PROCEEDINGS

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Refereed Abstracts

Sung-Jin Lee, Editor
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Creative Scholarship – Surface Design Techniques

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There are many surface design techniques documented in literature such as dyeing, embellishment, embroidery, fabric and fiber manipulation, printing, and staining fabric. The formal instruction and experience on these surface design techniques vary by designers. Recognizing my limited experience with surface design techniques, I began exploring the different surface design techniques as part of my professional development as a fashion design faculty. The Brushstrokes series explores diverse surface design techniques including embroidery, silk painting, fiber manipulation, yarn couching, and dyeing.

As a fashion designer, my creative practice is scholarship initiated from an inspiration. I have been inspired by Van Gogh's fascination with cypress trees. Van Gogh’s paintings suggest he found cypress trees to be a captivating and challenging subject. His paintings such as Cypresses, Wheat Field with Cypresses, and the well-known Starry Night reflect his captivation with cypress trees. The Brushstrokes is a self-study exploration of surface design techniques inspired by Van Gogh’s cypresses. The main objective of Brushstrokes was to demonstrate the visual connection between artistry and the interpretation of renowned artwork translated into expressions of fashion design.

Brushstrokes series consist of five garments that have been shown at juried international or national exhibitions, with one design being awarded first place in the fiber art category. The garments will be presented for their inspiration, exploration and sampling, materials used, application methods, and problems and solutions in the execution processes.

1. Brushstrokes in red. To portray swirling, broken brushstrokes, different size silk ribbons were purchased and individually dyed. The silk ribbons were applied on sheer organza with free-hand satin stitches and continuous straight and split ribbon stitches to express the brushstrokes of Van Gogh’s paintings. Techniques: ribbon embroidery, dyeing

2. Blue cypress. To achieve ombré effect of the painting, a mixture of eight different shades of blue, navy, and black merino wool roving were used. The stretch side panels were added to complement the non-stretchable felted panels for a better fit. Techniques: nuno felting, needle felting, slipstitching

3. Fiery cypress. Swirly lines were painted on silk twill fabric using the serti technique with water soluble resist. Techniques: silk painting, draping

4. Red cypress. Six uneven felt panels were created through nuno felt techniques. The design focus was more on achieving gradient ombré appearance by using different shades of red instead of focusing on the appearance of the broken brushstrokes. Techniques: nuno felting, needle felting, draping, blind hand stitching

5. Melancholy. To create a unique design using textured yarns, the zigzag machine stitches were utilized to couch the bouclé knitting yarns on the jersey backing fabric instead of traditional crocheting, knitting, weaving, or felting. Technique: couching.

The Brushstrokes series contributes to scholarship of teaching by documenting the process of dyeing and surface design techniques for use in teaching demonstrations. This design also contributes to the field of textiles and apparel design as it demonstrates the significance of using unique use of traditional materials to create textiles. Carefully controlled silk ribbon, yarn, and/or fiber application created soft, yet powerful movement of artist’s brushstrokes.

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Effectiveness of Clicker Technology and Peer Instruction – A Case Analysis
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**Purpose and Rational:** Student Response System (SRS), or commonly known as clicker, is a popular technology applied by educators to engage students and to assess understanding during lecture. Peer instruction is a SRS teaching method which asks students respond to a clicker question before and after discussion among peers. Although numerous studies reported positive impacts of SRS application and peer instruction in both science and professional disciplines (Heaslip, Donovan, & Gullen, 2014; Rana, Dwivedi, & Al-Khowaiter, 2016, Smith et al., 2009), only a few studies were found in areas related to Family and Consumer Sciences (FCS) (Gallayane & Thornton, 2011; Gentry, 2007). The purpose of this study was to investigate the effectiveness of clicker usage and peer instruction method through an undergraduate *Introduction to Textiles* course. The results could expand existing evidences of clicker technology and peer instruction application in FCS education.

**Methodology:** The SRS clicker and response system by *Turning Technology* is supported by the author’s institution and thus adopted in the textiles course. There was a combined total of 128 students in the course from fall 2016 (68 students) and fall 2017 (60 students). During each semester, peer instruction questions were frequently embedded in lectures and the correct answer percentage results were compared before and after peer instruction. To encourage attendance and engagement, participation points were given to all students who responded to each question regardless if their answers were correct. Students’ attitude towards the clicker application and their perception of clickers’ impact on learning were studied through six 5-scale Likert survey questions and one open-ended reflection question during mid-term exams. Excel was used to process the survey data. The qualitative data was analyzed by theme analysis through which key words and phrases were recorded, coded and grouped for frequency count.

**Finding:** An average of 28.4% increase in correct answer percentage was found with peer instruction questions, ranging from 19.8% to 58.5% improvement. Of the total 128 students, 77.3% agreed with the statement that “using clickers made me pay more attention during lecture” (mean =4.1), 84.4% agreed that “clicker question is helpful for class discussion” (mean =4.1), and 82.8% agreed that “instant clicker polling results help students know or check if they understand the concept” (mean=4.0). These percentages and mean scores were consistent with the major themes identified from students’ reflections about clicker application and peer instruction: ‘pay attention or focus’, ‘keep everyone engaged for discussion’ and ‘test my knowledge and understanding’. In addition, two themes not covered in the quantitative survey were identified from the open-ended reflections, including ‘helps us prepare for quiz and exam’ and ‘refreshes us on previous topics’.

**Conclusion and implication for Research:** The above results are consistent with those reported in literature that clicker technology enhances student engagement and peer instruction improves student in-class learning. In addition, this study added qualitative data to the clicker technology literature for better understanding. This case analysis may lead to more discussion and awareness among FCS educators about this technology and its positive impacts on students learning. It needs to be noted that it does take extra time and training for a faculty to use the technology effectively and institution support is also necessary.

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Assessment of Nutrition Knowledge of the Human Performance and Leisure Studies Department Students at North Carolina Agricultural and Technical State University

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Purpose and Rationale: The effects of “unhealthy” dietary consumption and low-level physical activity habits and their impact on excessive weight gain among college students are widely acknowledged. Efforts to help students manage their calorie intake have included a wide variety of strategies including nutrition education, food intake monitoring, labeling nutritional content of foods, promotion of healthy food choices, and social media appeals to eat foods from “recommended” food groups. While these efforts have had some success, their lack of total success is due in part to insufficient attention paid to the contextual environment in which students make food choices and decisions of when and how much to eat. Research addressing the food choices of college students especially aimed at increasing awareness of healthy foods is sparse. There are some studies published, but none were found at a historically black college or university. This provides us a unique opportunity to address health at a time when students are transitioning to adults and making life-altering decisions. In order to improve food choices of college students and promote healthy lifestyle behaviors, we first must determine the current level of nutritional knowledge and participation in physical activity. Therefore, the purpose of this study was to determine the current nutrition knowledge and physical activity of students enrolled in courses in the Human Performance and Leisure Studies Department at North Carolina Agricultural and Technical State University (NCAT).

Methodology: Paper based surveys were used to administer the 56-question Nutrition Knowledge Questionnaire (NKQ) (Parameter & Wardle, 2000) and the International Physical Activity Questionnaire (IPAQ) during the last week of the Spring 2017 semester in select Human Performance and Leisure Studies courses (n=360). Participation in the study was voluntary (IRB Study # 17-0047). The NKQ survey contains four sections: I-Dietary Recommendations (maximum score=11), II-Sources of Foods/Nutrients (maximum score = 69), III-Choosing Everyday Foods (maximum score = 10), and IV-Diet/Disease Relationship (maximum score = 20) which sum a total score out of 100. Descriptive data, ANOVA (gender and major) and MANOVA (gender/ major) were used to test for significance between groups, p<0.05.

Findings: Response rate was 65.6% (n=236). Demographics for gender are 45.3% male vs. 53.8% females; 76.7% reported majoring in sports science and fitness management (SSFM); ages 18-24 86.9%; Black African ethnic origin 64.9% and 94.4% single. Total NKQ Score was 49.22 +/- 9.84. Section IV was significantly difference between men (4.79 +/-2.30 vs. 5.37 +/- 1.87 women, p=0.03. SSFM majors scored lower, 5.64 +/-1.63 vs. 6.12 +/-1.32, than other majors for Section I, p=0.05.

