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## ANNOUNCING

### Introducing Fran Kozen as DEL by Charlotte Coffman



It is with great pleasure that FSAD announces the recent appointment of Frances H. Kozen as the Department Extension Leader (DEL). She will add the DEL duties to those of her current position as the Associate Director of the Cornell Institute of Fashion & Fiber Innovation (CIFFI), an organization created to facilitate collaboration between academia and industry.

Fran has a long affiliation with this department, receiving her B.S. in 1972 in Textiles & Apparel and her M.S. in 1977 in Textiles & Marketing Management. Since 1986, she has taught both fiber science and apparel management courses, organized the New York City study tour, accompanied students to India, authored several publications, organized symposia and interacted with alumni.

She has also been involved in two Extension programs: Apparel Industry Outreach and FSAD Youth Programs. Working with Suzanne Loker, Fran organized focus groups, conducted workshops and created a newsletter with the intention of supporting small apparel businesses and introducing them to apparel computer aided design (CAD).

Fran's experience with the FSAD Youth Program includes working with Charlotte Coffman to deliver Career Explorations programs on using CAD for home sewing, digital imaging, and upcycled clothing. Fran also "hit the road" across New York state to lead workshops on fabric dyeing, textile recycling, and FSAD careers. For the past three years, Fran has served as project manager for the Smart Clothing, Smart Girls: Engineering via Apparel Design project (now known as Style Engineers), which focuses on engaging middle school girls in STEM activities through their interest in fashion design.

Fran is highly respected for her knowledge and experience in the textile/apparel arena, her writing and organizing skills, her ability to work with others and her enthusiastic approach to new ideas. Fran will be a fantastic Department Extension Leader.

Note: Contact Fran Kozen, the Department Extension Leader, at [fhk2@cornell.edu](mailto:fhk2@cornell.edu) or 607-255-1093

### Planning Ahead for FSAD Extension Resources by Charlotte Coffman

Thanks to all the educators who accepted teaching kits, science supplies, dress forms, posters, exhibit boards, manuals and more from the FSAD Extension Workroom. It was amazing how many items had gathered there over the years and it was gratifying to see them find a new home. With my retirement, FSAD no longer has an assigned person to work with 4-H Youth Development, pesticide applicator training, or family and consumer science programs. Nonetheless, there will still be opportunities for collaborative research, special programs and department tours.

To keep up to date on what is happening in the department such as the latest research, interesting seminars, the exciting spring fashion show and the revolving exhibits, keep tabs on the FSAD general website <<http://www.human.cornell.edu/fsad/>>. The FSAD Youth Program and PPE webpages will be maintained until 2017. Related, but separate, websites such as Style Engineers and Pesticide Applicators Gear Up! will be maintained until they are no longer useful. Most of the youth publications are available on eCommons.

**This is the final issue of the FSAD newsletter Topstitch.** Past copies of *TXA News* and *Topstitch* will be archived on the FSAD website, <http://www.human.cornell.edu/fsad/outreach/newsletter.cfm>

To request a department tour or to locate a faculty member, call the FSAD main office, 607-255-3151 and the staff will either circulate your request or direct you to the appropriate person.

## ENGAGING YOUTH

### Review of STEAM 4-H Clothing Series from Nebraska

by Beth Davis

The University of Nebraska-Lincoln Extension 2014 STEAM (Science Technology Engineering Art Math) series is a four-volume guide to clothing construction aimed at youth aged 8 years old and up. The curriculum coordinates with STEAM concepts promoted in current educational standards. Each volume in the series begins with a description of the scientific method and explains how clothing construction skills improve by following the same cyclical progression: asking questions, forming hypotheses, testing based on hypotheses, analyzing results, forming conclusions, and asking more questions. The construction activities follow this model while at the same time each activity is identified as representative of a particular STEAM category. Youth are encouraged to recognize these connections as they engage in the various activities.

To document their progress, they are instructed to create a personalized clothing construction portfolio. Useful handouts (data collection sheets, patterns, etc.) are provided in the publications for reproduction and inclusion in the portfolio. These handouts help youth organize their projects as well as create a record of their progress for review. As students learn to identify goals, organize materials and critically evaluate their own work, they broaden their understanding of how STEAM augments as well as promotes successful outcomes. The activities in the series are presented in a consistent format from one volume to the next, making for smooth transitions to the ever advancing sewing challenges. Individual volumes are spiral bound, making for ease of use for both leaders and youth. The back of each volume includes descriptions of the Nebraska State and National Standards, as well as a table that identifies the standards that apply to each activity.

