” and are not designed by Tomboy Tools. Tools sold by the Denver-based company are designed and manufactured by others. In the case of the cordless drill,

as mentioned above, Campbell Hausfeld is the manufacturer and sells the same model drill on its website at a lower price than the same drill embellished with the Tomboy Tools logo. It is a disservice to women to mark up prices on tools just because they are “for women.”

2.5 Investigation 2: Design of Brand Identity and User Feedback

For this thesis study, the researcher developed a hypothetical tool company called Empower that would specialize in tools designed specifically with women in mind. The brand identity, company name, tagline, and graphic identity were carefully designed for a specific market, women ages twenty-five to fifty-five who are novice to intermediate Do-It-Yourselfers. For more information regarding the company identity and branding brief, see Appendices E, F, & G.

2.5.1 Method

A logo was developed for Empower, a hypothetical sub-brand of tools for Black & Decker that would be marketed and designed with women in mind. After looking at the logos of existing tool companies owned by Black and Decker, it was determined that a sans serif font would best fit in with the rest of the logos. Most of the Black & Decker owned companies have a largely male clientele and use very masculine, bold sans serif fonts in all capital letters.

For the Empower brand to attract women, it was determined that a rounded, semi-bold sans serif font in lower case letters would work best. ITC Ronda, a very feminine font with round letters, was chosen as the primary logo font. Lowercase letters were

chosen for the word Empower to project an approachable image. The letters are clean and exude a level of quality and precision.

The tagline, “Build Your Life,” was designed using Helvetica Neue, a different sans serif font. The second font, like the first, is clean and approachable, but the letters are all capitalized to draw attention to the message trying to be conveyed.

Pantone 2735C, a deep blue-purple, was chosen as key color for the Empower logo and is used for the word Empower. This color was chosen for its feminine and rich quality and was selected following color feedback on tools from the Agnes Scott College surveys. An orange, Pantone 1585C is used as a supporting color for the logo’s tagline, “Build Your Life” and ties the Empower brand to the Black & Decker brand. In addition, the orange Black & Decker hexagon symbol was added to reinforce Empower as a sub-brand of this company (Appendix H).

After the Empower logo and brand identity was completed, a short, four part survey on logo design (Appendix I) was given to thirty-eight women from the Auburn University Industrial Design community. Two women were staff members of the Industrial Design department; five participants were upperclassmen industrial design students. Eighteen were industrial design summer option students. Nine were industrial design summer day camp students. Subjects participated in the study voluntarily.

This survey was used to discover more about women’s preferences concerning fonts and to test the initial Empower logo, developed prior to the survey. The logo was tested in an effort to acquire feedback from women in the target market and to better understand how women interpreted the brand and tagline.

For the short survey, the Empower logo was varied eight times by using eight different sans serif fonts for the word empower. The tagline in Helvetica Neue did not change. Participants were asked to choose their favorite version of the logo and describe why they liked it best. Then, the subjects described what the word “Empower” meant to them. Lastly, the survey asked how the women interpreted the tagline, “Build Your Life.”

2.5.2 Anticipated Outcome

It can be expected that this study will show that women are attracted to sans serif fonts and prefer ones that have a very round quality to them. The results of this survey are expected to validate the design decisions made by the researcher, such as the fonts and colors chosen for the target market. It can be anticipated that the original logo will be the most favored and that the brand colors will be deemed appropriate.

2.5.3 Outcome

The top logo choice varied quite a bit among the female participants. However, two logo variations were most favored, and together, received two-thirds of the votes. Century Gothic, a very round-lettered sans serif font received ten votes; the top choice, with eleven votes, was the original logo that used the ITC Ronda font for the word empower. These results support the researcher’s understanding of logo development for this study’s target market.

“Empower” was interpreted by many women to mean independence, self-reliance, self-motivation, and believing in oneself. Others interpreted it as being in control of one’s destiny and making things happen for oneself. Further participants focused on the power

aspect of the word and thought that empower meant to give power to those who did not have it before. Overall, the word empower was well-received and was validated as an appropriate word to use for a brand focusing on women. Additionally, the survey feedback showed that the word “empower” conveyed the desired message to the target audience.

The tagline, “Build Your Life,” was successful as it meant many different things to female survey participants. To some women, it meant creating the life that one would like to lead and making things happen for oneself. Other women understood it to mean bettering one’s life through self-determination and planning. One woman interpreted it in a unique manner. She wrote, “it makes me think of tools that are good for a lifetime [which are] long-lasting and durable” (personal correspondence, June 27, 2007). Some female participants suggested that “Build Your Life” meant to be the author of one’s life and not to be dependent on others. Still others associated the tagline with creating a family and having children. The variety of responses to this question seemed to vary according to the participant’s situation in life, age, and perspective. Overall, this tagline achieved its intended purpose by being interpreted on many different levels and conveying many messages.

2.5.4 Discussion

The Empower brand and logo was a success as it was well-received by its intended audience. The desired messages crafted by the researcher were interpreted as anticipated. Survey participants related to the word empower in a positive manner. The “Build Your Life” tagline generated a variety of answers which illustrated its depth.

3. GUIDELINES FOR THE DESIGN OF HAND TOOLS AND POWER TOOLS THAT BETTER ACCOMMODATE WOMEN'S NEEDS

3.1 Emotional Connection through Branding

Men and women are very different emotionally and psychologically (Appendix K). It is therefore important to take note of this and design with this difference in mind. The following points reflect methods of connecting emotionally with women involved in the home improvement and tool markets. Often for women, home improvement projects are a form of self-expression and a way to improve their surroundings and their quality of life. Forming a strong emotional connection with women is important way to build brand loyalty and to win their business.

- Focus on selling the end result; show women what they can accomplish with the tools or products (i.e., before and after photographs of rooms; glamour shots of rooms that have been made over).
- Sell an improved quality of life. Help women imagine how their lives would be changed for the better after completing a home improvement project (e.g., Home Depot's True Stories commercial about gardening turning an apartment building into a community; see page 22).
- Send encouraging messages by showing other women completing the project successfully (e.g., Home Depot's True Stories advertisement campaign).

- Use advertising and commercials as a way to show that women are capable of doing home improvement projects; consider using a female endorser who is familiar to women and who is considered a credible person.
- Build a brand that is relevant to the target group of women, one in which they see themselves reflected (refer to 1.7.9).

3.2 Aesthetic Appeal

The criteria listed below address the appearance of the tool and how it should be designed to appeal to women's senses. The form and design of home improvement products designed for women should be carefully considered. Details for every aspect of the tool should be well thought through.

- Pay attention the overall design of the product, including the packaging, the instruction manual, the tool box or bag, and the other items that it comes with (i.e., the battery pack and charger for a cordless drill).
- Focus on a well-designed product manual with visuals (i.e., photographs and graphic elements) and a good graphic layout. Instructions should be easy to understand through clear written and visual instructions.
- Do not insult women by automatically conforming to gender stereotypes such as using pink or floral patterns; be thoughtful and deliberate when making design decisions. Products can be pink but should be well-made and well-designed; be prepared to defend specific color choices or offer the product in pink and an alternative color (e.g., Venus razor and IPOD mini & shuffle).

- Use form language that is consistent and thoughtful.
- Soft, fluid lines and rounded surfaces will make the product appear more feminine, but be careful not to overdo this. Tools and home improvement products still need to have some straight lines and surfaces in order to portray precision.
- Strategically use rubber over-mold to add visual and tactual softness to the tools.

3.3 Ergonomic Considerations

Women have a different physiology than men, and these anthropometric differences should be considered when designing for women. Hand size and strength are the two most critical considerations for tool and handle design, and for these measurements, it is recommended that designers refer to the anthropometric standards created by specialists in the respective fields of Anthropometry and Ergonomics. *The Measure of Man and Woman* by Alvin R. Tilley and Henry Dreyfus Associates and *Bodyspace* by Stephen Pheasant are good references with which to begin. Ergonomic considerations follow:

- The maximum grip diameter for women by percentile is consistently smaller than men's. For the fifth percentile of women, the maximum grip diameter is 43 mm; for the fiftieth percentile of women the maximum grip diameter is 48 mm, and for the ninety-fifth percentile, it is 53mm (Pheasant, 1996, pg. 84).
- The handle diameter for tools designed with women in mind should be approximately ten percent smaller than tools designed for men. This estimate is

based on Stephen Pheasant's maximum handle diameter measurements for women and men (1996, pg. 84). In general, for both men and women, 30-50 mm is the suggested range in diameter for tool handles (Pheasant, 1996, pg. 87). For women, Henry Dreyfus Associates suggests that 32-38 mm is the optimum diameter for ball or cylinder grips (Tilley, 2002, pg. 75).

- Avoid sharp points, finger grooves, and flat or raised surfaces that may cause hotspots on gripping surfaces (Pheasant, 1996, pg. 87).
- A circular handle or rounded handle with a minimum radius of 25 mm will be most comfortable for the user (Pheasant, 1996, pg. 87).
- Handle length should be at least 100 millimeters or approximately 4 inches (Grandjean, 1998, pg. 121).
- The weight of tools should be carefully considered when designing for women. It is commonly suggested that women are two-thirds as strong as men. However, the variance in strength between the two sexes depends on the muscles or regions of the body being tested. In general, there is a larger sex difference in upper body strength than lower body strength. It has been suggested that upper arm and shoulder strength varies more between the sexes than hand and forearm strength. (Pheasant, 1996, pg. 157). Thus, tools which require the female user to hold the tool in an upward position, using upper arm and shoulder muscles, should be reduced a third in weight. Designers can accommodate for this factor by using lighter materials and lighter-weight components.

3.4 Qualitative Characteristics

Qualitative factors are ones which convey quality to the consumer. In relation to tools, these characteristics address convenience, weight, balance, and perceived thoughtfulness, all key features that are important to the female consumer.

- Balance was mentioned frequently by women as a crucial factor for determining the perceived quality and effectiveness of a product. “The tool weight should balance close to the point of support” (Woodson, B. Tillman, & P. Tillman, 1992). In the case of the cordless drill, the motor is located over the handle and the battery below it. The combination of the two helps balance the drill.
- Use quality materials and components to ensure that the product works well. It has been suggested that the quality of internal components is as important when determining a tool’s power as the level of voltage available. Refer to the interview with Daily Gist, page 44.
- Include convenient product features when possible. In the case of the cordless drill, a bit holder and a bubble level might be included. These added features increase the value of the product to women.
- Bundle relevant tools together into kits for specific projects. Ready-to-use toolkits are popular with the female market because they are convenient and make home improvement projects more straightforward and manageable.
- Make tools convenient and easy to use (e.g., quick-change drill & screwdriver bits).

- Provide a place for tools to be put away. This should go beyond the traditional carrying case and provide a special place for associated components (i.e., drill bits and battery charger).
- Make products and projects less messy (e.g., Einstone pre-mixed concrete). Products that make home improvement easier and cleaner will be favored by women.
- Multipurpose tools for projects are viewed positively by many women (e.g., the Black & Decker *Project Mate*) because they take up less space, but still allow the user to complete a set of basic tasks.

3.5 Functional Qualities

These qualities contribute to utility of the overall product and to the way it works.

- Use mechanisms that reduce stress (i.e., springs that help ease the tensions when squeezing handles together such as with scissors or pliers).
- Controls should be obvious and communicate clearly.
- Use redundant queuing when applicable. Indicating a function to users in more than one way allows them to better understand how to use the tool and its features (e.g., a forward/reverse light indicator and a forward/reverse switch on the Empower cordless drill).
- Minimize the need for changeover between parts (e.g., using quick-change bits, which allow the user to switch between a drill bit and a screwdriver bit).
- Design tools to be battery-powered when possible to avoid the potential safety hazards of an electrical cord (Woodson et al., 1992, pg. 508).

3.6 Educational Focus

Education is a key component of the female market segment. Teaching women the correct way to use tools and to complete home improvement projects is a positive way to build brand loyalty and to increase business.

- Include an educational component that has clear, jargon-free, and well-illustrated directions on how to use the product; avoid industry jargon when possible.
- Make additional educational information available online or through the use of a DVD or CD included with the product. This will give women a how-to resource that will help build self-confidence and brand loyalty.
- When possible, sponsor or take part in educational workshops or programs that teach women how to use tools and complete home improvement projects (i.e. Home Depot's Do-It-Herself workshops and Lowe's Women's Build clinics).

3.7 Application of Guidelines

The guidelines developed for this thesis were applied to the redesign of a cordless drill in an effort to illustrate how a tool could be made to better suit women and their needs. The goal of the product design was to test the effectiveness of the newly developed guidelines and to illustrate their value. Points from each of the five key areas were used to create a dynamic and well-rounded product that has many of the female-friendly qualities.

As a starting point, the researcher used an existing cordless drill (i.e., the Ryobi 12 volt cordless drill, model HP512K) that was designed with women in mind. It has

positive characteristics, such as a handle diameter appropriate for women, nice marketing features such as a bubble level and magnetic tray, and an overall good design.

Additionally, the drill had been scaled down in a manner that used as little extra material as possible and used well-made internal components (i.e., the chuck, the clutch, and the motor). By using the existing drill handle and the internal components from the Ryobi HP512K, the researcher was able to build upon a good design and make it even better using the guidelines developed for this study. The following points describe the application of the tool guidelines to the design of the Empower cordless drill.

3.7.1 Emotional Connection through the Empower Brand

Creating an emotional connection between the brand and the intended audience was the clear goal of the Empower brand. Research from this study suggests that a very powerful way to gain the female consumer's business and loyalty is through emotional connections.