Conclusions and Implications for Research: The findings in this study highlight a gap in education and opportunity to provide nutrition education for students majoring in SSFM. Limitations to the study are a convenience sample was used to obtain data which may not represent a true nutrition knowledge of students majoring in SSFM. Future research will focus on broadening our sample base to gain a better understanding of students' knowledge of nutrition across campus.

Reference:

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Rheological Properties of Peanut Butter added to Waxes to Prevent Oil Separation: A Preliminary Study

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Purpose and Rationale: The main ingredients of commercial peanut butter can include a minimum of 90 percent peanuts, sugar or another type of sweetener, salt, and stabilizer. Stabilizers commonly used in commercial peanut butter include hydrogenated canola and cottonseed oils. It is well documented that a high intake of trans and saturated fatty acids (TFAs and SFAs) can lead to diseases such as cardiovascular disease (CVD), obesity and type 2 diabetes mellitus. Natural peanut butter does not contain a stabilizer and for this reason, is less firm, flows more easily and exhibits oil separation problems, with the formation of a hard layer of peanut solids at the bottom of the container which reduces the spreadability of the product. Wax esters are long-chain fatty alcohols esterified with long-chain fatty acids, which are known to be resistant to lipase hydrolysis and poorly digested by many mammals, including humans. Waxes as stabilizers is an alternative to produce a natural peanut butter without trans fats.

Objectives: The objective of this study was to determine the effect of waxes (beeswax, rice bran wax, and carnauba wax) as stabilizers to prevent oil separation in Natural Peanut Butter.

Methodology: Three laboratory-prepared peanut butter samples were prepared from roasted peanuts using different levels (1, 1.5, and 2%) of waxes (beeswax, rice bran and carnauba wax) following a modified procedure specified by Gills and Resurreccion (2000). Oil separation following method of Radočaj et al. (2012) was observed daily but measurements after 4 weeks of storage. The melting point of waxes was determined by DSC using a DSC Q20 (TA Instruments, New Castle, DE). The viscoelastic properties were determined using a magnetic bearing rheometer (TA Instruments AR-G2, New Castle, DE, USA). Viscoelastic properties were measured in triplicate and melting point of waxes in duplicate. Significant differences (\(\alpha = 0.05\)) were evaluated using one-way ANOVA using GraphPad Prism software, version 6.00 for Windows (GraphPad Software, San Diego, CA, USA).

Findings: Addition of waxes generally improved the rheological properties and significantly increased (P<0.0001) the elasticity values when the 1, 1.5 and 2% of rice bran wax (278.24 ± 63.89 Pa.s to 20882.86 ± 5690.3 Pa.s) and 2% of carnauba Wax (278.24 ± 63.89 Pa.s to 8867.62 ± 2163.75 Pa.s) was used as stabilizer. No significant difference was observed when beeswax was used. The Natural Peanut Butter samples exhibited oil separation after 4 weeks of storage with highest value of 1.8%. Peanut butter added beeswax also showed oil separation (1.09, 1.3 and 1.6%) for 1, 1.5 and 2% of addition respectively. Rice bran and carnauba waxes were effective in preventing oil separation in all percentages, making peanut butter stable throughout storage of 4 weeks.

Conclusion and Implications for research: This study suggests that rice bran and carnauba waxes can improve rheological properties of peanut butter as well as prevent oil separation indicating its potential as a stabilizer.

References:

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Food Preparation Preferences of Older African American Females

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Purpose and Rationale: The life expectancy is increasing, making communities of older adults more inclined to healthy living. For the elderly, regular physical activity is beneficial in preventing chronic disease and helping to maintain personal independence. Faith-based settings and religious organizations are uniquely positioned to address health-related problems by offering intervention or support services. Churches and other faith-based organization have become increasingly popular contexts to conduct health promotion activities, particularly in the African American community. The purpose of the present study is to assess older adults’ preferences for food preparation and consumption. Thus, not only is important to eat vegetables and lean meat, but it is also important in understanding healthy ways to prepare these foods.

Methodology: This proposal is part of a larger project which focuses on spirituality, physical health, and nutrition at a large suburban predominately African American Baptist church. In the spring of 2017, an announcement was shared with the members of the Senior Adult Ministry (SAM) about a Healthy Eating/Active Living (HEAL) workshop to be held at their church. Several members of SAM had participated in previous HEAL project activities. Participants of the proposed project were 50 – 80 years of age and were all female. The second author facilitated the workshop and presented the Food Preferences (FP) Booklet to the participants. The FP Booklet contained pictures of 10 items (vegetables and meats). Participants were to identify their preferred preparation method, i.e. fried, baked, and broiled of the presented foods as well as to any preferred toppings, i.e. cheese, butter, sour cream. The data was collected during a small focus group setting. Each question was read to participants. Participants worked on their own in completing the “preferred preparation methods”. The FP Booklet was completed in one group session.

Findings: The data was analyzed using Excel. Interrater reliability was used to rate food preparation methods as “good”, “moderate” and “bad”. Findings concluded a majority of the participants (70%) had “good” food preparation habits. However, nearly 60% of participants preferred “bad” toppings on their foods. Participants shared how the role of culture influences how they prepare and prefer to eat certain foods.

Conclusions and implications for research: People are living longer. Thus, it is important for health care professionals, extension agents as well as ministers and clergy working with older adults to ensure adults a high quality of life. This may be supported by focusing on healthy food preparation and healthy food consumption. While older adults are knowledgeable of “good”/healthy foods, how they prefer and prepare foods could negatively and/or positively influence health and well-being as well as longevity.

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Optimization of Onion Peel Tea Brewing Condition Using a Response Surface Methodology

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Purpose and Rationale: Functional foods are noted for their various health benefits including antioxidant content, anti-inflammatory properties, and their ability to improve the obese condition. A massive amount of food byproducts is generated domestically and agricultural industries which can be beneficial to our health. Specifically, onion peel is a byproduct that contains bioactive compounds such as quercetin which has been associated with antioxidant, anti-inflammation and anti-obesity properties. Despite these properties, we cannot digest onion peel and the easiest way to obtain these bioactive compounds is to consume it as a tea. Therefore, developing an easy onion peel tea brewing method would encourage more consumers to make and enjoy its associated health benefits. The purpose of this study was to examine the optimized condition to brew onion peel in a home condition.

Methodology: To find optimal brewing condition of onion peel tea, a central composite design (CCD) in a Response Surface Methodology (RSM), a statistic approach that is commonly used in food industry was used. This experimental design included two independent variables as volume and boiling time and two responses as total phenolic amount (TPA) and total antioxidant capacity (TAC). To generate experimental conditions, the independent variables was set at three levels, indicated as – 1, 0, and + 1. Based on preliminary experiments, values for each level were assigned as follows: water volume [60 mL (-1), 180 mL (+ 1)] and boiling time [100 minutes (-1), 200 minutes (+ 1)]. In the CCD, replicates of factorial, axial, center points were determined as 3, 2, and 5, respectively and alpha was set at 1.56508. According to this condition, 25 experimental conditions (20 not center points and 5 center points) was generated to predict optimal onion peel tea brewing condition that extracted the highest TPA and TAC. Based on the acquired conditions, 0.5 grams of dried peel was boiled in different amounts of water, for different time durations and then TPA and TAC were measured in tea obtained from each experimental condition. TPA was measured using Folin-Ciocalteu`s phenol reagent and then compared against gallic acid equivalents. TAC was determined by ABTS radical decolorization assay and data was measured (in mg) against vitamin C equivalents. TPA and TAC results input in the RSM again to generate the optimal condition of brewing onion peel tea. To confirm the optimal condition, the onion peel tea brewing was repeated by 2X (1 g/320 mL) and 4X (2 g/640 mL) extraction scales. The amount of TPA and TAC were then measured to examine the repeatability of maximum yields in different extraction scales.

Findings: Optimal conditions of 180 mL of water and 160 minutes brewing period were enough to extract the active compounds in onion peel. Different measurements: 1X, 2X, and 4X experimental conditions showed that there was the same amount of TPA and TAC in onion peel tea.

Conclusions and Implications for research: Small scale brewing condition is reliable to apply for a bigger scale brewing process. Developing an optimum brewing method for onion peel tea increases intake of active compounds, from an agricultural byproduct, that may improve health benefits.