#### STEAM Clothing 1: FUNdamentals

This first volume of the Clothing series is tailored for 8 to 10 year olds. It begins with a review of the basics from which to build a strong clothing construction foundation, and includes descriptions of sewing tools, sewing machines, color interactions, fiber identification, and fabric function. The accompanying projects allow youth to develop a set of handy references that will prove useful even at more advanced stages of clothing construction. For example, basic hand and machine sewing skills are achieved by the construction of samples. These help participants experiment with techniques and fabrics while at the same time they serve as permanent records of their work. As a result, youth gain experience and confidence before addressing more challenging final projects. Also included are topics that aim to introduce the novice sewer to steps used in typical garment construction, such as preparing, cutting and marking fabrics using commercial patterns. Several fun experiments explore the performance of fibers and fabrics placed under different conditions. At this level, simple garment or accessory projects are encouraged.



#### STEAM Clothing 2: Simply Sewing

The second volume, aimed at youth aged 10 to 12 years old, begins with an exploration of one's closet. This activity provides a platform for analyzing which clothes fit best, which ones look best and which ones express a unique personal taste. The projects that follow build on this theme, and include more advanced sewing techniques. Several fun ideas for using knits are included, such as the recycling of used T-shirts into scarves. Experiments that delve further into fabric behavior and address common occurrences of stains, dirt, and fading make for enjoyable but educational learning. Additional construction techniques such as over-casting edges, darts, buttons, curved seams and hems are clearly described. Upon finishing this volume, youth will be able to construct all parts of a shirt (collars, sleeves, buttons, pockets) as well as a simple skirt with waistband. A final activity offers a practical framework for estimating the selling price of a custom garment. This volume is particularly useful for groups that already have some sewing experience and would like to further develop their skills and knowledge.



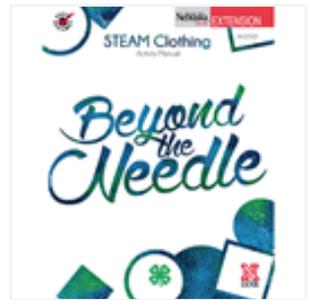
### STEAM Clothing 3: A Stitch Further

Volume 3 in the STEAM Clothing series provides guidelines for advanced sewing and construction techniques for youth aged 12 and up. The manual begins with an introduction to the serger and encourages participants to explore its many advantages. Youth cut apart an overlarge T-shirt and then reconstruct it to fit them, using the serger to finish all seams. This clever project teaches skills while at the same time overcoming fears associated with using new tools. Also included in this volume are some very useful experiments which address behaviors of different types of laundry detergents. These are presented in the observation/question/hypothesis/experiment framework and emphasize the importance of the scientific method as a tool for learning. Advanced sewing and construction techniques are presented, with helpful instructions for working on specialty fabrics such as velvet and leather. Chapter 4 includes detailed instructions for techniques such as French seams, flat felled seams, boning, and rolled hems. A chapter on designing a workable business plan introduces important considerations for the young entrepreneur. This volume is meant for youth who have demonstrated a strong interest in clothing construction and fashion and are ready to tackle challenging projects.



### STEAM Activity Manual: Beyond the Needle

This volume is not identified with any particular age group but would best serve ages 12 and up, as many of the projects require some experience with design and construction. The goal is to examine the Art component of a STEAM clothing construction curriculum through experimentation with various textile embellishments. The volume begins with a review of design concepts, including elements and principles, color, pattern and texture. These concepts are incorporated into subsequent activities that are presented according to difficulty with the easiest being introduced first. Youth are encouraged to brainstorm, explore and experiment through the construction of samples. With this approach, experience is gained before application onto a final piece. A handy reference guide, "Tips and Tricks," gives general advice for use in all of the projects. In many activities, additional web sites are listed for those who wish further exploration of a topic. With projects that include stamps, stencils, paints, buttons, dyes, threads, studs, rivets and grommets, these fun-filled activities are sure to delight youth who wish to express their creativity and don't mind sometimes getting messy in the process.



Copies of these publications are available from the UNL Marketplace, <<http://extensionpubs.unl.edu/search/?keyword=STEAM>>



## Style Engineers Moves Forward by Charlotte Coffman

Although the summer camps are in the past, Style Engineers continues to move forward as the team shares the program through conferences, expands the website, and reflects on the program evaluation.