- The Empower brand was developed carefully to evoke feelings of self-reliance, self-motivation, and taking control of one's life. The word "empower" relates to women in a positive manner and is appropriate for women within the targeted age range of 25-55 years.
- When compared to the other lines of female-friendly tools, Empower stands out with its strong and direct brand message.
- The tagline "Build Your Life" has layers of meaning and is interpreted according to the woman's age and situation in life. The depth of the message allows for the

brand to reach women of many ages, social classes, and life experiences. The tagline portrays a message that is relevant and meaningful to many.

- The goal of the brand development was to make an emotional connection with women by building a brand that is applicable to them and is one in which they see themselves reflected.
- Additionally, the brand is approachable to women not yet comfortable with tools and home improvement and encourages them to try home improvement projects.
- The proposed advertising and marketing strategy for Empower would be one that portrayed women as strong, capable individuals who author their own lives.

Home improvement projects would be shown as achievable tasks that women can do with the education and the right tools. The advertisements would focus on the end result of home improvement projects (i.e., images of beautiful interiors) and the improved quality of life as an outcome.

3.7.2 Suggested Features for Aesthetic Appeal

Attending to details is important when designing for women and was a primary consideration for the design of the Empower drill kit. Careful thought was put into every element of the kit from the drill design to the tool bag (Appendix L, Figure L1).

3.7.2.1 The Drill

The drill was designed to appeal to women aesthetically; curved lines and rounded surfaces were used to soften the design and make it approachable. The form language is consistent and shows beauty through simplicity. The form includes flat

surfaces and straight lines in a few places to convey precision, an important quality to portray when designing power tools.

- Curved transition lines, used in areas where there is a material change, give the drill a feminine touch. The line on the drill handle specifically adds flare to the design and exudes a quality of self-confidence and strength, characteristics of the brand (Appendix L, Figure L2).
- The form language for the motor venting and the label pockets mimics curves used in other areas of the drill. This ties the different areas of the drill together in a consistent visual manner (Appendix L, Figure L3).
- The round bubble level in the back of the drill and the magnetic tray on top also share a similar form language (Appendix L, Figure L1).
- The battery pack was incorporated into the drill design to create one well-designed form. Using an integrated battery allows for a more streamlined design and a simplified tool with fewer parts and a reduced weight. As a result, the tool becomes more approachable and less complicated to novice DIYers.
- The integrated battery pack was given chamfered edges to make the change between surfaces more interesting (Appendix L, Figure L5). The transition between the ABS plastic and rubber over mold was done with care.
- Rubber over mold was used to add visual and tactile softness to the tools.

3.7.2.2 The Tool Bag

The tool bag, fashioned after an electrician's bag, is unique in its shape, color, and compartments. It is a well-designed bag that would be suitable for women's home improvement storage needs (Appendix L, Figure L1).

- The Empower tool bag provides great storage for tools. It is well-organized and uses pockets and pouches to divide the bag into appropriate-sized compartments for tools. There is a place for every tool one might want. Its central compartment is the correct size for the Empower drill to be safely and snugly stored.
- Often tool bags available on the market are oversized, unmanageable, and overtly masculine. The Empower bag does not share these characteristics. Overall, the bag chosen for a female DIY clientele is visually pleasing; it is made with nicely-colored material and is a suitable size for a tool bag designed with women in mind.
- The Empower tool bag is also easy to handle and is well-balanced. These attributes make it convenient to carry around.

3.7.2.2 The Packaging Sleeve

- The packaging sleeve for the Empower drill kit illustrates useful product information and graphics in a succinct and sleek manner.
- The interior of the sleeve would show examples of product and tool placement for the Empower tool bag. It would clearly illustrate where to place other Empower tools and would take away any confusion the user might have.

- Additionally, the packaging sleeve covers empty pockets on the tool bag and presents a clean, well-organized image.

3.7.3 Proposed Ergonomic Considerations

For the ergonomic considerations, the researcher referred to the work and recommendations of experts in the fields of Anthropometry, Ergonomics, and Human Factors. Whenever possible, designers should reference texts that give well-researched and clearly cited anthropometric and ergonomic data.

- The Empower drill was designed to accommodate women's hand size. The measurements for the handle were taken from the Ryobi 12 volt drill (model number HP512K), which is a drill that was designed the female user in mind. The 4 inch length and 45 mm width fall in the range of anthropometric recommendations (Grandjean, 1988; Pheasant, 1996).
- The drill handle was designed with rounded surfaces to prevent any problems with hotspots. The screw bosses were placed strategically to avoid any hand irritation due to the change in surface depth.
- The weight of the drill was another important consideration. A 12 volt lithium ion battery (Li-Ion 18650 11.1V 2200 mAh Rechargeable Battery Pack with PCB Protection) from all-battery.com was chosen for its small size and light weight. The designer chose to incorporate the battery pack in with the drill body; this saves material weight and thickness. Overall, both adjustments to the drill make it

lighter weight than a standard 12 volt nickel-cadmium (i.e., Ni-Cad) battery-run drill.

3.7.4 Application of Qualitative Characteristics

Perception of quality is an important aspect when designing and marketing products, in this case the cordless power drill to women. For novice to intermediate level DIYers, added features on the drill more than likely will increase its appeal.

The Empower drill includes multiple quality-enhancing features such as an innovative directional light indicator, an integrated battery pack, a bubble level, and a magnetic tray.

- The forward/reverse light indicator is a unique feature that would allow the user to better understand the driving direction of the drill when in use. The directional arrows would light up according whether the drill was driving in or out. The indicator located on the top of the drill would be conveniently in the user's direct line of sight. This feature makes use of redundant queuing which reinforces communication through visual (i.e., the light indicator) and tactile queues (i.e., the forward/reverse switch).
- The internal components of the Empower drill would be OEM parts, used successfully in the Ryobi 12 volt drill (model number HP512K). These parts are high quality, entry-level components that are suitable for the intended target market.

- Quick-change drill bits would be included with the purchase of the Empower drill. These bits would make it very easy to switch between drilling and driving and would save a substantial amount of time. Using a quick change bit system would help novice DIYers use the tool more efficiently and would make it less intimidating.
- The Empower drill additionally would have a feature that would allow the user to continue to use the cordless drill when its battery died. A small DC adapter plug would be located near the base of the battery pack and would allow the user to continue operating the tool as a corded drill until it was finished charging. An adapter and wall charger would be included with the drill kit.

3.7.5 Functional Qualities

- The forward/reverse switch on the Empower drill is clearly marked using arrows to indicate the rotational direction of the drill bit.
- Redundant queuing has been applied to the Empower drill with the forward/reverse switch and the forward/reverse directional light indicators. Using the two different features in unison will help clarify the direction in which the drill is moving. Removing this confusion will help the female target market of novice to intermediate DIYers.
- A set of quick change drill bits will be included in the Empower drill kit and reduce the time needed to switch between drill and screwdriver bits for drilling and driving. The reduction in time and convenient quick-change mechanism allows the user to quickly change bits with one hand. Additionally, these

fast-changing bits are not grip-strength dependent and will make changing bits easier for the female target market.

- The Empower drill has been designed to be a cordless drill, which gives the tool operator flexibility to move around freely without the hassle or hazard of electrical cords. However, when the drill is running low on power, an electrical cord can be plugged into the battery pack area, and then the drill can be used briefly as a corded drill until the battery is recharged.

3.7.6 Educational Focus

Lack of knowledge regarding tool use and home improvement projects is a huge inhibitor for many women and new Do-It-Yourselfers. Empower would tackle this problem by incorporating educational solutions with the sale of its tools. Through education, Empower would build a strong customer base of loyal women and would likely profit from the increased business of these customers.

- The proposed drill and carrying case would come with an informative, educational DVD that would teach women how to use the product or tool properly. It would be targeted towards the novice to intermediate level female Do-It-Yourselfer.
- Another educational feature would be the development of a visually appealing instruction manual to illustrate the workings of the drill, which would have a short tutorial about choosing the right screw and bit combination. It would also include short how-to projects, such as hanging a picture frame and installing a curtain rod.

- Empower tools would have an informative webpage that would include project tips, home improvement tutorials, and inspirational home enhancement ideas.
- Finally, Empower would partner with the Do-It-Herself workshops at Home Depot (i.e., POP display with the workshop schedules). Through this sponsorship, Empower would be aiding in the education of women.

The guidelines, when applied to redesigned tools, illustrate the need for designers to take care when developing products for women. Superficial changes through color and pattern are not complete solutions. The many details of a product's design should be thoughtfully worked through by the designer in an effort to create a well-done, cohesive design.

4. CONCLUSION OF STUDY

4.1 Summary of Study

This thesis study began with the identification of a need or problem which was a lack of high-quality tools on the market designed with women in mind. It was determined that a set of valid guidelines needed to be established to help other designers understand what characteristics and features are important to consider when designing home improvement products for women.

Over the course of this study, it was revealed that there are many misconceptions regarding the meaning of tools “for women,” and this confusion is a result of the weak examples of existing women’s tools on the market. Many of the hand tools on the market targeting women are OEM tools that are being produced in pink or purple. These tools are not thoughtfully designed and are not accommodating to women.

Companies Barbara K! and Tomboy Tools have established themselves as providers of quality tools for women. Ergonomic considerations have been applied to their tools, and marketing has been done to target women. However, despite the development of their tool lines and marketing strategies, neither company has met the needs of women interested in home repair because their tool lines are not accessible to many and their brand names are not recognizable.

Brand recognition and store placement were key problems for the existing women-owned companies manufacturing tools for women. For a line of products

like this to be accepted, it was suggested that a major corporation would have to undertake the project and invest a large amount of money into a strong marketing and advertising campaign. Additionally, home improvement retailers such as Home Depot and Lowe's would need to carry these tools for wide availability. The problem, however, is that many home improvement retailers and tool companies are unwilling to take the risk of designing or marketing tools specifically for women. Over the course of this study, it has been revealed that these institutions are fearful of alienating men and are trying to avoid losing their traditional customer base, male contractors.

Ironically, home improvement statistics and studies done by major home improvement retailers show that women represent approximately fifty percent of home improvement purchasers; in some cases, women are over half of the customer base. This data reveals the importance of the female market segment in home improvement. This trend will continue to grow steadily as increasing numbers of single women are becoming homeowners and are involving themselves in home improvement. This information suggests that there is a consumer market, women, with an unmet need, tools designed with the female-user in mind.

After building a case for the creation of thoughtfully designed tools for women, guidelines were developed to help organize a list of important features that the female consumer looks for when buying tools. The points suggested cover five categories: connecting emotionally through branding, creating an aesthetic appeal, including qualitative features, using functional qualities, and incorporating an educational component. The guidelines were developed through field and academic research. Some

points were ideas that were expressed in publications dedicated to the home improvement retail industry, while others were developed from product feedback and user surveys.

The guidelines developed for this thesis study were applied to the design of the drill, often the first power tool purchase by women. Factors such as weight and handle size were made to accommodate women's strength and smaller hand size. Additionally, features that added to women's sense of perceived value were incorporated into the design (e.g., a bubble level, magnetic tray, and directional light indicator). Form language and color choices were also carefully considered to appeal to women in a sophisticated manner.

In addition, the guidelines were considered during the development of the Empower brand identity and graphic system. Points which reflected the need to connect on an emotional level were used in the design of the brand and marketing strategy. Emphasizing self-reliance and the ability to improve one's life through home improvement were messages suggested by the Empower tagline, "Build Your Life."

The Empower design solutions demonstrate how tools can be developed to better accommodate women and to appeal to their senses. Overall, it can be concluded that tool companies and home improvement retailers can better meet the needs of their female customers through careful research and thoughtful design.

4.2 Study Accomplishment

The accomplishments of this study are the guidelines for designing tools with women in mind. These principles were successfully applied to the design of a home improvement product, a drill designed with women in mind. The drill redesign is a

successful illustration of a product that has been designed to better accommodate women. It shows a level of sophistication and is a visual example of the thought and consideration that should go into developing products specifically for women.

This study has streamlined the key points of many articles and research studies into a concise list of design considerations that can now be used by designers who are developing tools or other home improvement products for women.

4.3 Future Areas of Study

In the future, it would be worthwhile to conduct a drill comparison session that would test the new Empower drill against the Barbara K! *Power Lite* and the Tomboy Tools drill. This would allow the researcher to get feedback from the target market, women ages 25-55, and to discover whether or not the Empower drill is an appropriate design for these women. Better understanding the preferences of women would benefit the researcher in the process of refining the Empower drill design.

This thesis study illustrates the design of one specific product using a new set of guidelines which focus on design rules for developing tools for women. These guidelines could easily be applied to other home improvement products or even the creation of a complete tool line for women. Similar guidelines for designing other types of products for the female market could be an extension of this study; the key connection would be designing products with women in mind.

Markets such as electronics and automotive supply, which traditionally are male-oriented, might be an interesting area of expansion. Like home improvement, these retail

areas may be seeing a change in their customer base and thus, would need to make changes to accommodate women.

Additionally, further study could be made to segmenting the female market. Research on the variation of female consumers would reveal more specifics about how these consumers shop and make their purchasing decisions. This information could expand the depth of the guidelines developed for designers creating products for women or with women in mind. Better understanding the market and its needs would lead to the improvement of existing consumer products and the possible creation of others where there is an identified unmet need.

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APPENDIX A

Reference List of Home Improvement Books for Women

- Baker, Heidi and Eden Jarrin (2006, December). *Be Jane's Guide to Home Empowerment: Projects to Change the Way You Live*. Clarkston Potter.
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APPENDIX B

Investigation 1: Product Feedback Session 1 and User Survey 1

The following six drills were examined during a product feedback session at Agnes Scott College. Female participants were asked to handle each drill and give feedback on their opinion of each.