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Anti-Oxidant and Anti-Hyperglycemia Activities of Four Different Colored Sweet Bell Peppers (Capsicum annuum L.) Extracts

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Purpose and Rationale: Hyperglycemia, a rapid rise in blood glucose levels in NIDDM patients occurs due to hydrolysis of starch by pancreatic α-amylase and absorption of glucose in the small intestine by α-glucosidases such as sucrase and maltase. Inhibition of these carbohydrate-hydrolyzing enzymes significantly decreases the postprandial hyperglycemia, which has been known as a key strategy to control diabetes mellitus. Therefore, natural α-glucosidase inhibitors from food-grade plants, commonly known as phenolic compounds offer an attractive strategy to control postprandial hyperglycemia for type 2 diabetes management. Sweet peppers Capsicum annuum L. (C. annuum) are excellent source of vitamins A and C as well as phenolic compounds that may have beneficial effect to reduce the risk of metabolic diseases [1, 2]. The purpose of this study was to examine total phenolic contents, antioxidant activities and α-glucosidase inhibitory activities of 4 different colored (Red, Orange, Yellow and Green) sweet bell-peppers (Capsicum annuum L.).

Methodology: Sweet bell pepper extract powders were prepared by hot water extraction and then freeze-dry procedure. Total phenolic content and antioxidant activity were measured using a Folin-Ciocalteu and 1,1-diphenyl-2-picrylhydrazyl (DPPH) reagents, respectively [3]. Intestinal α-glucosidase inhibitory activity was determined using rat intestinal α-glucosidase and p-nitrophenyl-α-D-glucopyranoside as a substrate. Glucose Oxidase assay enzyme solution that was prepared from rat intestinal acetone powder was used to measure the activity of the small intestinal maltase, sucrase, and glucoamylase enzymes. Inhibitory enzyme activity was determined by comparing enzyme activity in presence and absence (a control) of samples. The data was analyzed using one-way analysis of variance of SPSS 10.0 with Duncan’s post-hoc test. P values less than 0.05 were considered significant.

Findings: Orange bell pepper extract powder exhibited the highest phenolic content (4.06±0.25 g/100g extract weight) whereas green bell pepper extract powder showed the lowest value (2.55±0.23 g/100g extract weight). These phenolic contents of four sweet peppers showed strong correlation with their antioxidant activities (r=0.98). Intestinal α-glucosidase, maltase, sucrase, and glucoamylase activities were inhibited by four bell pepper extract powders.

Conclusions and Implications: Sweet bell pepper extract powders had the high phenolic content and antioxidant activity and further inhibited activity of intestinal enzymes that are involved in the regulation of intestinal carbohydrate absorption. This indicates that sweet bell peppers may have the potential to regulate postprandial hyperglycemia in intestine, which provides beneficial effects to diabetic patients.

References

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Anti-Inflammatory Effects of Red Onion Peel Extract on LPS-Induced Raw 264.7 Macrophage Cells

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Purpose and Rationale: Obesity, a world-wide health problem causes low-grade inflammation that is associated with metabolic disorders such as type 2 diabetes and cardiovascular diseases (Hill, 2012). Therefore, it is important to prevent metabolic inflammation. Red onion contains the high amounts of anthocyanins that have consistently shown anti-inflammatory and antioxidant effects (Singh, 2009). Onion peels, which are by-products of onions, contain greater amounts of dietary compounds in comparison to the inner layers of onions. This implies that red onion peel may be a potential source to provide anti-inflammatory effect. The purpose of this study was to investigate the anti-inflammatory effects of red onion peel extract on lipopolysaccharide (LPS)-induced Raw 264.7 macrophage cells.

Methodology: Red onion peel extract (ROPE) was prepared through a standard extraction procedure using 60% ethanol. To determine non-toxic concentrations of ROPE, the cytotoxicity of ROPE was measured using 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) reagent in Raw 264.7 macrophage cells. To examine the anti-inflammatory effects of ROPE, Raw 264.7 cells were pretreated with different concentrations of ROPE for 12 hours, and treated with ROPE in the presence of LPS for an additional 3 hours. Cells were then harvested for RNA extraction. The expression of genes that are related to regulation of inflammation were measured using a quantitative real-time PCR. An enzyme-linked immunosorbent assay was used to measure the amount of tumor necrosis factor alpha (TNF-α), an inflammatory cytokine, secreted from the Raw 264.7 cells into the extracellular medium. One-Way ANOVA (p < 0.05) with Tukey’s post hoc test were conducted to perform statistical analysis using Graphpad prism.

Findings: According to cell viability, 12.5 - 50 μg/μL of ROPE was not toxic to the cells. LPS induced the expression of Interleukin 1 beta (IL-1b), Monocyte chemoattractant protein-1 (MCP1), nicotinamide adenine dinucleotide phosphate oxidase 1 (NOX1), inducible nitric oxide synthase (iNOS), cyclooxygenase-2 (COX2), and tumor necrosis factor alpha (TNF-α) genes. This LPS induction was decreased by treatment of ROPE in a dose-dependent manner. Consistent with a change of TNF-α gene expression, the secretion of TNF-α into the extracellular medium was also decreased by treatment of ROPE in a dose-dependent manner.

Conclusions and Implications for research: In conclusions, ROPE had anti-inflammatory effect. This indicates that red onion peel may have a potential to improve obesity-induced inflammation.

References

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Effect of Quercetin on Non-Shivering Thermogenesis through Wnt Signaling in Brown Adipocytes

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Purpose and Rationale: Non-shivering thermogenesis is a main function of brown adipose tissue (BAT), which burns body fat by generating heat (Cypess et al., 2015). It has been indicated that activating non-shivering thermogenesis is the potential way to reduce obesity. Moreover, development of brown adipocytes was inversely correlated with canonical Wnt signaling (Lo, Ng, Kabiri, Virshup, & Sun, 2016). Recently our lab found that quercetin, a main dietary compound in onion peel converted characteristics of white adipocytes that mainly functions as storing fat to BAT-like cells (Lee, Parks, & Kang, 2017). However, effect of quercetin in a function of BAT and its’ metabolic regulation through Wnt signaling has not been studied yet. The purpose of this study is to determine the effect of quercetin on non-shivering thermogenesis in brown adipocytes and further the mechanism by which quercetin affect non-shivering thermogenesis through Wnt signaling.

Methodology: Immortalized brown preadipocytes were seeded and then differentiated for 11 days, which becomes mature brown adipocytes (a control). In an experimental group, quercetin (40 µg/ml) was treated during the differentiation (day 5, 7, and 9). Fully matured brown adipocytes (day 11) were harvested for extracting total RNA. Sequentially cDNA was synthesized and then the expression of genes, such as uncoupling protein 1 (UCP1), cell death-inducing DFFA-like effector A (CIDEA), and peroxisome proliferator-activated receptor (PPAR) γ-coactivator 1-α (PGC1α) that are related to non-shivering thermogenesis, carnitine palmitoyltransferase 1α (CPT1α), a main regulator for fatty acid oxidation, and Wnt10b, Frizzled 2, Low-density lipoprotein receptor-related protein (LRP)-6, and β-catenin that are involved in regulation of canonical Wnt signaling were measured using a real-time PCR.

Findings: Brown adipocytes treated with quercetin showed increased expression of UCP1, CIDEA, and CPT1α genes, but PGC1α gene was not changed. Wnt10b, Frizzled 2, Low-density lipoprotein receptor-related protein (LRP)-6, and β-catenin genes were downregulated compared to brown adipocytes that were cultured without quercetin.

Conclusions and Implications for research: In conclusion, quercetin induced function of brown adipocytes by inhibiting canonical Wnt signaling. This indicates that quercetin may be the potential dietary compound that reduces obesity by regulating adipocytes’ metabolic destiny.

References:

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Parenting Matters: A Promising Evidenced-Informed Parent Education Program for High Needs Parents

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Purpose and Rationale: The purpose of this study was to evaluate the effectiveness of Parenting Matters (Baldwin, M.J., 2003), an eight-session program developed to fill the need for parenting training for parents mandated by the courts or referred by social services or other agencies.