### Fall 2015 Conferences

At the annual conference of the New York State Association of Cornell Cooperative Extension 4-H Educators (NYSCCE4-HE), Roxanne Dueppengiesser (Wyoming CCE), Jennifer Jensen (Ontario CCE) and Mary Ann Scharmberg (Livingston CCE) presented a poster *Style Engineers: Fashion through Science*. They also led a workshop *Style Engineers: Smart Clothing, Smart Kids* at the National Association of Extension 4-H Agents (NAE4-HA) Conference, Portland, OR. These three 4-H educators along with FSAD faculty Charlotte Coffman received the 2015 "Excellence in Teamwork" Award, Northeast Region, NAE4-HA.



Susan Ashdown and Denise Green from Cornell, Kristen Morris from the University of Missouri, and Lucy Dunne from the University of Minnesota represented Style Engineers at the national conference of the International Textile and Apparel Association, Santa Fe, NM. Their presentations included:

- *Exploring Naïve Spatial Understanding in Patternmaking.*
- *Sketching as a Tool to Measure Concept Application in an Informal Learning Environment.*



Website Enhancement. <<http://www.styleengineers.org>>

The website is being revised as comments are received and instructions for four new activities were recently added: Expand Band, LED Bracelet, Polar Walk and Thermal Wrap. Watch for information on how to make your own half-scale dress form – coming soon! In the meantime, learn more about the half-scale dress form project (Supporting Industry, below).

#### Summative Evaluation

Edu Inc., program evaluators, reported positive outcomes in the project’s summative evaluation:

- Girls were deeply engaged.
- Girls immediately applied the Engineering Design Process
- Girls showed increased STEM knowledge and demonstrated STEM skills such as team work, communication, problem solving, and analytical thinking.
- Girls rated activities overall 5 on a 5-point scale.
- Adults leaders rated their confidence in teaching STEM concepts 4.0, the efficacy of training provided by the project 4.5, and the web-based training materials 4.5 – all out of 5.



*Note: This project is funded by the National Science Foundation.*

## **ENHANCING SAFETY**

### **PPE Website**

by Charlotte Coffman

A new interactive website *Agricultural Pesticide Handlers – Gear Up!* helps workers understand PPE statements on pesticide labels, and provides information about materials, garment design, and maintenance. In the “Suit Up!” section, users can “click-and-drag” garment illustrations onto a model and learn whether the personal protective clothing they selected is in compliance with the pesticide PPE label statement. The aim is that pesticide handlers will use this website to study for their pesticide applicator certification, to answer PPE questions that arise on the job, and to achieve a safer working environment. It also may be useful to researchers and educators. Watch for the launch of the website at <[http:// www.pesticidehandlersgear.human.cornell.edu](http://www.pesticidehandlersgear.human.cornell.edu)>

## **SUPPORTING INDUSTRY**

### **Designing with Half-Scale Dress Forms**

by Beth Davis

How often do we hear that an influential dress designer discovered his or her passion for apparel design while passing time dressing dolls? The experimentation with color, texture and shape on a small scale is a liberating process, where creativity is less restrained by cost, time, or materials. Should it be any wonder that this activity could stimulate an interest later in life? The advantages of this type of activity, where experimentation and creativity can thrive, are not lost on educators. Increasingly, apparel design students are training to use half-scale dress forms in an effort to unleash the creativity needed to become artistic as well as competent designers. Once a design has been completed on the half-scale dress form, the resulting pattern can be scaled to a full-sized pattern. Just as with dressing dolls, numerous combinations and permutations are possible without the high costs associated with full-scale designing.

What is a half-scale dress form? These dress forms are standard sizes reduced by half: for example, a full-scale, standard Missy size 10 that measures 32 ½ -30 ½ - 25, would measure 16 ¼ - 15 ¼ - 12 ½ in half scale. Traditionally, the measurements used to create dress forms, both full-scale and half-scale, were based on industry sizing standards. However, this sizing does not reflect different body types and has limited application in our global market environment. In addition, the actual costs to purchase either of these types of commercial forms are quite high. As the trend towards using half-scale models increases, solutions to sizing as well as cost issues need to be found.

To create a half-scale dress form which more accurately reflects the human body size, Cornell FSAD Professor Susan Ashdown has developed a system which utilizes the 3-D Body Scanner and Computer-Aided Design (CAD) software. First, a scan is taken of a real person and the digital information is translated into half-scale, 3-D horizontal plates. (Figure 1). This information is then entered into a CAD program, which creates a half-scale dress form pattern following the contours of the horizontal plates. Figure 2 shows a half-scale dress form created by a commercial company, Alvanon, using data collected from Cornell 3-D body scans. All types of body shapes can be replicated in this manner, including plus sizes (Figure 3.) After designing garments on the half-scale form, CAD software is used to precisely translate resulting half-scale patterns into full-scale garment patterns.