Figure B1. Agnes Scott College Product Feedback Session 1

Investigation 1: User Survey 1

The following survey was given to female participants following the product feedback session 1. Those involved in the survey were asked to quickly answer the following questions:


	Name: _____ Email: _____ Number: _____
1. Have you ever held a cordless power drill before today? a. Yes b. No	
2. Do you know how to use a drill? a. Yes b. No If yes, who taught you how to use one? _____ If no, would you be interested in learning how to? _____	
3. Question 3: If you were to buy a drill, which factors would most influence your purchase? Rank (in order) the following factors from 1 to 8 with 1 being most important. _____ color _____ price _____ weight _____ overall design _____ handle size _____ torque _____ other _____ would never buy a drill	
4. If you were to use a drill, how would you envision using it? (Circle all that apply) a. for home décor projects b. for home improvement projects c. for arts & crafts projects d. at work e. at school f. would never use a drill g. other	
5. What color would you imagine a cordless drill for women to be? _____	
6. Comments and suggestions _____ _____ _____	

Figure B2. Agnes Scott College User Survey 1.

Charted Results from User Survey 1

The following charts represent the results of the first of two user surveys given to female participants at Agnes Scott College. Results for the first survey follow:

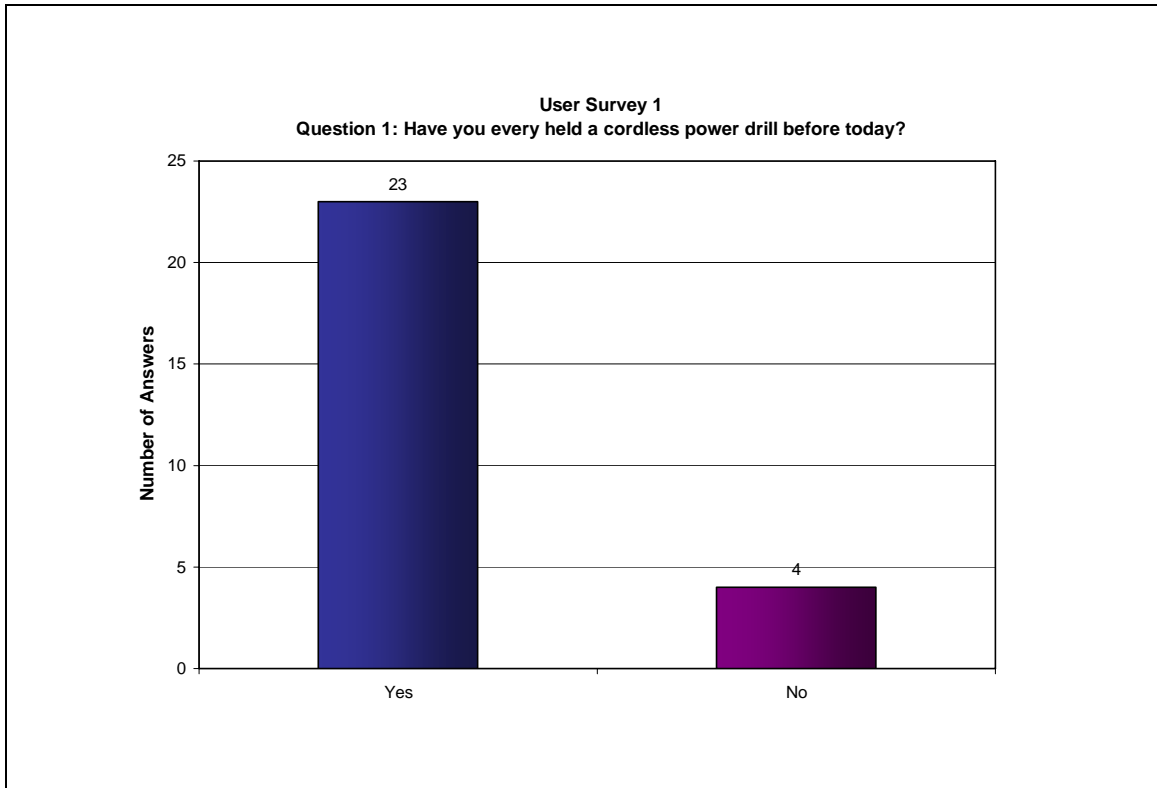


Figure B3. User Survey 1: Results from Question 1

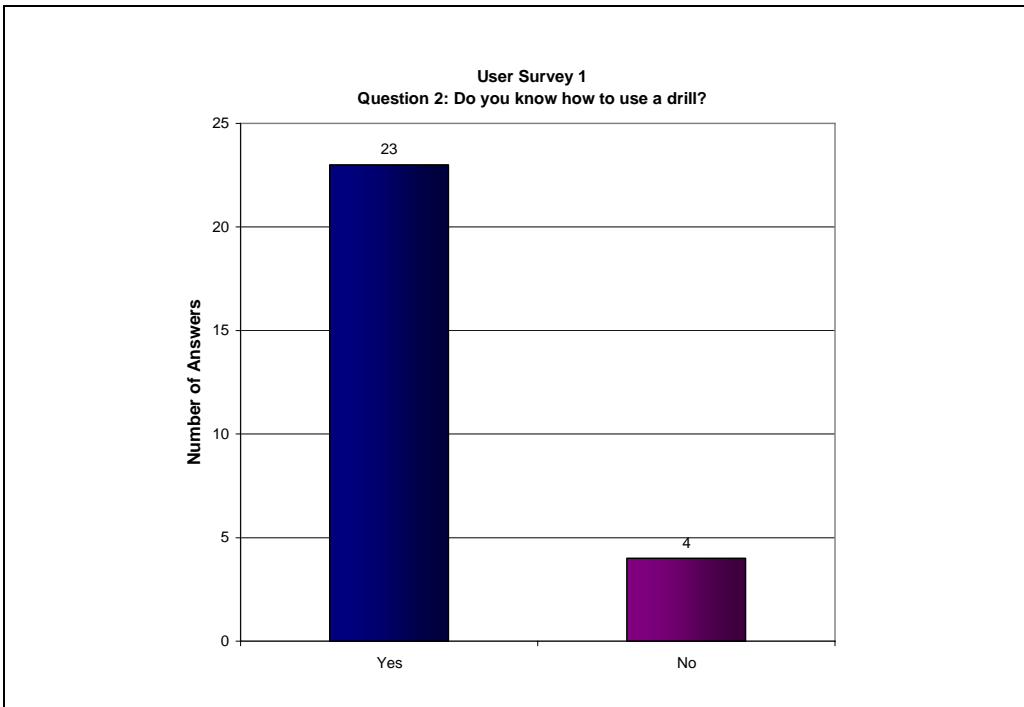


Figure B4. User Survey 1: Results from Question 2.

The majority of female survey participants knew how to use a drill prior to the product feedback session in which they were asked to examine six drills. Many mentioned that their fathers had taught them how to use a drill. Most of the women who did not know how to use a drill expressed interest in learning how to use one.

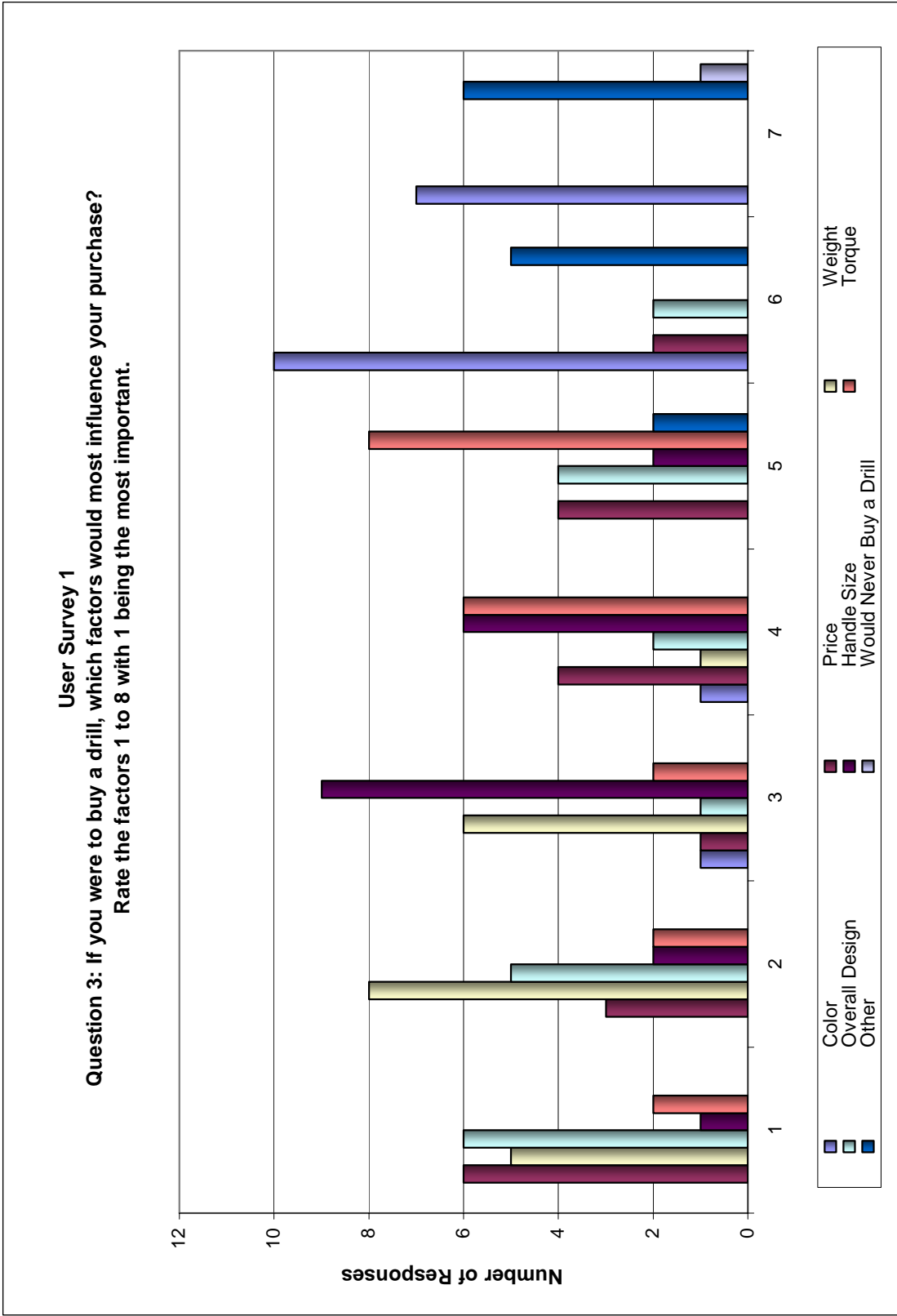


Figure B5. User Survey 1: Results from Question 3.

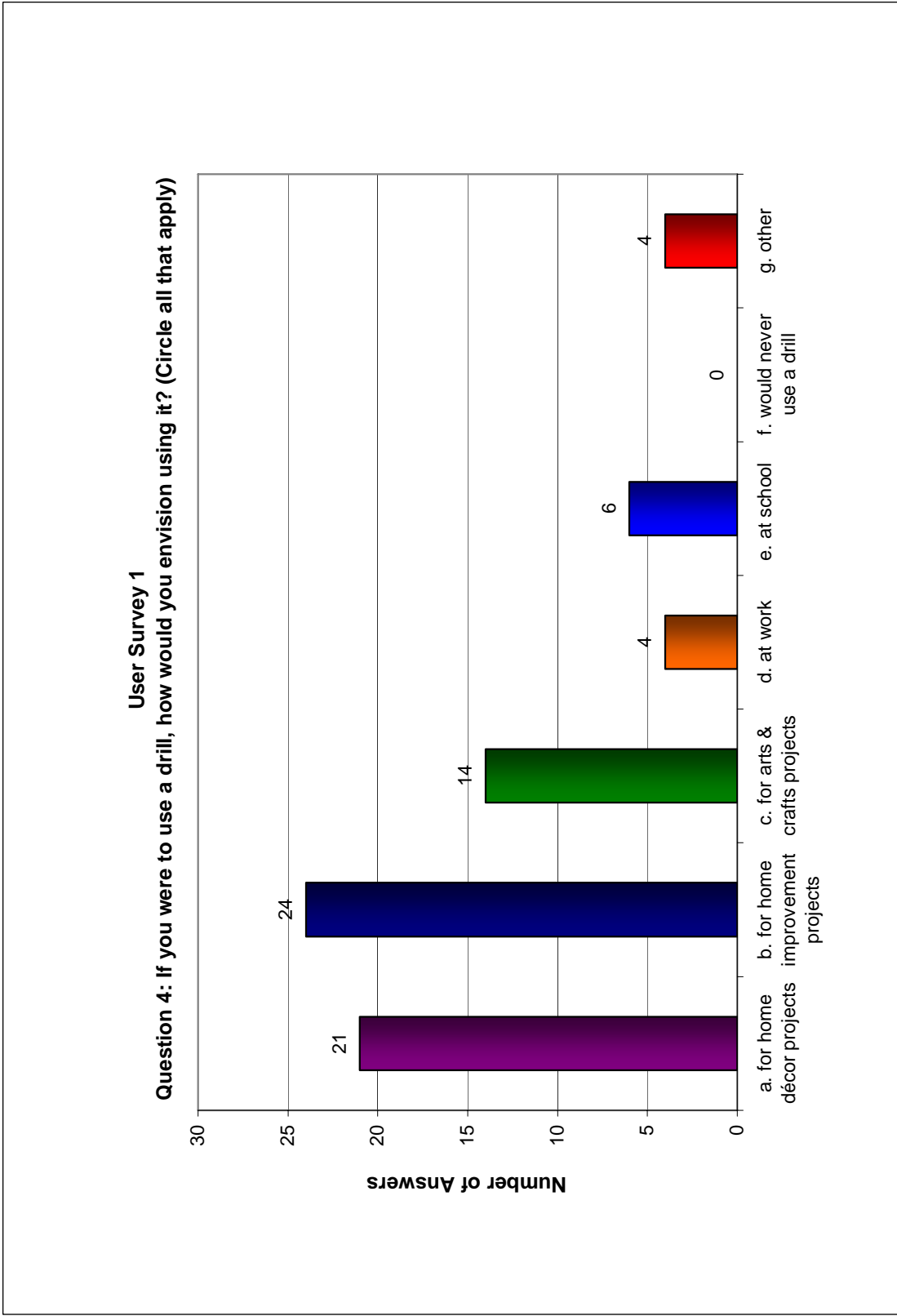


Figure B6. User Survey 1: Results from Question 4.