Methodology: A total of 146 family participants from 10 North Carolina counties participated in the study. The research process was a repeated measures design using the following procedures: pre-assessment, eight-week Parenting Matters sessions, three-month wait period, and post-assessment. The measures battery consisted of the Family Status Form (Coard, 2009); Parenting Stress Index Short Form (Abidin, 1990); Behavior Assessment System for Children (Reynolds & Kamphaus, 1992); Parenting Practices Scale (Staryhorn & Weidman, 1988); Social Skills Rating Scale (Gresham & Elliot, 1990); Social Support Questionnaire-Short Version (Sarason, Levin, Basham & Sarason, 1983); Network Orientation Scale (Vaux, Burda & Stewart, 1986); and Brief Infant-Toddler Social and Emotional Assessment (Briggs-Gowan & Carter, 2002). Parent participants were administered pre-assessment measures. Parent participants in the intervention group participated in the eight-week Parenting Matters program and the controlled group were wait-listed to participate in the parent education program. At the end of the eight weeks, all parent participants (intervention and wait-listed controlled groups) were administered the post-assessment measures. Intervention effects on parenting were evaluated with repeated measures analyses of variance with condition (experimental vs. control) as the between-participants factor, time as the within-participant factor, and the measure of parenting as the dependent variable. An independent t-test was used to compare pre- and post- measure scores based on subscale and total scores.

Findings: The pre- and post-intervention scores on the Parenting Stress Index-Short Form showed parents increase in stress at post measurement (effect size = -.03). Based on the pre- and post-intervention scores on the Parenting Practices Questionnaire, parents showed an increase in parenting practices at post measurement (effect size of -.03). From the pre- and post-intervention scores on the Social Skills Rating Scale (Problem Behavior subscale), parents reported a decrease in the frequency of problem behavior at post measurement (effect size of .09). From the ratings for items related to satisfaction with social support on the Social Support Questionnaire–Short Form, over 75% of participants were either satisfied or very satisfied with their social support. Based on correlations, an increase in parenting practices was associated with an increase in parental stress. Based on the pre- and post-intervention scores on the Behavioral Assessment System for Children, average scores for pre-intervention (125.95) were higher than post-intervention (122.58), signaling a decrease in parent reported behavior challenges. However, this finding was not significantly different.

Conclusions and Implications for Research and/or Practice: Based on the pre- and post-intervention scores, parents showed increased stress at post measurement. It was concluded that the increase in stress could be due to the stress participants felt from applying the new parenting knowledge and parenting skills, as well as being more aware of their parenting behavior as learned from participation in Parenting Matters. Parenting practices were positively related with parental stress. This supports the finding that parental stress increased at post-measurement as their parenting competence increased. It was concluded that Parenting Matters shows promise as an effective evidenced-informed parent program as it raised awareness and elicited conscientious effective parenting practices.

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Improving Verbal-Social Communication Skills of Preschool Students From Low Socioeconomic Backgrounds

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**Purpose and Rationale:** The purpose of the research was to study the verbal-social skills of preschoolers from low-socioeconomic status (SES) backgrounds. The goals were to determine whether teaching strategies of conflict negotiation and initiation and maintenance of conversations through group and free-play activities would lead to increased verbal-social skills among low SES preschool children.

**Methodology:** A total of 30 participants from two Head Start classrooms participated in the study. One classroom served as the experimental group, and the other classroom as the control group. Social skill strategies were taught to the experimental group, composed of 4-year olds of low SES, over a 2-month period. The researcher incorporated group and free-play activities targeting specific verbal-social skills into the intervention classroom’s activities. The control classroom received no intervention. Both groups participated in pre- and post-testing. Analyses of variance for the pre- and post-test scores from the Caregiver-Teacher Report Form, language subtest of the Developmental Indicators for the Assessment of Learning-Third Edition, and the Social Skills Rating System for each group were conducted to determine if the verbal-social skills of the students were altered by the intervention strategies implemented. Although social skill building is a part of the Head Start program and implemented naturally within the classroom setting, the intervention in this research consisted of weekly group sessions specifically designed to target particular social skills in an explicit manner.

**Findings:** Findings, while mixed, support the idea that expressive language and social skills in young children are shaped by interactions with others. Informal observations, noted journal entries made by researcher of students’ social skills during free play, revealed improvements in the intervention group’s verbal-social skills. The intervention group utilized learned social skill strategies to a greater degree from pretest to posttest during group and free-play activities. From pretest to posttest, both the control and intervention group improved with the intervention group showing a trend toward a higher rate of improvement. In addition, the intervention group learned strategies that were helpful and assisted them in resolving conflicts and decreasing negative behaviors. Data provided from observation and journal entries suggested that the intervention group improved in their verbal language abilities. From pretest to posttest, children in the intervention group demonstrated an increase in their ability to formulate their thoughts and verbalize them appropriately.

**Conclusions and Implications for research:** The research demonstrated that children from low SES backgrounds, particularly those in child care settings, may possess appropriate verbal-social skills. The researcher’s observations of children from low SES backgrounds in the intervention group during play suggested that they utilized the strategies during the intervention period. The intervention proved to be a companion to the already established design of the Head Start program. If a larger sample had been used, it is likely that the group differences in social skill would have achieved statistical significance.

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Effects of High Pressure Thermal Processing on Ochratoxin A Content of Grape Pomace

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Purpose and Rational: Due pathogenic mold invasion and contamination of grapes during ripening and harvesting, the presence of ochratoxin A (OTA) in grapes and grape derived products such as grape juice, wine, raisin, and grape pomace becomes a safety concern. Grape pomace is the residue of grapes after wine making and is a valuable source of phenolic antioxidants and dietary fiber with proven health benefits, and has potential to serve as a food ingredient. Due to the presence of OTA, it is important to develop effective method to destroy this toxin or convert it into non-toxic compounds. The objective of this study was to investigate the effectiveness of high pressure thermal processing in OTA reduction of grape pomace.

Method: The wet grape pomace samples from 7 grape cultivars were treated at 15 pis and 121°C for 10, 20 and 30 minutes in a lab autoclave. The untreated pomace samples were used as controls. The OTA in the grape pomace was extracted by 70% methanol aqueous solution. The OTA contents of extracts were determined in triplicate using an ELISA kit. The moisture contents of all pomace samples were measured by drying samples in a vacuum oven for 24 hours at 80°C. The OTA content was expressed as μg/kg sample. Data were analyzed by post ANOVA Duncan test. The percentages of OTA reduction under specific treatment was calculated for each pomace.

Results and Discussion: OTA was detected in all tested pomace samples. The levels of OTA were 25-65 μg/kg in the wet basis and 75-180 μg/kg in dry basis, varied with the grape cultivars significantly (P<0.05). Autoclave reduced up to 90% of total OTA content in grape pomace, but treatment time did not make significant difference in residual OTA content.

Conclusion and implications for research: High pressure thermal processing such as autoclave and pressure cooking may be effective ways to destroy OTA in grape pomace. More research is needed to investigate the impact of such treatment on polyphenol profile of grape pomace.

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In Vitro Digestibility of Extruded Food Products as Affected by Grape Pomace Contents and Moisture of Formula

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Purpose and Rational: Extrusion cooking offers the means to convert whole grains to palatable and convenient products. This food processing method destroys antinutritional factors and microbes while increasing the digestibility of the product. However, extrusion also increases starch digestibility and reduces insoluble dietary fiber (IDF) content that is undesirable for obesity and diabetes prevention. Grape pomace (GP) the residue of grapes from wine making is rich in polyphenol and IDF, and could be used to increase the dietary fiber content of extruded product. The objective of this study was to evaluate the effects of adding GP on the digestibility of extruded corn-based product.

Methods: Yellow corn-grits was mixed with different amount of GP (0, 5, 10 and 15%, w/w) and water (15, 17 and 19%, w/w). The mixtures were extruded at 160 °C and 175 rpm. At each moisture level, the product with 0% GP was served as control. The overall digestibility of extruded products was evaluated by total dietary fiber (TDF) of products without correction of non-digestible protein. The starch digestibility of extruded products was evaluated by simulated gastric fluid (SGF) digestion and in vitro amylase digestion methods in which the reducing sugar content of digesta was used as indicator of starch digestion.

Results: TDF content of the extruded product increased with GP level almost linearly, and were affected by the moisture of formula. The reducing sugar content of amylase digested samples decreased with GP content in dose dependent manner. For samples obtained from simulated gastric-intestine digestion only those containing 5 and 10% GP showed significantly reduced reducing sugar content in the digesta (P<0.05).