Figure 1



Figure 2



Figure 3



Figure 4

Although this new type of half-scale form is more accurate than previous forms, commercial products based on body scans are expensive, so costs remain an issue. To find alternatives, an experiment was performed to recreate a half-scale dress form on a 3-D printer. Figure 4 shows Cornell FSAD Professor Susan Ashdown with her personal half-scale dress form created on a 3-D printer using data taken from her 3-D body scan. Although extremely accurate, this process has also proven to be too costly for practicality (though the cost of 3-D printing may lessen as the technology becomes more widespread.)

There are benefits for young designers who learn to design using the half-scale method, and efforts have been made to make this information available to them. For the application of science and technology in fashion designing, the Style Engineers program has encouraged designing on this type of dress form. Several projects provide step-by-step instructions for creating garments on the half-scale model (see listing below.) To tackle the cost and sizing issues for these young designers, Professor Ashdown and her students at Cornell have taken up the challenge of creating a half-scale dress form that is accurate, sturdy, and economical. Beginning with 3-D body scans of middle-school aged youths, they experimented with numerous materials and modes of construction. After a period of trial and error, they developed a half-scale dress form that uses common materials and is inexpensive to construct. Using the CAD generated half-scale dress form patterns, a lightweight, 3-dimensional frame is constructed from sturdy tagboard. This frame sets the shape of the half-scale body. Covering the frame is a close-fitting, body-shaped fabric sheath. Finally, the interior is stuffed with fiberfill and the neck and armhole edges are covered by shaped, tagboard pieces (Figure 5.) Once Professor Ashdown and her students have finalized the prototype, a module for creating this half-scale dress form, including patterns and instructions, will be posted on the Style Engineers website, <[www.styleengineers.org](http://www.styleengineers.org)>. There are also plans for making kits available, which would cost approximately \$20 plus shipping. Supplied with half-scale models, instructions, and encouragement, this approach to apparel design can offer the young designer the chance to discover and advance his or her own creativity without the worry of excessive expense.



Figure 5

Several websites offer information on this subject, including the development of the Cornell half-scale dress forms as well as illustrations of the design process using these types of forms.

- <http://www.human.cornell.edu/fsad/halfscale.cfm>
- <http://styleengineers.org/wp/wp-content/uploads/2015/04/Free-Draping-with-Fabrics-LeaderGuide-8-7-1.pdf>
- <http://styleengineers.org/activity/spectacular-skirts/>
- <http://www.threadsmagazine.com/item/15441/design-on-the-half-scale>
- [http://www.centerforpatternanddesign.com/collections/frontpage/products/how-to-enlarge-patterns\(\\$4.95\)](http://www.centerforpatternanddesign.com/collections/frontpage/products/how-to-enlarge-patterns($4.95))
- <https://www.youtube.com/watch?v=6fQGtj7lu8> (designing on the half-scale dress form)

# RECALLING TRADITIONS

## Beulah Blackmore (1886-1967): Pioneer in the Field of Clothing and Textiles

by Beth Davis

One hundred years ago, 29-year old Beulah Blackmore arrived at Cornell University, the first full-time clothing and textile instructor in the newly established Department of Home Economics. A native of Vassar, Michigan, Miss Blackmore joined a small but ambitious team led by Martha Van Rensselaer and Flora Rose. These two women, with experience in Extension and Education Reform, found in Beulah Blackmore an energetic colleague who exhibited a self-assured confidence as well as an inexhaustible desire for knowledge. Before coming to Ithaca, Beulah Blackmore had received training in five institutions in five states and taught at two schools in two states. She had studied at Teachers College, Columbia University, and would receive her Bachelor of Science degree soon after her move to Ithaca. But what is most telling about Miss Blackmore was the constant search for educational improvement which continued long after her arrival on the Cornell campus. As a result of her insatiable curiosity about the central role of clothing and textiles in the lives of people, Beulah Blackmore would enrich, expand, and expose the field as a worthy academic discipline for both students and faculty.