Figure B7 represents the top results for question five from the first user survey.

These answers were determined to be the most important as they received multiple votes.

Answers that received two votes or less were not charted.

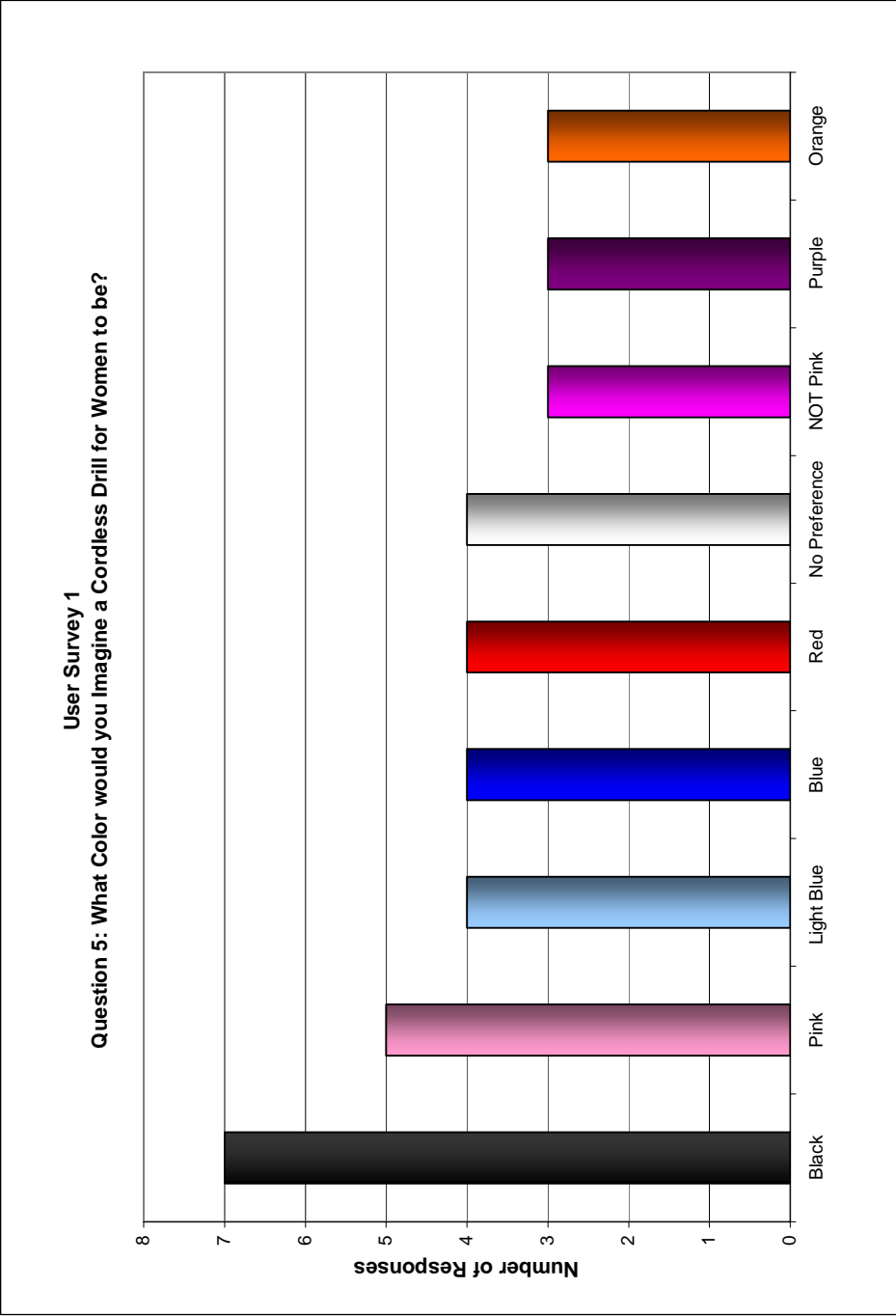


Figure B7. User Survey 1: Results from Question 5.

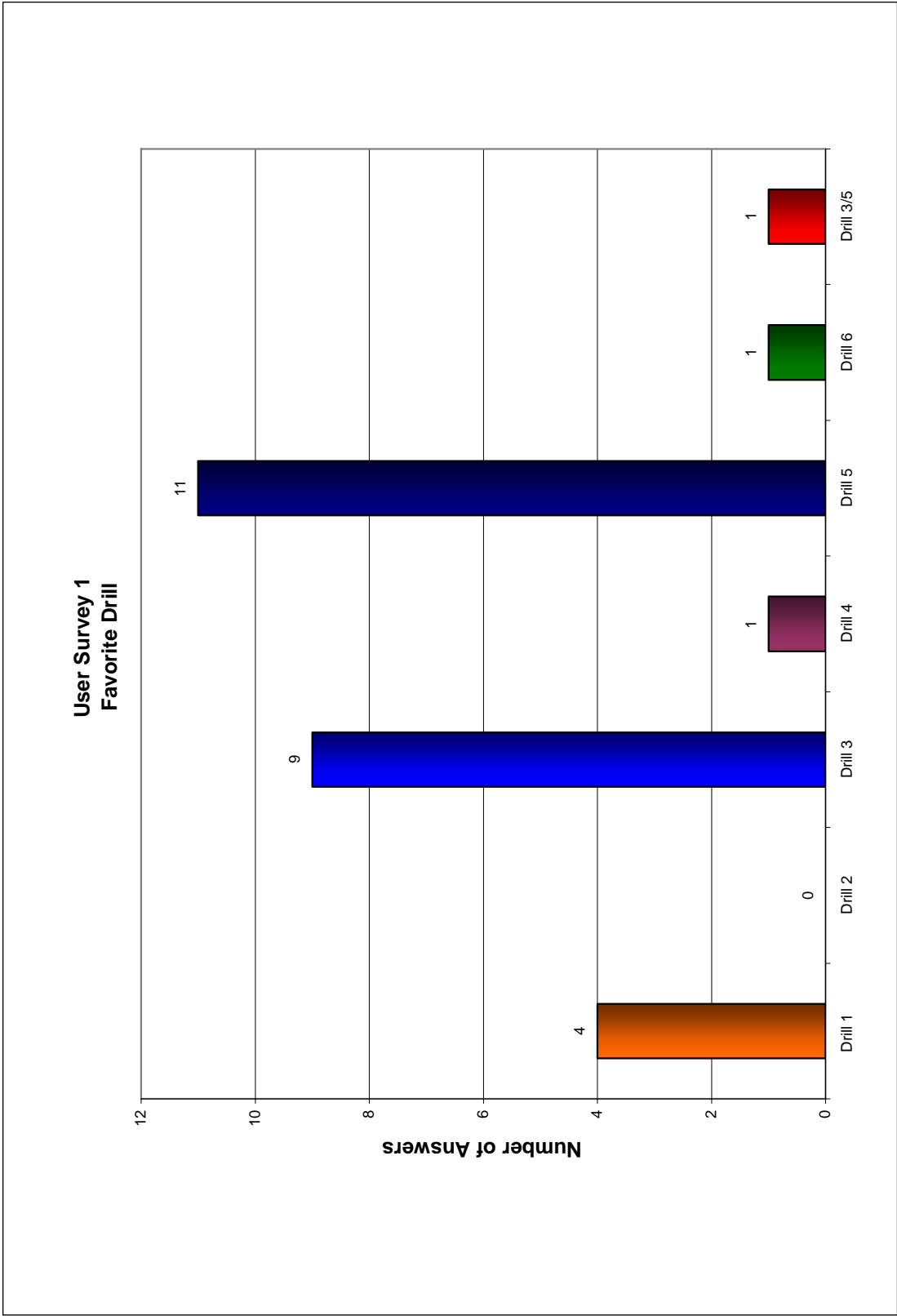


Figure B8. User Survey 1: Results for Favorite Drill.

APPENDIX C

Investigation 1: Product Feedback Session 2 and User Survey 2


The following six drills were examined during the second product feedback session at Agnes Scott College. Female participants were asked to handle each drill and give feedback on each.



Figure C1. Agnes Scott College Product Feedback Session 2

Investigation 1: User Survey 2

The following survey was given to female participants following the product feedback session 2. Those involved in the survey were asked to quickly answer the following questions:

	Name: _____
	Email: _____
	Number: _____

1. Have you ever held a cordless power drill before today?
 - a. Yes
 - b. No
2. Do you know how to use a drill?
 - a. Yes
 - b. No

If yes, who taught you how to use one? _____

If no, would you be interested in learning how to? _____
3. Question 3: If you were to buy a drill, which factors would most influence your purchase? Rank (in order) the following factors from 1 to 8 with 1 being most important.

_____ color
_____ price
_____ weight
_____ overall design
_____ handle size
_____ torque
_____ other
_____ would never buy a drill
4. If you were to use a drill, how would you envision using it? (Circle all that apply)
 - a. for home décor projects
 - b. for home improvement projects
 - c. for arts & crafts projects
 - d. at work
 - e. at school
 - f. would never use a drill
 - g. other
5. What features, if any, would you like to see in a drill? _____
6. What color would you imagine a cordless drill for women to be? _____
7. Think about the accessories you wear, the cosmetics you buy, and the products you use. Are there any colors that stand out? _____
8. Comments and suggestions _____

Figure C2. Agnes Scott College User Survey 2.

Charted Results from User Survey 2

The following charts represent the results of the second of two user surveys given to female participants at Agnes Scott College. Results for the first survey follow:

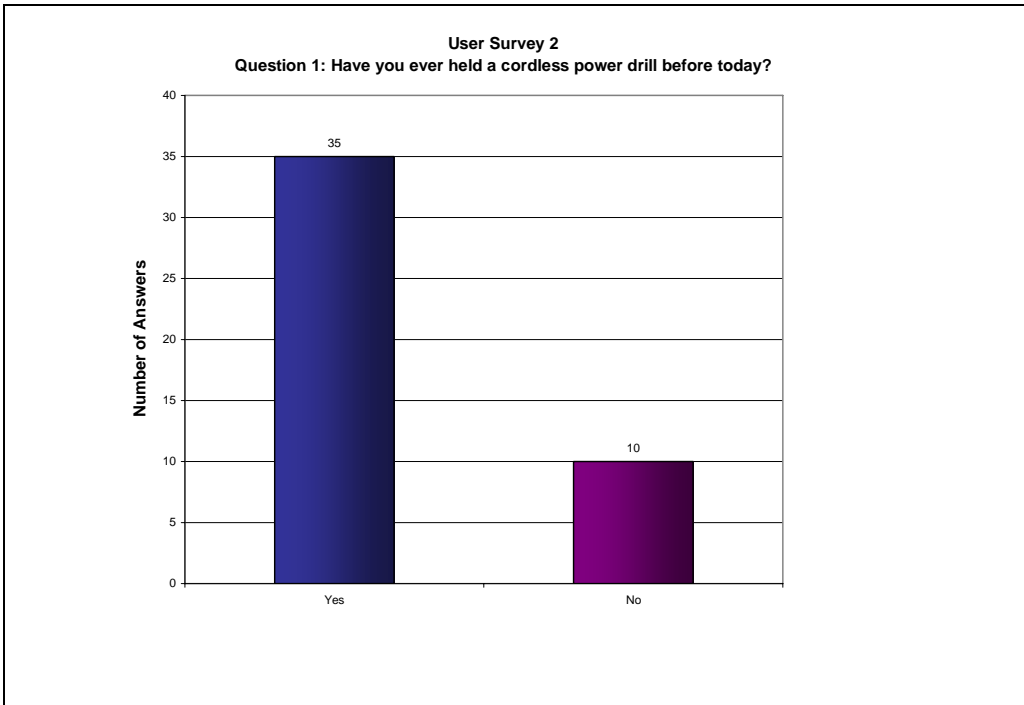


Figure C3. User Survey 2: Results from Question 1.