Conclusion and implications for research: The results indicate that the presence of GP significantly reduced starch and overall digestibility of extruded food product. This suggests less energy intake compared with regular extruded product when same amount of food is consumed.

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Characteristics of Sugar Cookies Containing Grape Skin Powder

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Purpose and Rational: Cookie is a popular snack food rich in fat and sugar but lower in dietary fiber and bioactive compounds. Because cookies are usually stored at room temperature to avoid hardening at low temperature, oxidation becomes a major concern. Lipid oxidation can affect quality attributes, nutritional value and safety of food products. Grape skin is rich in anthocyanin colorant and dietary fiber. Addition of grape skin powder will increase antioxidant and dietary fiber content of cookie, but it may also change the physical and chemical characteristics. This study investigates the addition of 1-5% of grape skin powder (GSP) on the physical properties and storage stability of cookies.

Methodology: Cookies were formulated by replacing 1.0, 2.5 and 5.0% of the total amount of regular ingredients with GSP, and the cookie with 0% GSP was used as control. After baking and cooling, the color, weight, diameter, thickness and hardness of cookies were measured. The cookies were packed in glass jars, sealed with caps with Teflon liner, and stored in an incubator at 37°C for 10 weeks. Samples were taken weekly to determine peroxide value (PV, the indicator of early lipid oxidation product) and p-anisidine value (p-AV, the indicator of late oxidation product). The PV was measured in duplicate and p-AV was measured in triplicates. Data were analyzed by Duncan Multiple Range Comparison.

Findings: In the presence of GSP, the cookie color changed from blue to purple depending on the quantity of GSP added. Addition of GSP did not affect cookie weight. The diameter and thickness of cookies were not influenced at 1 and 2.5% GP level, but were significantly affected at 5% GP (P<0.001). The hardness of cookie decreased dramatically in the presence of grape skin (P<0.0001), but was not significantly affected by the dose of GSP (P>0.05). The PV and p-AV of cookies containing GSP were significantly higher than that of control cross the whole storage period (P<0.05). In the presence of GSP, PV increased faster from week 0 to week 3, remained constant from week 3 to week 4, then started decreasing at week 5, while P-AV remained relatively constant during the storage. At same storage time, PV and p-AV of cookies increased with GSP in dose-dependent manner. No rancid odor was detected at week 10.

Conclusion and implications for research: Adding GSP to the cookie formula resulted in significant changes in cookie color, physical properties and oxidation status. These changes may impact consumer acceptance and storage stability of cookies. The unexpected higher oxidation rate of cookies with GSP indicated that the polyphenols, particularly anthocyanins, in GSP might act as pro-oxidant in high-fat low-moisture food product.

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Effectiveness of Different Proteases on Reducing Peanut Allergen Content in Raw Peanuts

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Purpose and Rational: Food allergy represents a specific type of food safety issue. Peanut allergy is a severe and lifelong type of food allergy triggered by allergenic proteins in peanuts. About 0.6-1.3% of US populations including 400,000 school age children are allergic to peanuts. Some proteases such as trypsin and alpha-chymotrypsin have shown to effectively decompose major allergens Ara h 1 and Ara h 2 in roasted peanuts, but not for raw peanuts. The purpose of this study was to evaluate the effectiveness of other food grade proteases in reducing allergenic proteins in raw peanuts.

Methodology: Raw Virginia peanuts were purchased from a North Carolina peanut producer. Peanut kernels treated by four single proteases (alcalase, papain, neutrase and flavourzyme) at the optimal pH and temperature of each enzyme. The effectiveness of treatment was evaluated by quantifying the residues of three major peanut allergens, Ara h 1, Ara h 2 and Ara h 6 using sandwich ELISA. The allergens in the insoluble portion of peanuts were extracted using sample buffer containing reducing agent and visualized using SDS-PAGE. Data were analyzed by calculating the percentage reduction of each allergen in comparison to the untreated raw peanut sample.

Findings: Alcalase and papain were found to be more effective than neutrase and flaovurzyme in reducing peanut allergens. Only papain-alcalase combination showed higher effectiveness than single enzyme treatments. The study also found that Ara h 6 was more resistant to protease digestion than Ara h 2. The maximal reduction of extractable Ara h 1, Ara h 2 and Ara h 6 achieved were 100%, 99.8% and 87%, respectively. The extract of papain-alcalase treated peanuts also showed lower IgE-binding capacity.

Conclusion and implications for research: Among proteases tested in this study alcalase, papain and their combination could effectively reduce major allergens in raw peanuts, but significant amount of Ara h 6 remained. More studies are needed to enhance the reduction of Ara h 6 and evaluate the allergenicity of raw peanuts treated by different proteases by both in vitro and in vivo methods.

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Physical and Chemical Properties of Extruded Product Containing Grape Pomace

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Purpose and Rational: Extruded breakfast cereal is typically grain-based. It is lower in dietary fiber and micronutrient, but higher in starch. It was reported that extrusion process increase the digestibility of starch and reduce the insoluble dietary fiber (IDF). Grape pomace (GP) is rich IDF and polyphenols and can be used to restore the DF content extruded product but it may also have some undesirable impact on the product quality. The objective of this study was to evaluate the effect of different GP content on the physical properties and chemical composition of extruded corn-based product.

Methods: Yellow corn-grits was mixed with different amount of GP (0, 5, 10 and 15%, w/w) and water (13, 15, 17 and 19%, w/w). The mixtures were extruded at 160 °C and 175 rpm. At each moisture level, the product with 0% GP was served as control. The sample diameter was measured as an indicator of puffy properties, the color was measured by ICE system and L*, a* and b* values were recorded, where L represents brightness and darkness with L*= 0 as black and L*= 100 as white, a* and b* represent neutral gray value at a*= 0 and b* = 0, and represent green and blue at negative values and red and yellow at positive values respectively. The texture of the product was measured by 3-point bending method which measures the tension/fragility of the product. The proximate composition and total dietary fiber were determined by AOAC methods, total polyphenol content was determined by Folin-Ciocalteu method. Data were analyzed by Regression Analysis and Duncan multiple range comparison.

Results: Adding GP in the formula resulted in product darkening of cookie in dose-dependent manner, as shown by decreased L and b values, and increased a value. Significant decrease in product circumference/diameter and increase in the tension (the force needed to bend product) were observed at GP content 10% and higher. The moisture of formula has greater impact on the circumference and texture than GP content, particularly, at moisture content 17% and higher. Lower moisture (15% or lower) formula resulted in crunchy product with better puffy properties. Total dietary fiber (TDF) and total polyphenol content (TPC) increased linearly with GP level (R²=0.975-0.997) and every 1% increase in GP, there is an average of 0.78% increase of TDF and about 143-210 μg/g increase of TPC in the product (R²=0.981-0.995) varied with moisture content of formula.

Conclusion and implications for research: Grape pomace could serve as an inexpensive source of dietary fiber and polyphenol of extruded products to improve the nutritional quality. Products with better physical properties were produced at lower GP content (5% or less) and low moisture (13% or lower), but undesirable effects were observed at high GP level and high moisture content.

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Diet-Induced Inflammation in Generational Obesity

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Purpose and Rationale: Human obesity is often a life-long phenomenon that may originate from childhood obesity, making it important to describe and understand long-term metabolic characteristics as obesity develops and progresses. More and more women are obese when becoming pregnant and are consuming a high-fat (HF) diet during pregnancy. Given the complexities of intergenerational phenotypes in humans, well-designed experimental models are necessary to clarify the potential mechanisms. Rats are an appropriate translational model because the lifespan, pregnancy time and time to adulthood are abbreviated and provide the opportunity to look at multigenerational design at the same time the neural controls of food intake and body weight in rodents and people are similar. One of the key nutritional factors in HF diets is fatty acid saturation. This is based on the connection between fatty acid saturation and inflammation. The feeding center in the brain is located in the hypothalamus. Hypothalamic inflammation is increased by saturated fatty acids but not by monounsaturated fatty acids like olive oil. Hypothalamic inflammation is causally linked to insulin and leptin resistance and is one of the proposed mechanisms for obesity.