Figure 1



Figure 2

In the fledgling field of Home Economics, there were few guides to consult for curriculum or course development. Blackmore's earliest classes were concerned with basic clothing construction for family needs. At this time, a student could take courses in clothing design, clothing construction and millinery. A 1916 photograph shows (now Professor) Blackmore teaching millinery to eight young women (Figure 1.) Between 1916 and 1925, Beulah Blackmore pursued a personal course of study which today would be labeled as "fieldwork and data collection." In addition to attending summer art schools, she worked as a sales assistant at Lord and Taylor in New York City and at William Filene Sons in Boston. The former developed her understanding of art and design while the latter improved her understanding of consumer household needs. In the summers of 1922 and 1923, she worked at different New York State hotels in order to understand the textile needs and requirements of that industry. Later, art courses in Paris and technical courses at Cornell and M.I.T. would be added to her professional training. These experiences would broaden the subject matters in her classes beyond an emphasis on household needs to

include those that involved the larger world, particularly addressing the growing requirements demanded by commercial design and mass-production in industry.

In 1925, the once small Department of Home Economics became the College of Home Economics, the first state-chartered college of home economics in the country. Prof. Blackmore was appointed the first Head of the Department of Textiles and Clothing and was now responsible for the direction of teaching, research and extension in the department. With Prof. Blackmore at the helm, the curriculum dramatically expanded. For young designers, she initiated the Costume Shop,

where apparel design students gained on-the-job training while designing clothing for individual clients (Figure 2.) She taught courses in household textiles (Figure 3) and for students of the Hotel School, many of them men (at that time part of the College of Home Economics) she offered courses in hotel and commercial textiles. Testing of fibers became part of the curriculum, and Prof. Blackmore utilized the newest equipment in the classroom (Figure 4.) Extension was a vital program throughout the college. A 1927 photograph from Junior Field Days shows an exhibit for 4-H Club girls of garments

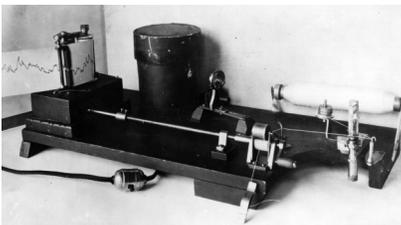


Figure 4

from the department collection arranged by Beulah Blackmore (Figure 5.)



Figure 3



Figure 5



Figure 6

During the 1930s, Prof. Blackmore continued her mission to develop new and better curriculum. A formal photograph from this period shows a poised and confident "BB" as she was affectionately known by her students (Figure 6.) Under her leadership, art training became an essential element in dress design. In one freshman class, apparel design students experimented with color and explored its application in dress (Figure 7.) Historic costume as a source of design inspiration was also one of



Figure 7

her introductions, and several photographs from this period illustrate exhibits for this purpose (Figure 8.) Prof. Blackmore was beginning to amass a substantial collection of historic garments and in 1936, she undertook an "Around the World" tour which included Japan, Philippines, Indonesia, China, India, the

Middle East and parts of Europe. The purpose was to add items to the collection which were not represented, with an emphasis on Asian dress and textiles. Because of her efforts, the current Cornell Costume and Textile Collection contains a broad selection of



Figure 8

both European and Asian costumes and textiles, rare and significant pieces that are no longer being produced. Soon after her return, she purchased a wine-colored silk frock at B. Altman's in New York to wear to the 1937 President's Day Inaugural Reception at Willard Straight Hall (Figure 9.) Prof. Blackmore must have found the garment's restrained but elegant detailing and rich color suitable for one whose tastes had been influenced by worldly experience.

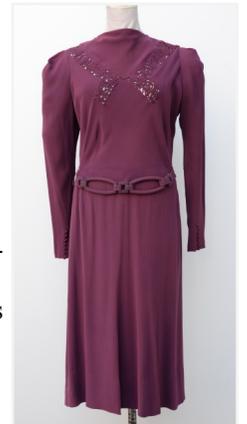


Figure 9

By the late 1940s, the recognition of the role that psychology plays in all areas of clothing and textiles led Prof. Blackmore to hire a new faculty member who studied dress behavior and psychology. At this time, the first textile scientist entered the department, and the study of clothing and textiles now included the chemistry of fibers. In 1951, after serving thirty-six years in the capacity of professor and department chair, Beulah Blackmore retired. Her legacy included the development of a clothing and textile curriculum into a twentieth-century discipline, while her vision laid the foundation for the advancement of the field into the twenty-first century. Today, a dedicated faculty of apparel designers, theorists, extension educators, costume historians, business educators, anthropologists, chemists, engineers and fiber researchers perform research, develop programs for extension, and instruct about 100 undergraduate and 25 graduate students. The diversity of this program is testament to Prof. Beulah Blackmore's quest to continually expand her own horizons as well as those of her colleagues and students.

**Note:** An exhibit featuring the work of Beulah Blackmore is planned for the fall of 2016.

### Extension Faculty and Staff

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