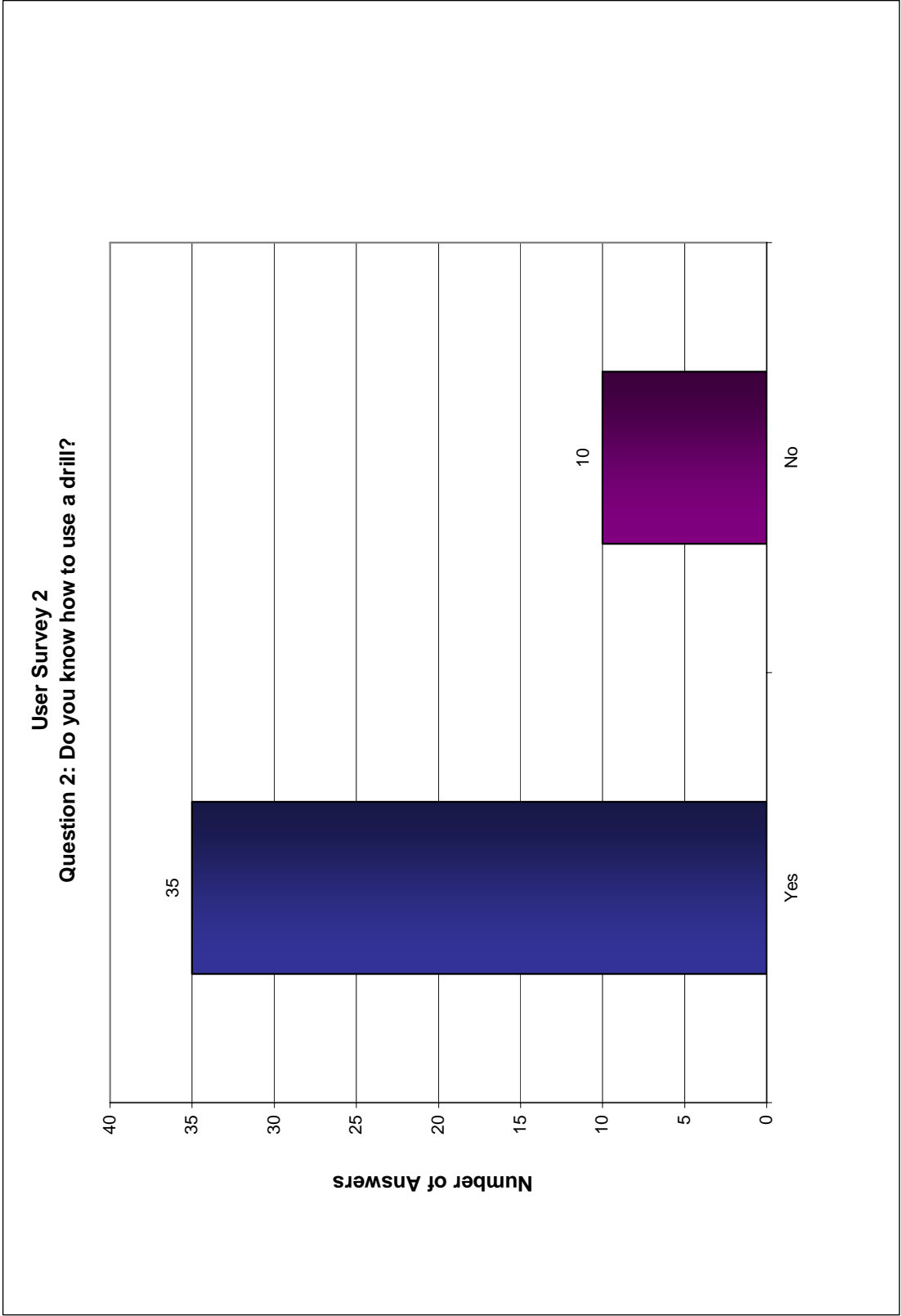


Figure C4. User Survey 2: Results from Question 2.

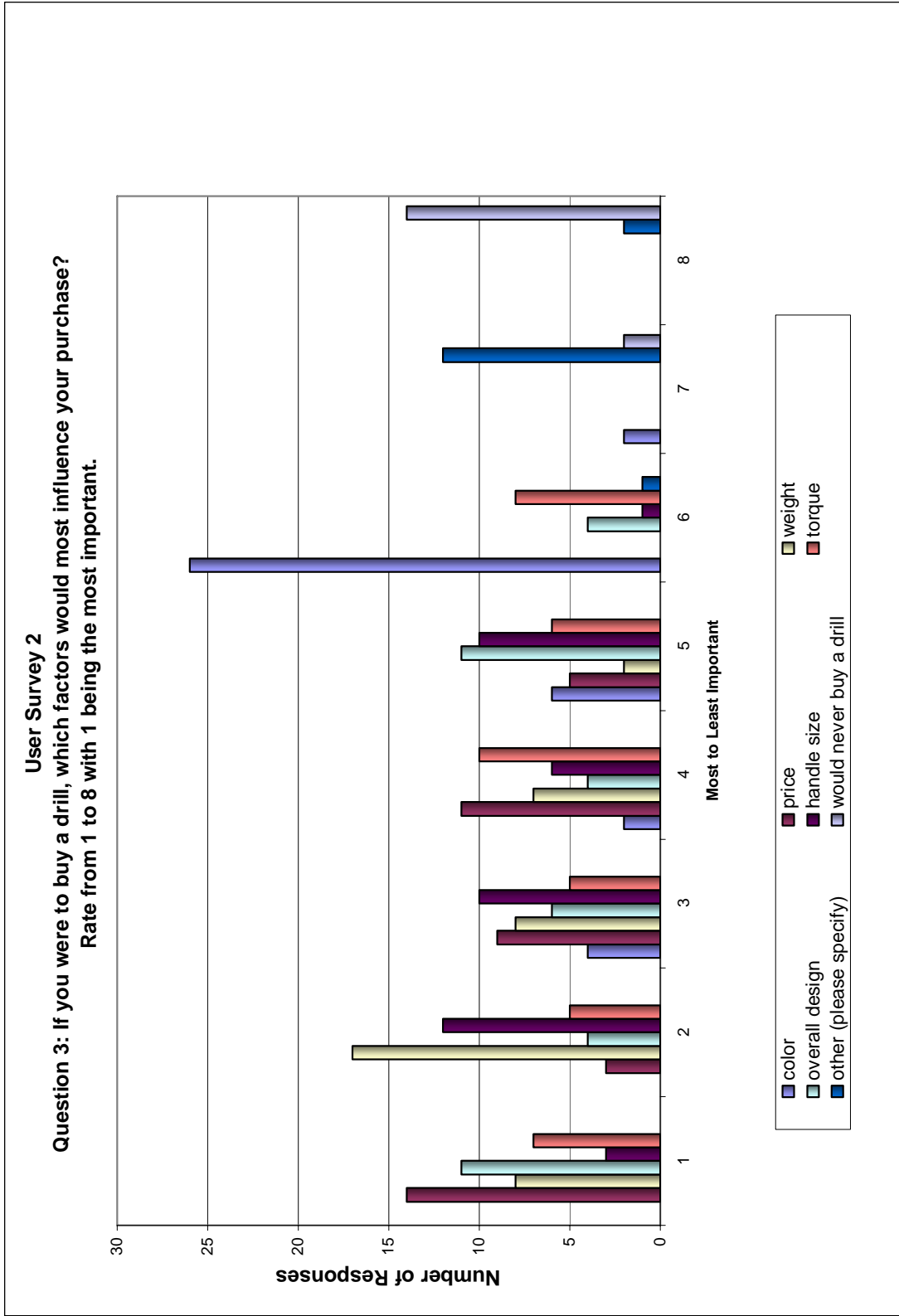


Figure C5. User Survey 2: Results from Question 3.

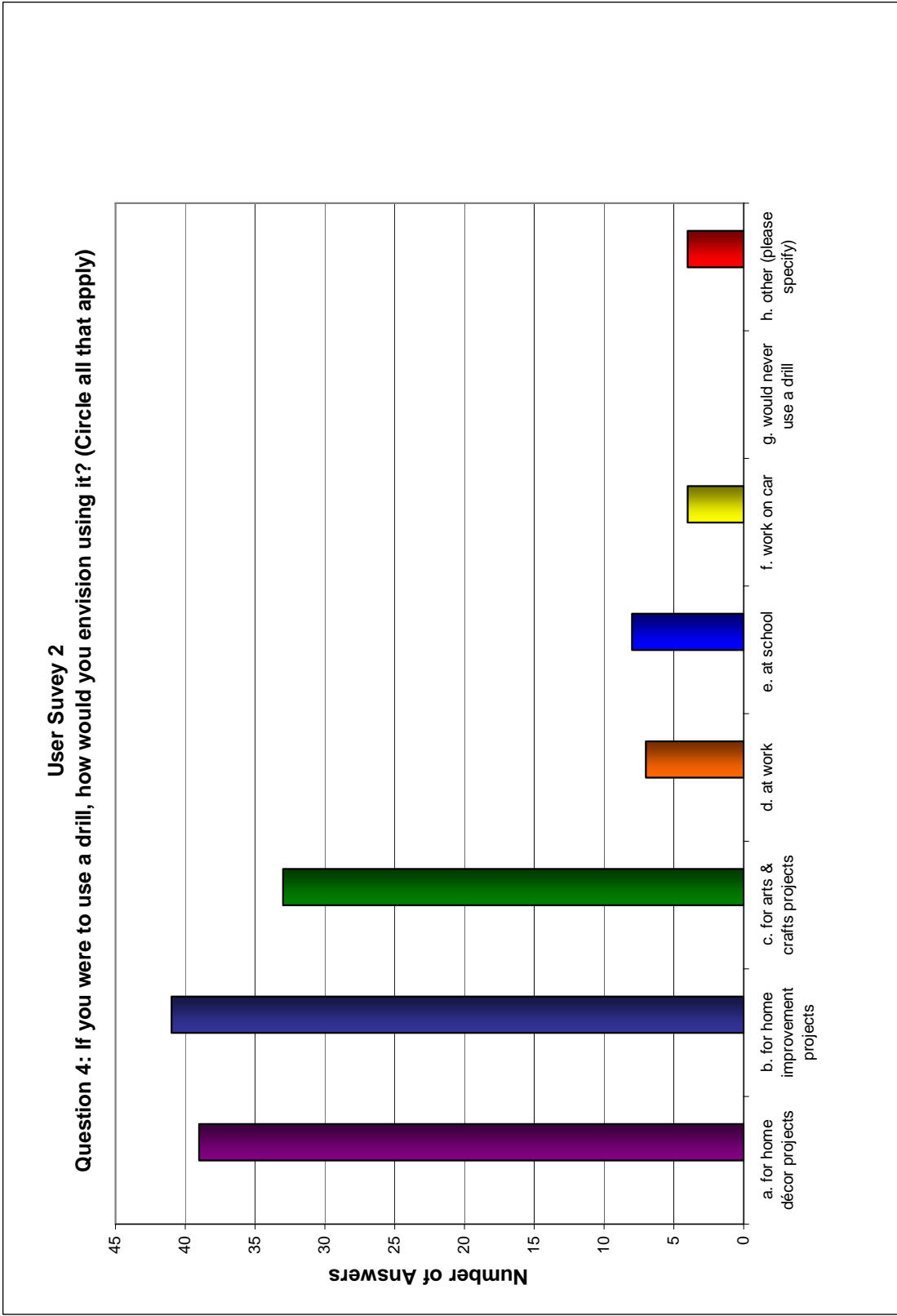


Figure C6. User Survey 2: Results from Question 4.

The following chart represents the top answers given for question 5. There were many suggestions for a variety of features; however, the ones seen here are the ones that were most popular and most desired.

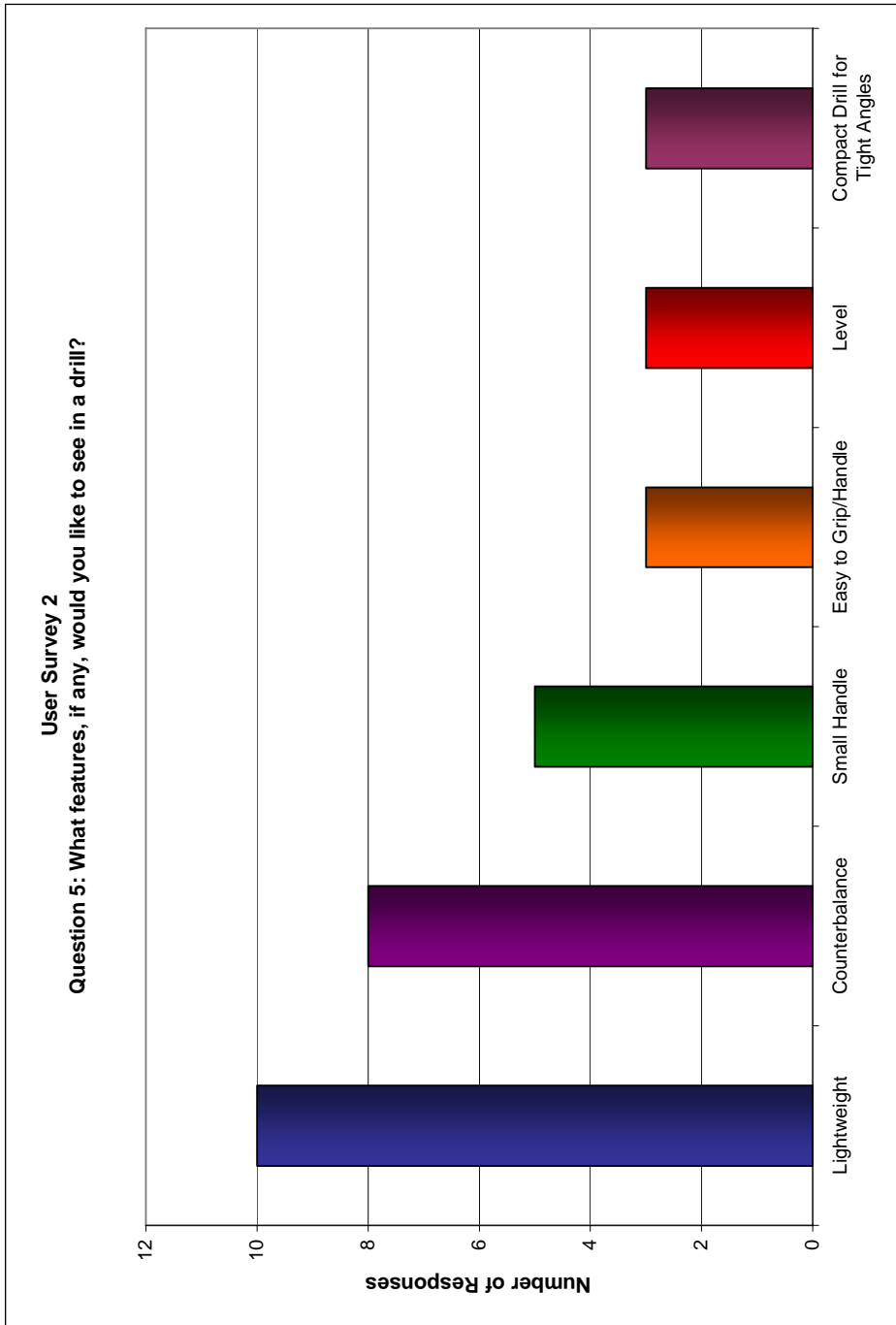


Figure C7. User Survey 2: Results from Question 5.