Methodology: Eighteen breeding Long Evans rats were ordered from Envigo Labs and housed individually on arrival to acclimate to the vivarium (IACUC protocol #17-002). The breeders formed the founding or F0 generation. The breeders were placed on one of three diets, a low-fat diet (LFD), a high-fat saturated fat diet (HFS) containing butter fat, or a high-fat monounsaturated fat (HFM) containing olive oil. Three breeding pairs were formed for each diet and 104 rat pups were produced for the F1 generation, with an n of at least 30 for each diet and 15 per sex within the diets. The offspring remained on the parental diet. Body weight and food weight were recorded daily. To measure diet-induced inflammation RNA was isolated from the liver and the hypothalamus and converted to cDNA. Quantitative PCR was used to measure markers of the NFκB/IKKβ inflammation pathway impacted by free fatty acids.

Findings: In the F0 generation, the males on the HFS gained the most weight throughout the study, followed by LFD then HFM. As expected the HFM diet did not result in overeating which could indicate less inflammation in the hypothalamus. Females gained weight steadily before and during pregnancy. While lactating and after weaning, females lost a substantial amount of weight. As a result breeding females had more variability in food intake and body weight than the males. The 18 F0 rats are a small data set and there was a trend for lower hepatic RNA expression in females compared to males; however the greatest variation in RNA expression was between males and females in the HFS group. The F1 generation with a great number of rats per group has more power to compare differences.

Conclusion and implications for research: Our research objectives include determining whether fatty acid saturation can alter diet-induced inflammation or obesity. This study examines whether parental diet creates a microenvironment that programs the developing brain for obesity. The data for this project includes the initiation of the study with the founding breeders or the F0 generation. The F0 breeders remained on the experimental diets for four months and we will measure central and peripheral inflammation related to the diets in this generation and in three generations produced from these founding rats.

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**NC Early Childhood Teachers Provide Input for Curriculum Revision**

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**Purpose and Rationale:** The purpose of this study was to communicate with the Family and Consumer Sciences (FACS) Early Childhood Education (ECE) teachers in North Carolina public high schools to determine changes that they would recommend for the updating and revision of the current ECE curriculum. This data will be delivered to the Department of Public Instruction (DPI) in the form of a recommendation for ECE curriculum changes.

**Methodology:** This research was approved by the Institutional Research Board in December 2017. Trends from the last ten years in the literature were used to develop the survey questions. Teachers were asked to consider which of these need to be addressed in an update of the ECE curriculum. The on-line survey was made available to the Family and Consumer Sciences teachers who are currently teaching Early Childhood Education in North Carolina through the DPI Moodle. Data and recommendations collected from the survey will be shared with the Department of Public Instruction, and Family and Consumer Sciences consultant, for consideration for upcoming Early Childhood Education I and II curriculum revisions.

**Findings:** A total of 38 early childhood education FACS teachers in NC completed the survey; all respondents were females except for one male and all held at least a bachelor’s degree. Only 47% entered teaching through a traditional teacher education program, while 48% entered laterally and one is currently not certified. The majority have taught five years or less and are currently teaching other FACS courses, most of which include Parenting/Child Development. A total of 40% are teaching both levels (I and II) in a combined double block. Only 14% of the teachers are members of National Association for the Education of Young Children. Of the list of trends listed on the survey, these teachers indicated the following ones as those that should be included in curriculum review: more post-secondary opportunities, technology updates, inclusivity and developmentally appropriate practice. The survey included a seven point Likert scale which allowed teachers to rate their feelings on current rigor across all units of the curriculum; trends in early childhood; resources; and activities and assessments for both levels I and II. Many teachers seemed satisfied with the amount of rigor in both courses. However, a large percentage (an average of 44% in level I and 43% in level II) indicated that the content needed updating. Most teachers agreed that the resources for the entire curriculum needed updating but indicated that the activities were challenging and meaningful. The majority of teachers felt that there were adequate formative assessments included in the curriculum guides for all the units in ECE I and II.

**Conclusion and implications for research:** Implications for the Early Childhood Education I and II curriculum indicate several key components that need revision in both courses since the 2008 revisions. This research serves as a means for the participation and input of teachers in the curriculum development process. It might also generate interest among FACS teachers who teach ECE I and II to become members of a curriculum team that will facilitate these updates. The demographic information helps us gain insight into who these teachers are and what they need to deliver to their students an updated curriculum. All teachers need professional development when there are curriculum changes; however, this becomes even more necessary when, according to the survey, many of these teachers have taught less than five years and many are lateral entry. In addition, with only 14% of the teachers being members of NAEYC there will be a need for professional development that includes the importance of these industry standards and the research that supports those standards. Suggested professional development by these teachers indicated that 47% would prefer sessions at the Career and Technical Education Summer Conference and 31% would prefer face time sessions throughout the school year. This research will aid in the development of a relevant early childhood education curriculum product that reflects teacher input.

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“My Faith Keeps Me Healthy”;
Conversations with Older Adults about Healthy Eating and Active Living

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Purpose and Rationale: Improving the health and quality of life for older adults works well when in collaboration between multiple and diverse group settings. Older adults have the highest rates of poor physical health and activity limitation compared with other age groups. For older adults, regular physical activity is beneficial to health by preventing chronic disease and by helping maintain personal independence. Moreover, religious organizations are uniquely positioned to address health-related problems and obesity by offering intervention or support services. Churches and other faith-based organization have become increasingly popular settings to conduct health promotion and research studies, particularly in the African American community. The purpose of the proposed research is to contextualize how spirituality influences eating habits and physical activity among older female in a faith-based setting.

Methodology: This proposal is part of a larger project which focuses on spirituality, physical health, and nutrition at a large suburban predominately African American Baptist church. In the fall of 2017, an announcement was shared with the members of the Senior Adult Ministry (SAM) about a Healthy Eating/Active Living (HEAL) workshop to be held at their church. Some members of SAM had participated in previous HEAL project activities. Participants of the proposed activity were 50 – 80 years of age and were all female. The focus group started with opening prayer, followed by a light healthy lunch provided by the research team. The second author/facilitator initiated the discussion with the following prompt – “What works and what does not work in your eating healthy and exercising”. This led to an interactive, rich discussion with participants of their daily eating habits and physical activity.

Findings: This qualitative approach allowed the participants to have an in depth discussion of the barriers, motivators as well as successes in improving and/or maintaining good physical health. Responses to “what works” for good health included: exercising (line dancing, walking), logging food intake, consuming smaller portions, staying active and accountability. In addition, one participant stated how her involvement in church and helps her to focus on her health. Responses concerning “what does not work” for good health included: health related issues such as arthritis, being too busy, not having a good appetite and eating late at night.

Conclusions and implications for research: Participating in regular physical activity is one of the most important ways to improve weight control, reduce risks of cardiovascular disease and increase longevity. Older adults in this study shared “what works” and “what does not work” regarding eating healthy and exercising. Faith appeared to be a common theme among participants’ responses. Thus, contextualizing the health concerns and improving the quality of life of older adults may involve faith leaders, clergy as well as other religious organizations.

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Exploring Effective Teaching Strategies at the University Level that Impact Low-Socioeconomic Students

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Purpose and Rationale: Higher education institutions are constantly questioning why lower socioeconomic students continue to graduate from college at lower rates (Morales, 2014). However, there has not been much work done on what low-socioeconomic students need in the classroom to increase graduation rates. Morales (2014) found that faculty who work with their students to build self-efficacy, realistically appraise students’ strengths and weaknesses, encourage their help seeking tendencies, and provide clear linkages between academic success and future economic security were most helpful in promoting academic resilience in low-socioeconomic students. By implementing these strategies in the classroom, faculty could help raise the percentage of low-socioeconomic students who graduate. The purpose of this study is to examine how low-socioeconomic college students think these teaching strategies are being implemented by their professors in their respective classrooms.

Methodology: This study was conducted by surveying students at a Southeastern University who depend on a Federal Pell Grant to help pay for their college education. The self-constructed survey was designed to collect data that was quantitative and qualitative in nature. A total of 210 university students participated in the study.