Figure C8 represents the top colors that were most suggested by survey participants to be used for a cordless drill designed with women in mind. There were many other color suggestions, but these were the answers which garnered the most votes.

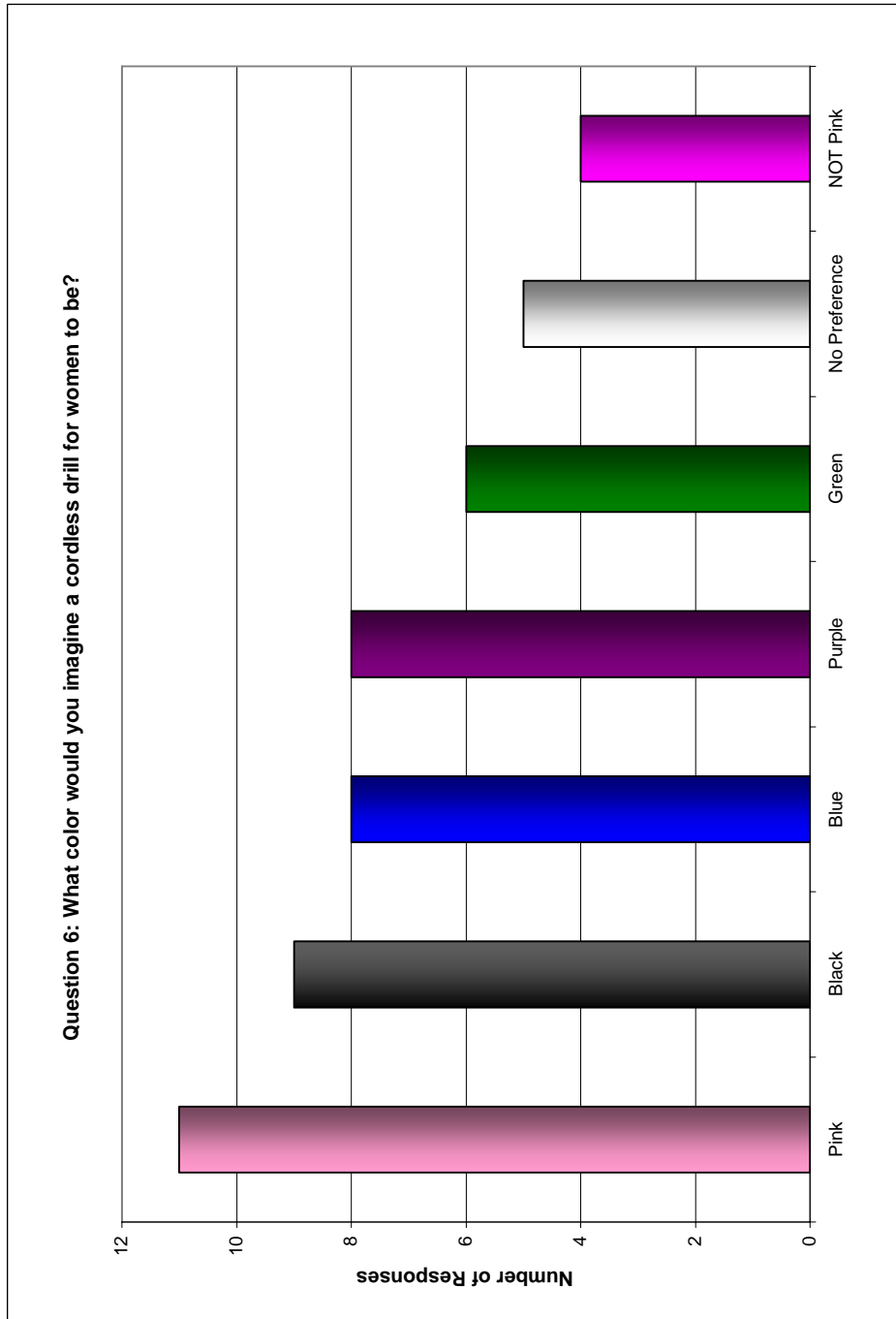


Figure C8. User Survey 2: Results from Question 6.

Figure C9 represents data from another question relating to color in women's lives. The following chart shows the colors that are common in women's everyday lives. The listed colors represent only the top answers.

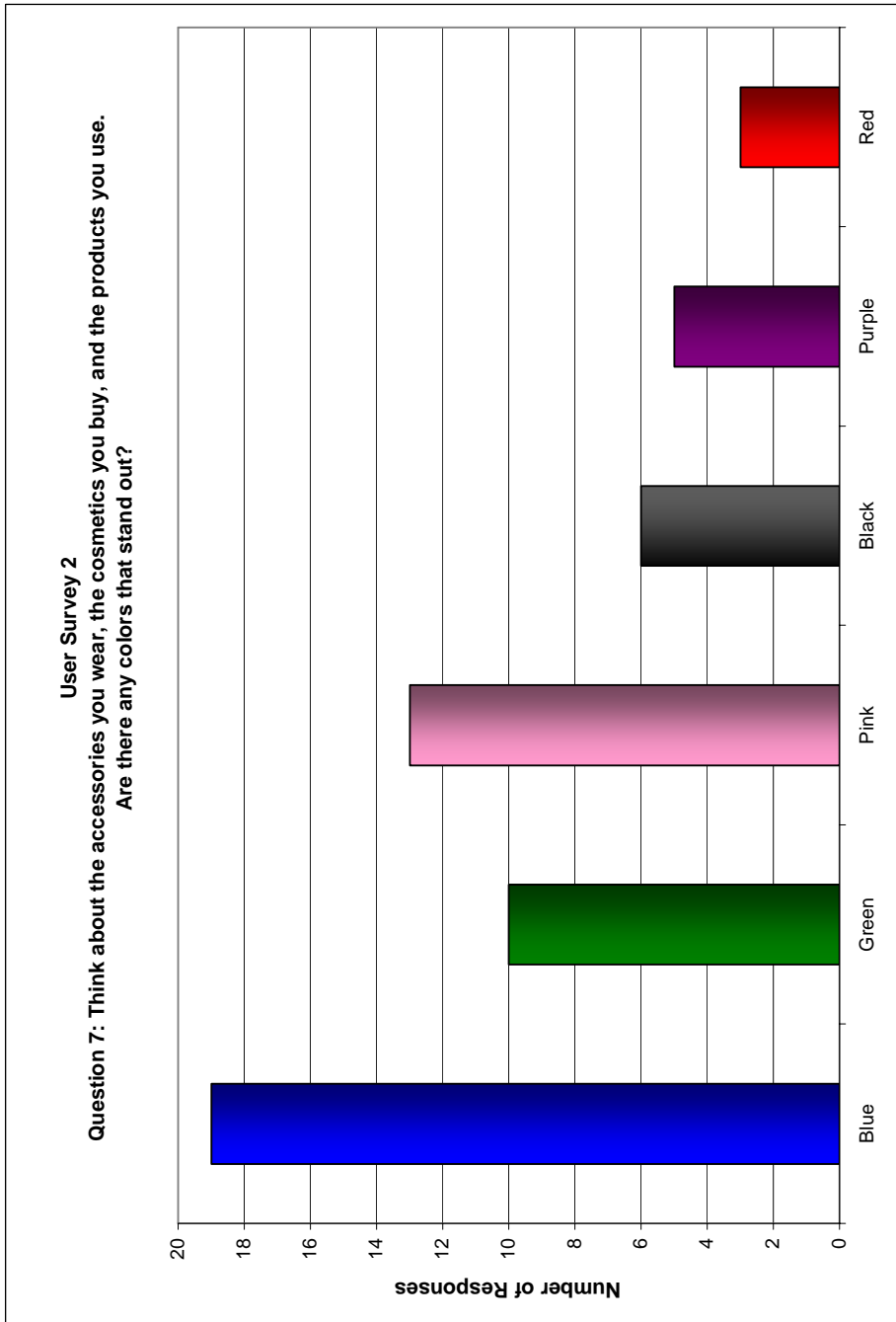


Figure C9. User Survey 2: Results for Question 7.

For the second product feedback and user survey session, drill 1 was most favored followed by drill 5. Interestingly enough both drills that were most liked were drills designed with women in mind. Drill 1 was the Tomboy Tools 12 volt drill, and drill 5 was the Barbara K! drill.

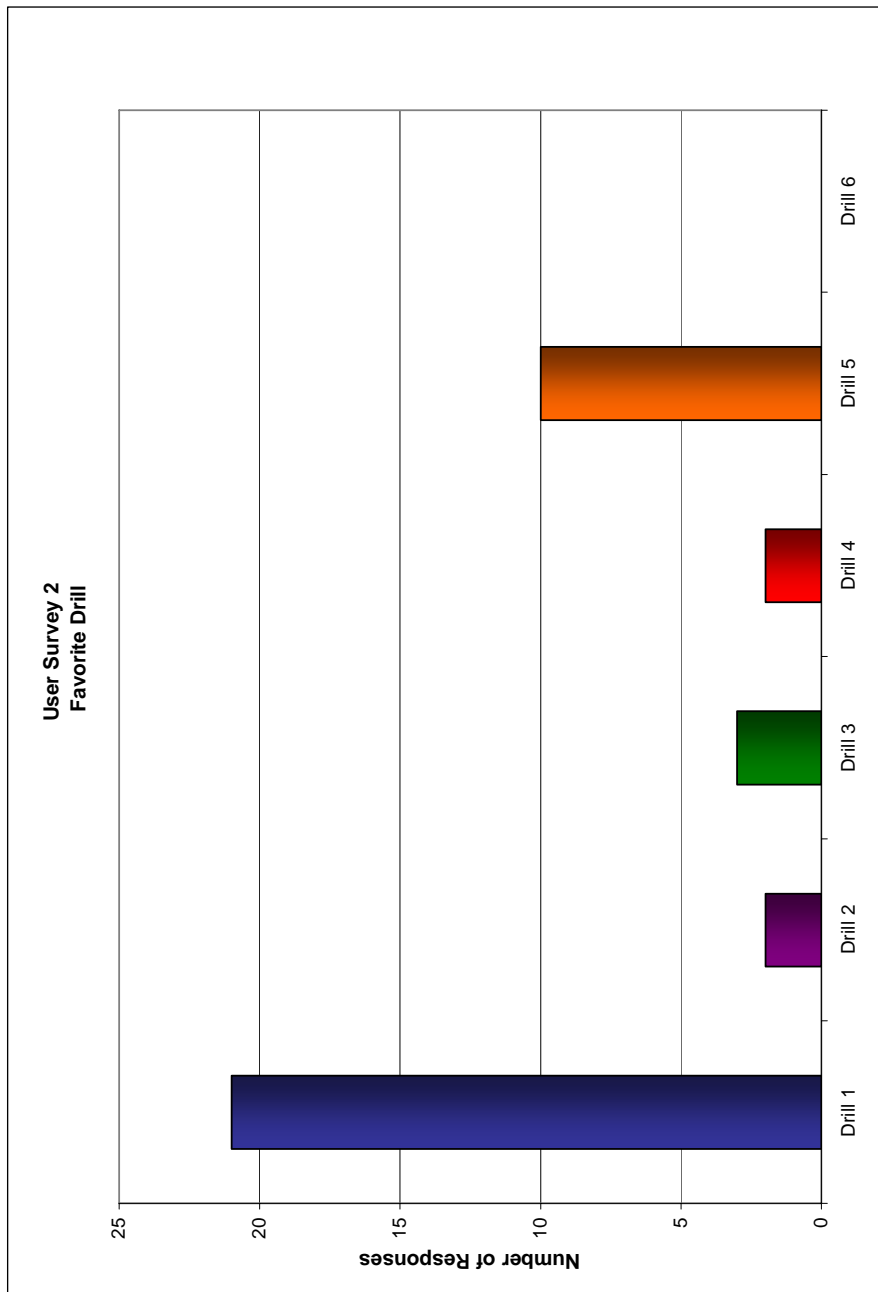


Figure C10. User Survey 2: Results for Favorite Drill.

APPENDIX D

Interview with Darwin Keith-Lucas

Q. From your experience, do you see a need for gender specific tools?

A. Yes, refer to the chapter on the need for two sized handles.

Q. Is there room in the home improvement sector for a woman's tool line?

A. Yes, single women are the fastest growing segment of consumers

Q. Are there specific factors that restrict a company's desire to head into this market?

A. Distribution issues & alienating the male consumer

Q. What type of company do you think would consider making tools for women?

A. Smaller companies that have less to risk

Q. From your research and work, what were the major factors to consider when designing tool handles (for men/women)?

A. Diameter, button placement, possibly grasp (dip in hand-bulge in handle & scallop out)

Q. Do you have any suggestions on resources that I should definitely use for my thesis?

A. Human factor/ergonomic society (HFES); Natick Soldier Center (US Army) hand study; Weiman/Gordon Study

Q. Do you have any suggestions on how to develop a form language for a tool line?

A. Use soft lines, which will come across as less aggressive; review the form language uses in women's outdoors products & household cleaning products.

Q. How important was color in your tool design? Percentage of colors used (company colors)?

A. Color was very influential (e.g., Dewalt's "Caution Yellow")

Q. I am considering using a transparent plastic for the drill that I design. Do you think this would work okay for this type of product? (e.g., Zircon iSensor; Gillette Sensor for women, & Gillette Venus)

A. Transparent colored plastics will get scratched up and will become hazy.

Q. If I do use transparent colored plastics, I will need to pay special attention to designing the screw bosses in a pleasing manner. Any tips?

A. Use glass filled nylon instead; it unfortunately is not available as a translucent material. The housing is usually 3mm thick. Bosses are 10mm diameter, and screws are thread forming.

Q. Do you have any advice for redesigning the power drill? Are there specific things I should consider when designing this tool?

A. Right angle drills house the motor in the handle not barrel body. Balance is important.

Also, look at battery technology.

APPENDIX E

Core Branding Questions: An Exercise Completed by Jacqueline Urda from Professor Chris Arnold's Summer Studio 2007

1) What is your mission? What are your three most important goals?

To create a line of high quality hand and power tools that accommodates and empowers women through improved design and accessible education.

- educate & empower women
- make tools that are more accessible and accommodating for women
- good design of product, packaging, and user experience

2) Why was this company created?

Business opportunity and unmet need within the home improvement industry due to the growth of the DIY movement and women involved in home improvement

3) Describe your products or services?

Quality tools that accommodate women by emphasizing education and ease of use

4) Who is your target market?

- Women ages 25-55

- DIYer (novice to intermediate level)
- Single women
- First time home buyers /homeowners

5) Prioritize your stakeholders in order of importance. How do you want to be perceived by each audience?

- Women ages 25-55: Tools for me (women)
- DIYer (novice to intermediate level): Educational, easy to use products
- Single women: Empowering Women; I can do home improvement projects myself without the help of a man
- First time home buyers /homeowners: Can do home improvement projects myself

6) What is your competitive advantage? Why do your customers choose your product or service over others? What do you do better than anyone else?

- Tools for women: design & marketing
- Educational focus
- Focus on end result; what women can accomplish with the product
- Ease of use
- Approachable & fun; antithesis of intimidating

7) Who is your competition? Is there a competitor that you admire most, and why?

- Barbara K, Tomboy Tools, Ryobi, Makita, Black & Decker, RIGID, DeWalt, Craftsman
- Barbara K has done well in the media and has gotten a lot of press in regards to her line of tools.
- Makita & Bosch have really well-designed cordless drills that are lightweight because they use lithium ion battery technology. Their drills are less bulky and are more manageable.

8) What are the trends and changes that affect your industry?

- More women entering the home improvement & DIY movement
- More single women homeowners
- Increase in the number of DIYers
- Improved technologies (lithium ion batteries)
- Focus on education (television shows, magazines, books, etc)
- Home improvement has been popularized

9) Where will you be in five years? In ten years?

- Full line of basic hand and power tools
- Gear & promotional items
- In-store displays (POP/POS)

- Established, well-known brand and line of tools
- Expansion of brand into DIY books & magazines
- Partnership with major home improvement store

10) How do you measure success?

- Press coverage
- Distribution of product
- Quantity of units sold
- Number of women that have been educated
- Profits earned
- Positive feedback from consumers

11) What values and beliefs unify your personnel and drive their performance?

- Belief in the benefits of education
- Desire to deliver quality tools at an affordable price
- Confident that women are capable of doing DIY projects and using tools
- Making home improvement accessible and approachable

12) What are the potential barriers to the success of your product or service?

- Distribution of Product
- Marketing strategy: transparent vs. visible
- Alienating men

- Alienating women

13) Place yourself in the future. If your company could do anything or be anything, what would it be?

- An educational resource for women (like *This Old House*)
- Educational seminars for young girls and teenagers

14) If you could communicate a single message about your company, what would it be?

- We take women seriously.
- Women deserve to have quality tools that are easy to use.

APPENDIX F

Brand Brief

This document provides a brief description of the Empower brand. It outlines the plan and framework by which decisions will be evaluated.

Project Details:

Brand name: Empower

Associated Brand(s): Black and Decker

Existing Base / Perception

Black & Decker is best known for its small home appliances and entry level power tools. Its products are relatively inexpensive and are reliable. Black & Decker is a well-known and reputable company that carries a decent consumer grade product.

B&D is widely available in many retail outlets such as Wal-Mart, Target, Home Depot, and Lowe's, to name just a few.

The Black & Decker Company owns DeWalt, Porter Cable, Weiser Lock, Kwikset, Delta Machinery, Emhart Technologies, and Price Pfister. Under the Black & Decker brand, there are sub-brands like Firestorm; the Empower brand would be treated as a sub-brand, like Firestorm.

empower

BUILD YOUR LIFE

Technical Guidelines for Identity and Logo

Brand History and Competition



Mood/Theme Imagery

Approachable, Good Value, Empowering, Well-Known, Quality, & Educational



Brand Architecture and Market Position



Figure F1. Empower Brand Identity Board.

Existing Brand Offering / Delivery

Customers of Black & Decker (B&D) products expect to buy a decent quality product that will meet their basic needs. B&D tools are generally consumer grade, not professional, and the price point reflects this. Often, these tools are the first that one might receive as a present or might purchase as a beginner in home improvement.

Tools developed under the Empower brand, a sub-brand of Black & Decker, would be entry-level, consumer grade products and would be priced accordingly. This brand would continue to reflect Black & Decker's reliability, as well as its availability. This line of tools would be marketed towards women who are novice to intermediate level.

Strength, Weakness, Opportunity, Threat (SWOT) Assessment

Black & Decker's Empower brand would be a line of tools designed for and marketed towards novice to mid-level female consumers. This brand would be approachable to women and would focus on ease of use and education to lure women. Additionally, the Empower brand would sell the end result approach by showing women what they can accomplish.

Very few tools companies have approached the female segment of home improvement as a business opportunity. Home improvement and repair has traditionally been a male-oriented, contractor based business. Alienating men is a huge concern within this industry, and marketing or designing tools for women is viewed as risky business.

Women are increasingly becoming members of the Do-It-Yourself movement and are becoming more and more visible in home improvement stores. Women are

completing home improvement and repair projects to make their surroundings more beautiful, to make themselves feel empowered and independent, and because frequently there is not anyone around to help. Today, single women are the 2nd largest group of home buyers, just behind married couples. This market is projected to grow steadily.

Black & Decker currently has a line of craft and painting tools that were designed with women in mind. The *Project Mate* is a multi-purpose tool that was developed for light home improvement or craft projects. The Empower line of tools could easily include some of these existing products and would be a great brand to develop further to include tools that would appeal to women and their projects or hobbies.

The Empower brand would need to be different enough to distinguish it from the standard B&D tool brand, but similar enough so that there is an association between the brands. The line of Empower tools should include the B&D colors, even if it is just as an accent.

Identify Stakeholders / Measures of Success

- Home Improvement Stores
- Retailers
- Female Consumers
- DIYers

Desirable Brand Vocabulary

- Approachable
- Affordable

- Empowering
- Well-known
- Quality
- Educational



Figure F2. Empower Mood Board.

Desirable Brand Image (i.e., moods and themes)

- Empowering
- Independent women (Rosie the Riveter)
- Approachable / Easy to Use (Anyone can do it)
- Affordable (Assessable to Many)

- Reputable

The Desirable Brand Message

To develop a line of high quality hand and power tools that accommodates and empowers women through improved design and accessible education.

APPENDIX G

Creative Brief:

This document provides a brief description of the project. It outlines the objectives, audience, and assumptions for the project and details the creative concept the team intends to use moving forward.

Project Details

Project name: Empower by Black & Decker

Brand Concept

The objective of this project is to develop a line of high quality hand and power tools that accommodates and empowers women through improved design and accessible education. This project encompasses both the need for design focused on women, as well as marketing strategies to attract women and to make home improvement approachable.

Business Objectives

Empower by Black and Decker seeks to create a new line of tools for a specific market segment, women who are involved in the DIY movement. This brand seeks to increase Black and Decker's market share of the home improvement industry. Tools

focusing on women's needs or designed for women are not common and are not available in most hardware stores. Black & Decker products are placed in many stores; it is likely that B& D would introduce the Empower brand into many high volume retail stores, creating a niche market of available tools designed for women.

Value Proposition / Benefits

- Educational component
- Ease of use
- Quality tools
- End result or product (what can be accomplished with the tools)

Design Considerations / Opportunities

- Quality of Life (tools are a means to an end)
- Make life easier (ease of use)
- Make time more meaningful (efficient)
- Connection
- Experience
- Education (the adventure of learning)
- Sell Convenience
- Benefit to Consumer
- Clear instructions

Target Market / Audience

- Women ages 25-55
- DIYer (novice to intermediate level)
- Single women (home buyers & home owners)

Competitive Landscape

Barbara K! has created a line of tools designed for and marketed towards women. It has placed its product in retail stores where many women shop such as Bed Bath & Beyond and Linens 'n Things. Barbara K! has had great press coverage and continues to be visible in the media. The story of the Barbara K's founder strikes a cord with female consumers and makes her a credible figure in the tool industry.

Tomboy Tools is a company that has put together an educational community for women that focuses on teaching women how to use hand and power tools. This company uses the strategy of house parties to sell its products and has created a strong word of mouth campaign. Tomboy Tools' products are available to purchase online and from Tomboy Tools consultants. They are not available in retail or hardware stores.

Ryobi has created several smaller and lighter cordless drills that have been designed with women in mind. They are however not marketed as drills for women, but have been popular with female consumers.

Makita has also designed several of its drills to be smaller and lighter, making them more accommodating to women. Again, the drills are not marketed towards women, but have features attractive to female consumers.

APPENDIX H

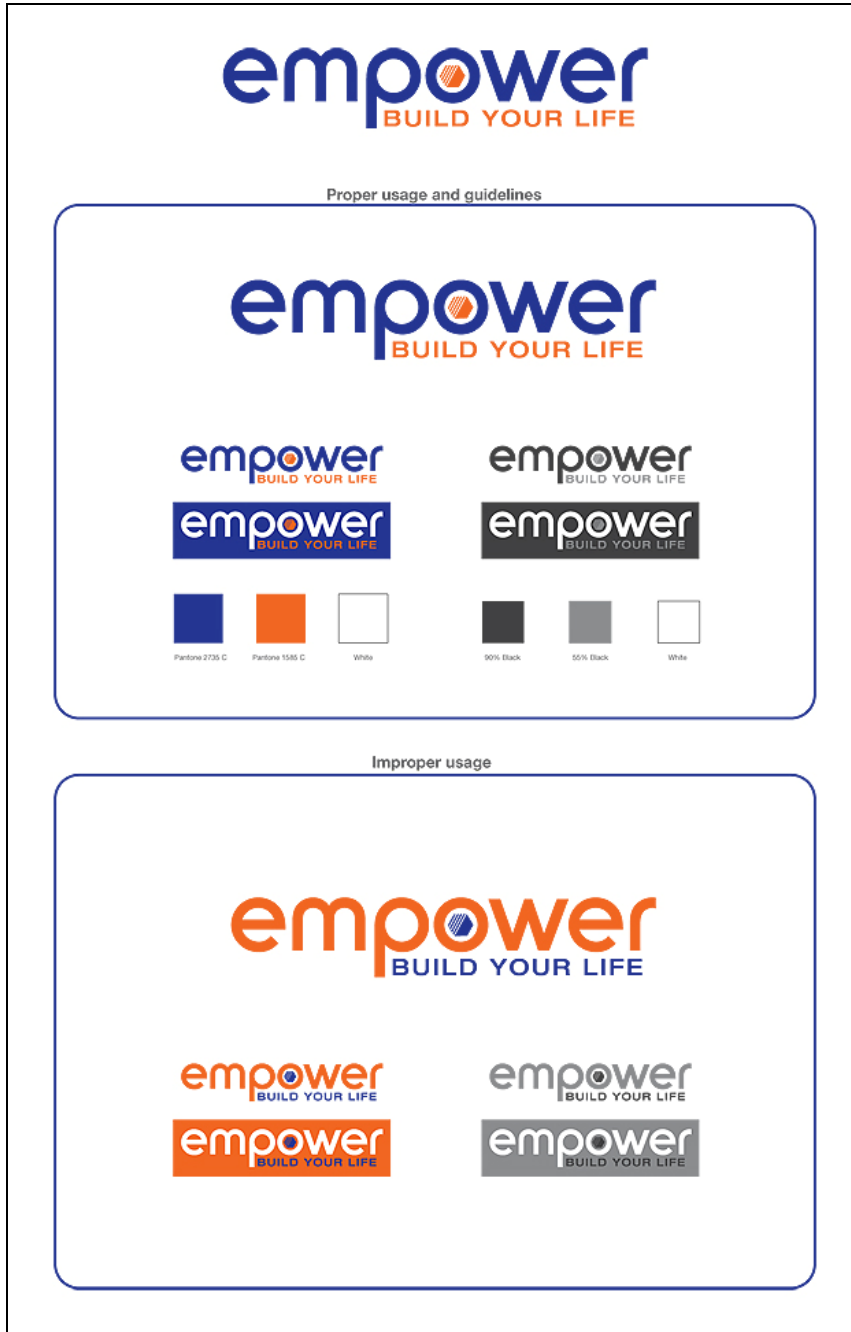










Figure H1. Empower Logo Guidelines

APPENDIX I

Please Circle Your Favorite Logo

Please explain why you like the one that you circled? _____

What does the word "Empower" mean to you? _____

How do you interpret "Build Your Life"? What does it make you think of? _____

Figure I1. Empower Logo Survey.

quality woodworking tools recently created a line of tools for women. In January of 2007, Walnut Hollow was awarded the Craftrends® Award of Creative Excellence (ACE) in the Innovation Category for its “Designed For Her™ Tools Program” (Walnut Hollow Tools, 2007).