Findings: Majority of the participants who responded to the survey were white (n=103), females (n=158) with a GPA ranging from a 1.0-4.0 (n=210). The self-constructed survey was found to be highly reliable (15 items; \( \alpha = .89 \)). The Total Scale Score was strongly correlated with all its subscales: Self-Efficacy, \( r = .90, p < .05 \); Appraising Students’ Strengths and Weaknesses, \( r = .789, p < .05 \); Encouraging Help-Seeking Tendencies, \( r = .829, p < .05 \); Linking Academic Success to Future Economic Security, \( r = .761, p < .05 \). We found a significant difference at the \( p < .05 \) level in Self-Efficacy scores (subscale 2) and student GPA: \( F(2,207) = 3.435, p = .034 \). Post-hoc comparisons revealed that students with higher GPA (3.0-4.0) perceived faculty to indulge in more self-efficacy encouraging strategies than students with lower GPAs (2.0-3.0). There were no significant findings across ethnic groups, age groups, classification, and majors when compared with different subscale scores. Open-ended responses from participants revealed both negative and positive comments on the faculty’s teaching strategies.

Conclusions and Implications for research: Low-socioeconomic students with higher GPAs showed to rate their faculty higher for using teaching strategies that built their self-efficacy, compared to students with lower GPAs. Thus, sustaining that teaching strategies for low-socioeconomic students with lower GPAs need to be explored further. Students’ qualitative responses showcased that involved, encouraging, and helpful faculty within the university help to enhance students’ self-esteem and make them feel valued.

References:


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Purpose and Rationale: The purpose of the study was to foster empathy in students for interior design clients with various limitations by allowing an experiential exercise in a residential undergraduate studio. The piloted exercise was highly successful with 80% students participating. Universal design principles are an important aspect to interior design education. The American Association of Retired Persons (AARP) reported that 88% of those aged 65 and older want to remain in their homes for as long as possible (i.e., aging in place) (Keenan, 2010). Incorporating evidence-based universal design research will be beneficial. “Evidence-based design is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes” (Levin, 2008, p.8)

Methodology: Research Objectives: 1. Pilot the scavenger hunt exercise in the fall 2017 semester 2. Through the development of an on campus scavenger hunt questionnaire have students experience various disabilities. 3. During the scavenger hunt students note challenges and limitations as they assume various persona to better empathize with the experience of navigating interior spaces. 4. Provide students with a variety of tasks at various locations across campus 5. Have students return to class and share their findings. 6. Through ongoing reflective teaching, evaluate the effectiveness of the scavenger hunt for best practice for teaching. -The researcher developed the universal design scavenger hunt questionnaire using materials from the Center for Universal Design at NC State University. The students further explored universal design principles through a universal design building analysis evaluating a building’s interior spaces. Students were assigned a building on campus and completed a multi-page universal design questionnaire. Aspects examined included clarity, inclusiveness, safety, comfort, choice, and accessibility culminating with a graphic, written, and verbal presentation of findings. Students were assessed on their knowledge through a quiz on universal design principles. Ultimately students synthesized their knowledge of universal design principles in a final course project focusing on a multi-family, multi-generational residence incorporating aging in in place, accessibility, and theories on restorative environments.

Findings: Students whom participated in the scavenger hunt earned higher scores when tested over universal design principles. Students whom participated provided regular, timely, critical feedback during desk critiques which facilitated student success. An example of a student comment includes, “I definitely feel I better understand the limitations of someone using a wheelchair now”. Challenges of the scavenger hunt included student level of engagement, physical limitations, and access to equipment.

Conclusions and Implications for research: Experiential learning activities for college students are possible, attainable, and successful. This exercise provided students with an opportunity to experience in a physical interior environment user limitations. The research ensured that students were afforded opportunities to experience multiple limitations at various environments across campus. The exercise will be implemented to curricular offering within the interior design program.

References:

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Dietary Supplements: An Exercise in Experiential Learning

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Purpose and Rationale: Americans spend approximately $12.8 billion dollars annually on dietary supplements (DS). Recent surveys have shown that 68% of Americans regularly use dietary supplements for a variety of reasons including increasing levels of vitamins or minerals, managing weight loss or gain, or helping with certain chronic diseases and illnesses. As nutrition educators, we apply scientific knowledge and principles to dietary trends in order to educate different populations (e.g. children and parents, athletes, the elderly). However, students often struggle with communication issues when discussing the topic of nutrition, sometimes providing too much information and sometimes not enough. The objective of this study was thus to provide an experiential learning experience to help medical nutrition therapy students better understand how to communicate nutrition and metabolic processes by ascertaining and comparing the actual health benefits of DS to the health claims. In addition, we introduced students to the regulatory policies related to dietary supplements as well as the various government agencies that oversee this area.

Methodology: The project included the following steps: 1. Identification of the top DS sold in the United States (U.S.) based on the most recent National Health and Nutrition Examination Survey (NHANES) (2003-2006) data set, 2. Distribution of DS fact sheets for consumer and health professionals from the National Institute of Health (NIH) Office of Dietary Supplements (ODS), 3. Compilation of health claims for the corresponding DS, 4. Instruction on federal regulation of DS, health claims and labels, and 5. Comparison of the Dietary Recommended Intakes (DRI), food sources, digestion, metabolism and function of the health claims for each supplement. Finally, students synthesized the information into a brief paper and presentation.

Findings: Over 49% of U.S. adults take at least one dietary supplement, with the majority reporting a daily intake (Bailey et al, 2011). The top seven dietary supplements sold and used in the U.S. are Vitamins A, E, B6, B12, C, K and the mineral magnesium (Bailey et al., 2011). The health-related claims on DS were related to the function or role of the vitamins and mineral in the body. However, some claims were marginally accurate, e.g. a Vitamin K supplement included the claim “regulates blood sugar”. The research to support the health-related claim is equivocal. Additionally, the Food and Drug Administration (FDA) regulation of DS is not the same as that of over-the-counter or prescription drugs, which makes label claims for DS the responsibility of the product manufacturers.

Conclusion and Implications for research: This experiential project engaged students in a multidisciplinary mode of learning and scholarly engagement. Students reported having more confidence to communicate the science to educate individuals about the use of DS, the role of vitamins and minerals in metabolic processes as well as a better understanding of DS regulation and health-claims in the U.S.

The process provided a unique and innovative approach to help students better understand how to synthesize newly acquired knowledge and effectively communicate current dietary trends.

References:

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**Nutrition Knowledge of NCAA Division I Student-Athletes**

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**Purpose and Rationale:** Obesity is a major public health problem. Efforts to help students manage their calorie intake include a wide variety of strategies, including nutrition education, food intake monitoring, labeling nutritional content of foods, promotion of healthy food choices, and social media appeals to eat foods from “recommended” food groups. While these strategies have had some success, previous studies have shown a lack of nutrition knowledge among students, particularly student-athletes (SA), which limit their ability to identify healthy options on campus. Additionally, SA have a higher demand on their time with a typical in season week including at least 20 hours of game preparation on top of their academic course load. Therefore, the purpose of this study was to assess nutrition knowledge of Division I SA using the Nutrition Knowledge Questionnaire (NKQ) prior to working with a sports dietitian (RD) (pre) and conduct a follow-up four years later (post).

**Methodology:** Survey Monkey was used to administer the 56 questions NKQ survey via email to all registered SA (pre=358; post=399) participating on 17 NCAA Division I teams. The NKQ survey contains four sections: I-Dietary Recommendations (maximum score=11), II-Sources of Foods/Nutrients (maximum score = 69), III-Choosing Everyday Foods (maximum score = 10), and IV-Diet/Disease Relationship (maximum score = 20) which sum a total score out of 100. The nutrition education intervention consisted of team talks, individual or small group counseling by a RD and promoting healthy eating for performance through handouts and social media. ANOVA (pre and post) and MANOVA (gender/ sport by pre/post) were used to test for significance over time and between groups, p<0.05.

**Findings:** Response rates were 26.3% (n=94) and 20.8% (n=82), respectively. Demographics (pre) 29.6% male/ 70.4% female and (post) 32.3% male/ 67.7% female; ages 18-24 98.6% and 92.3%; white ethnic origin 88.6% and 90.0%, p>0.05. Section I, III and IV were non-significant between PRE and POST. However, Section II was significantly different between PRE and POST, 38.27 +/- 14.901 vs. 32.94 +/- 14.054 p = 0.02 and the total NKQ score trended towards significance (p = 0.06), 53.85 +/- 18.54 vs. 48.6 +/- 18.2.00, respectively. There was no significant difference over time by sport or gender in section or total NKQ scores. On average, 10.5 teams out of the 17 teams participated in team nutrition talks over the four years. Counseling was provided to 173 athletes (on average 380 SA per year were enrolled), 95 male SA and 78 female SA.