Ladies Tools Online is a website that sells a series of tool kits targeting women as its market. The tools sold by this company are not designed specifically with women in mind; the tools are superficially colored pink, purple, and peach and are off-the-shelf models.



Figure J3. Vax Drill.

Vax, a British company that primarily sells vacuums, has a cordless drill/driver that is similar to the Ryobi 12 volt drill (model number HP512K). In fact, the Vax 12 volt drill is an OEM product produced by Ryobi. The only substantive difference is color.

Vax also sells a tool kit which includes several basic hand tools and a cordless drill. This toolkit is worth noting because it has been well attended to and is a good solution. The toolkit appears to have been designed with the female consumer in mind, as it is well-designed and comes with an instructional DVD. This product is for the UK market and is out of the realm of this study.

Other less serious cordless mini drill/screwdrivers available in the UK are the Handy Mandy and the DIY Diva. Similarly designed to these drills is a pink mini drill offered by U.S. based Lillian Vernon.

Another tool line that focuses on women as the end user is Norma Valley's Chix Can Fix company, which sells a variety of hand tools to women. These tools seem to be OEM models that have been "feminized" using the color purple. Grip is another tool company which has toolkits for women. They also are likely to be OEM tools and are very similar to the Norma Valley tools.

In addition to the above mentioned tool lines, still others are available for purchase. The general problem with many of these tools is a lack of depth and understanding of what differences should be considered when designing with women in mind. Furthermore, each of the tool companies targeting women needs to improve its brand and marketing strategy because they are missing the depth of their target market.

APPENDIX K

Psychology of Men and Women

Evolutionary psychologists believe that nature and evolution are the key differentiators between men and women. According to this theory, it is in men's instinctive self to have as many offspring as possible with as many mates as possible, with the goal of spreading their DNA to many. Women on the other hand, from the evolutionary psychologist's perspective, innately are caregivers and are keepers of the home who are searching for a strong, loyal man with whom to mate (Blustain, 2000).

On the other side of the argument are psychologists who believe that social roles and gender stereotypes, not biology, are the cause of differences between men and women. The behavior of men and women, as well as the way they each think, according to social and feminist psychologists, is a result of social pressures and societal influence (Blustain, 2000). Following social standards, men's role is to be the provider for their family, whereas women are given the role of caregiver and homemaker. Despite personal philosophies, psychologists on both sides believe that there are differences between men and women.

Doreen Kimura, an authority on sex differences, according to *Scientific American*, believes that many of the differences between men and women result from the difference in sex chromosomes (i.e. XXY and XX). Genetic differences between males and females develop in utero and are a result of prenatal hormones. Kimura claims that "from the

start, environment is acting on differently wired brains in girls and boys” (*Psychology Today*, 1994). Size and structure are two differentiating factors between the male and female brain; these anatomical variations result in organizational differences between the thought processes of men and women. (Kimura, 1999)

Other psychologists describe differences in the orientation of males and females in relation to their view of themselves in the world. Bakan, Carlson, and Meyers-Levy, psychologists quoted by Maureen Hupfer (2002), in *Communicating with the Agentic Woman and the Communal Man*, describe men as the “agentic male,” a man whose world is characterized in terms of himself, who is self-reliant and independent, and who is autonomous; women are identified as the “communal woman” who is defined in terms of herself and others, who is often the caretaker, and whose self-concept is interrelated with that of others. The roles of the “agentic man” and the “communal woman” support Doreen Kimura’s claim that men and women do not view the world and their part in it in the same way.

Another example of how men and women vary is illustrated by a study on impulse buying, which suggests that “men tend to impulsively buy instrumental and leisure items projecting independence and activity, while women tend to buy symbolic and self-expressive goods concerned with appearance and emotional aspects of self” (Dittmar, Beattie, & Friese, 1995).

APPENDIX L

The following images show the Empower drill and highlight its features. The drill was designed with women in mind throughout the whole design process and incorporates the guidelines developed to design hand and power tools to better accommodate women.



Figure L1. Empower Drill, Tool Bag, and Packaging Sleeve.



Figure L2. Empower Drill Handle.



Figure L3. Empower Venting and Label Pocket.



Figure L4. Integrated Battery Pack.

APPENDIX M

The following sketches and images represent the design process used for the creation of the Empower drill. The drill concepts started out very rough and got more refined over the course of three months.

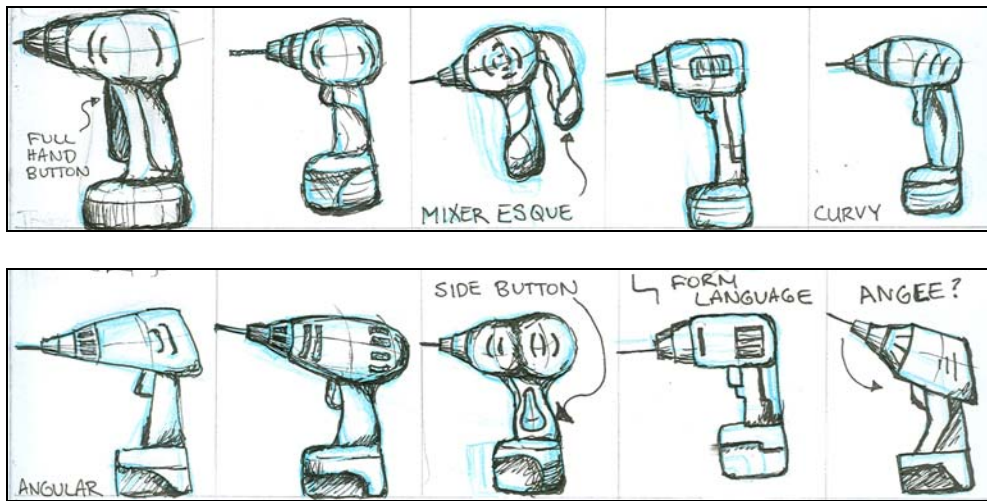


Figure M1. Thumbnail Sketches of Drill Concepts.

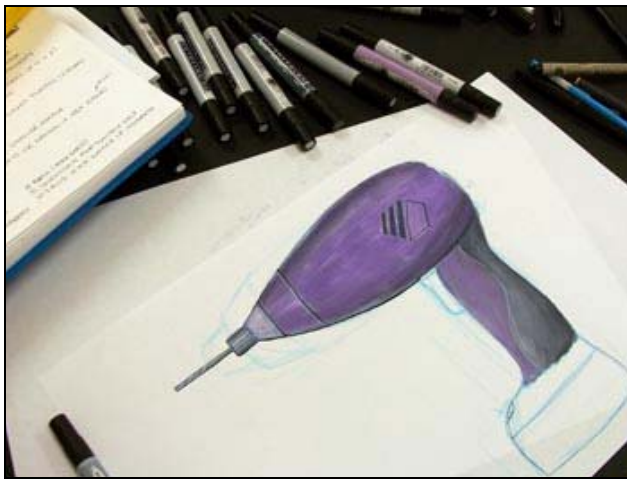


Figure M2. Initial Drill Rendering.



Figure M3. White Model 1.

Yellow polyurethane foam was used to make rough sketch models of two designs. The models were made to help the researcher gain a better understanding of the drills form.



Figure M4. White Model 2.

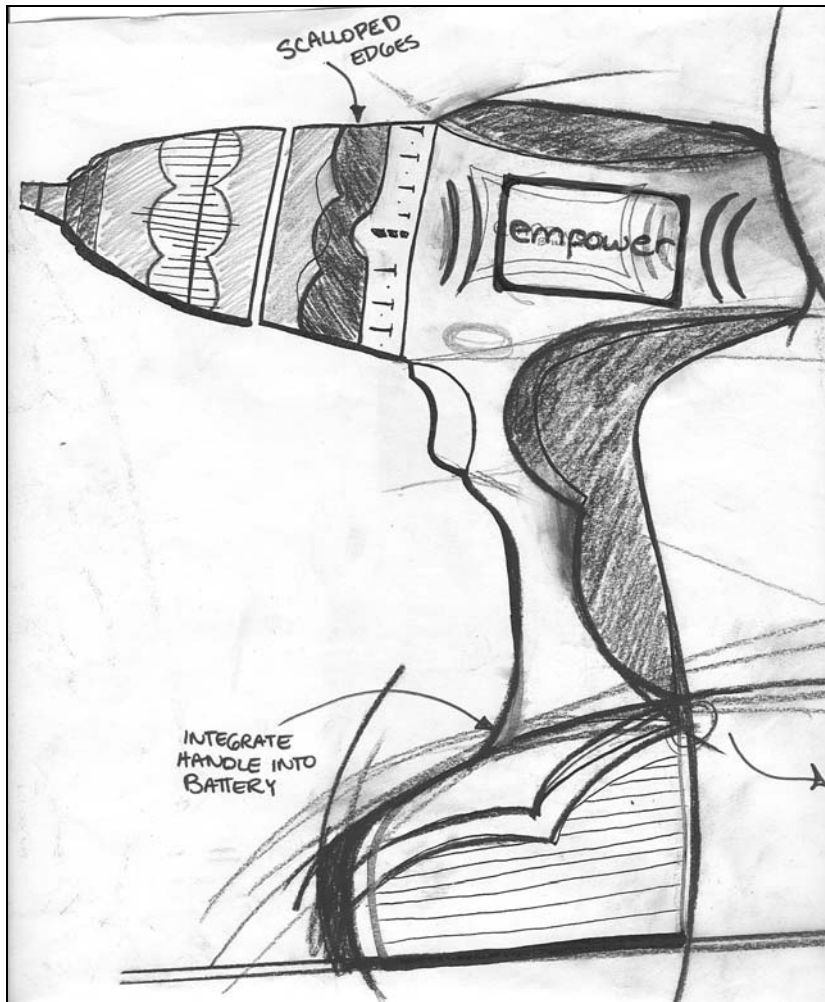


Figure M5. Empower Drill Sketch, Side View.

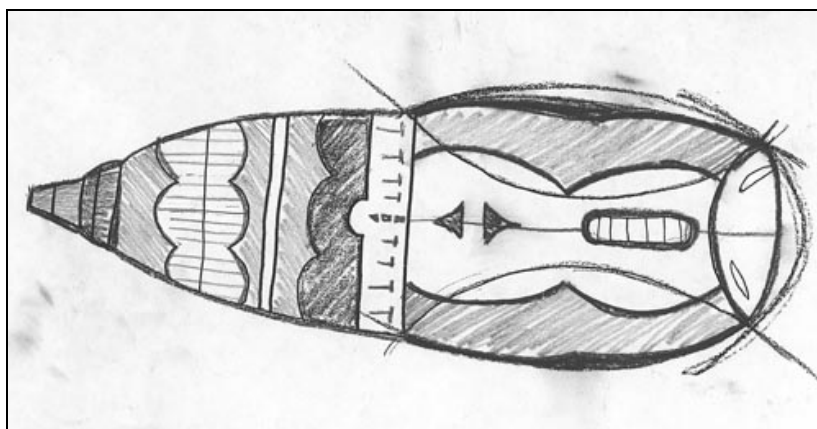


Figure M6. Empower Drill Sketch, Top View.



The Empower drill was developed using two 3D modeling programs, Rhinoceros and Solid Edge, and a 3D object scanner. After developing a decent 3D model using computer software, the file was used to create a machine-milled foam model. The foam model allowed the researcher to view the form and to test its level of comfort. After getting feedback from others around the Industrial Design department, it was determined that the drill handle need to be lengthened by half an inch.

Figure M7. 3D Rhinoceros Model.



Figure M8. CNC Foam Model.



Figure M9. Renshape CNC Model.

After finalizing and revising the drill model, the computer file was once again used to create a 3D model. This time however, the model was made out of a high quality modeling material called Renshape and was created as a hollow model with screw bosses.

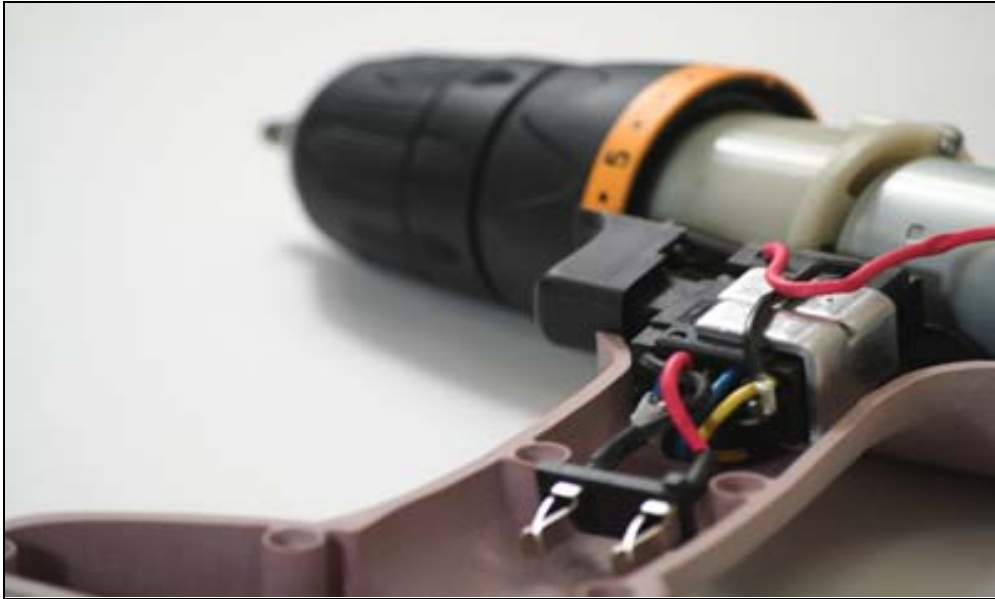


Figure M10. Hollowed Final Model with Existing Drill Components.



Figure M11. Final Model of the Empower Drill.