**Conclusion and Implications:** The findings in this study show collegiate athletic departments need to be aware of the nutritional knowledge gap in student-athletes (SA). Despite having access to sports dietitian less than four hours per week over a four-year time frame, nutrition knowledge in SA did not improve. There are several potential reasons: first the small sample size may not have adequately represented the SA who benefited from time with the RD and the SA who participated in the post survey may not have been the same SA who initially participated (pre). However, future research will look to develop nutritional programs aimed at improving nutrition knowledge to educated SA about the importance of nutrition and performance.

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Family and Consumer Sciences Educators Implementing Technology-Based Learning in the Classroom: Benefits, Barriers, Support, and Best Practices

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**Purpose:** Family and consumer sciences education (FCS) is a component of Career and Technical Education (CTE) and 21st century skills are important in preparing youth for the work place. FCS courses require specific technological tools to realistically teach and learn the course material (Jenkins, Mimbs, & Kitchel, 2009). Throughout the state, there seems to be a discrepancy of adequate and effective access to the technology needed for the courses that FCS educators teach. Research shows, there is a deficiency of backing and diligence in using technological tools appropriately in the FCS classroom (Walker, 2016). Barriers and concerns should be addressed and corrected to prevent teachers and students from misusing or neglecting technology. Teachers need to feel confident and stimulated to use technology-based instruction in their teaching repertoire. This research examined what NC FCS teachers are currently doing with technology-based instruction, the barriers associated, and how to overcome and prevent hindrances of incorporating best practices and support of technology in the FCS classroom.

**Methodology:** Research Objectives: 1. Do FCS teachers want, or are open to, support for using technology? 2. What types of instructional support do FCS teachers believe they need to be successful in using technology? 3. What types of technology are available and required to successfully teach FCS? 4. How often do FCS teachers receive technology professional development, or have access to training materials? 5. What are the reasons for not using technology in classrooms? And 6. What do FCS teachers believe will influence them to use technology? This research approved by the IRB began in January 2017. An online survey was selected for ease in collecting the data, maintaining teacher anonymity, and prevention of data entry error. The survey was created, distributed, and data analyzed through the university’s online survey system, Qualtrics. The link for the survey could be accessed using any device with internet capability. The FCS teachers accessed the survey by clicking on a link in the state’s CTE secure website. In the survey, basic demographic questions were asked regarding gender, age, years of teaching experience, and subject areas taught in FCS. Then, the survey examined FCS teachers’ current use of technology and their perceptions on preferred instructional support needed to implement and utilize technology in their classrooms. Examining FCS teachers’ insights on their desired instructional support needed to implement and utilize technology in their classrooms was more easily done with a Likert scale. On the Likert scale of agreement from strongly agree, agree, and disagree, to strongly disagree, teachers selected a standpoint for the questions asked.

**Findings:** A total of 59 middle and high school family and consumer sciences (FCS) teachers in NC participated in this study. A majority of respondents were teaching high school, were employed by their school systems as full-time FCS teachers, and taught three classes per day on a block schedule. Foods I was the most popular course taught by teachers at 42%, parenting and child development was not far behind with 25%. A total of 49% of these teachers have a degree in FCS education, while 32% had a related degree and had obtained licensure through lateral entry. These FCS teachers indicated that they are using technology at least three days out of the week. Emailing, displaying a presentation, lesson planning, and entering grades are the prevalent methods being utilized. Facilitating student technology use and assigning classwork, homework, or projects with technology was often indicated. These teachers don’t feel particularly confident in their capabilities of exercising all aspects of the technological tools. Over one half of the teachers surveyed declared that they are competent with using a document camera. Almost 40% are comfortable with a SMART Board, Promethean Board, or interactive whiteboard. Some however note that even computers, laptops, projectors, and televisions can be unfamiliar tools. The more conventional the technological-based learning method is, the more mainstream it appears in the FCS classroom of these teachers. A large number (67%) noted that the technological tools available are inconvenient and unreliable, and 66% disclosed that it is time consuming to develop, design, and implement the technology in their classrooms.

**Conclusions:** The FCS teachers consider technology an important aspect of education and recognize that technology enhances the FCS classroom content, curriculum, and standards. This research recognized the types of instructional support and coaching FCS teachers would find practical in handling, and integrating technology into their classrooms. The barriers of using technology are more difficult to address. The FCS teachers cited that the issues and problems associated with technology are connected to measures that cannot always be controlled, such as time, money, and avoidance. Money for updated technology, availability of the current technology, technical glitches with systems and tools, and cooperation of teachers, administration, students, and the curriculum are just some of the obstacles FCS teachers are having to deal with daily. Also, some school systems do not have the funding to hire a technology coach, or facilitator (Stanhope & Corn, 2014). So, teachers do not have the option to retrieve assistance, or innovative ideas. The data has shown that there are opportunities in the FCS domain to enhance, mend, and advance technology-based learning in the classroom.

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Housing Unit Location and Food Desert Issues for Low-Income Elderly Renters
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Purpose and Rational: Low-income elderly households are likely to have difficulty accessing transportation; low, fixed incomes; and deteriorating health. Such sociodemographic characteristics may cause elderly households to be affected by food deserts (Fitzpatrick et al., 2015). Food deserts are defined as areas lacking access to affordable and healthy foods (Centers for Disease Control and Prevention, 2017). In this study, the authors focused on low-income elderly households, particularly, renters who may have much lower incomes and limited resources than low-income elderly homeowners (Goodman & Ganesh, 2017) and examined the issues in terms of their housing unit location within food desert areas.

Methodology: This study was drawn from an Evans Allen project (2015-2018), entitled “Investigating Aging in Place Strategies Used by NC Low-Income Renters.” A site visitation with a closed-ended questionnaire was conducted. A total of twenty-five (N=25) elderly renters participated. For data analysis, Statistical Package for the IBM Social Sciences (SPSS) version 24 was used to provide descriptive statistics; the Scribble Maps application and the USDA Economic Research Service Food Desert Locator tool were employed to map income status, vehicle access, and food desert location in relation to participant’s housing location.

Findings: The average age of participants was 72 years. Most participants reported an annual income below $25,000 (24). Eleven participants received Supplemental Nutrition Assistance Program (SNAP) benefits the average being $48.68 per month. Based on the mapping analyses, the majority of the elderly renters (76%) lived in low-income areas with a poverty rate of 20% or higher or the median family income was less than 80% for the state or metropolitan area. More than half (56%) lived in low-vehicle access areas and 44% resided in food desert areas. Food Lion, Save-A-Lot, Aldi, and Walmart were the most common supermarkets available for the study participants; and were located in the southern and eastern areas, where the poverty rate was highest.

Conclusions and Implications: The findings suggest the need for increasing retail access to elderly renters residing in food desert areas and the need to increase nutritional assistance among low-income elderly renters. It is important that policy makers, non-profit organizations, and housing/service agencies understand how food deserts affect the well-being of low-income elderly renters given state and local resources allocated to improving food access in low-income communities. The study will benefit agencies in developing relevant policies and services to help low-income elderly renters. Future work will explore how living in a food desert may affect the health of low-income elderly renters.

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Health Concerns among Low-Income Elderly Renters: Aging in Place


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Purpose and Rationale: The purpose of this study was to explore the health concerns among low-income elderly renters in the context of aging in place. The home environment is important for healthy aging and well-being, and the study of these environments has continuously been an important research topic for understanding aging in place (Iwarsson, 2005). More attention is to be given to low-income elderly renters. Previous studies revealed that aging renters having low incomes are likely to have more health and financial challenges than those having high incomes and/or homeowners (Gibler, 2003) and that elderly renters living in subsidized housing units have greater health and physical limitations than those living in unsubsidized housing (Gibler, 2003).

Methodology: A total of 25 participants, who were low-income renters, ages 62 and over, and who lived in a central North Carolina city were interviewed. Interview responses were tape recorded and transcribed. A content analysis, designed to convert textural information to more relevant, manageable data was employed for the qualitative data analysis (Berelson, 1971).

Findings: The majority of the interviewees (n=24) had an annual household income of less than $25,000. The participants were mostly women (17), African American (23), and an average age of 72 years old. Twenty participants were single (widowed, divorced, separated, or never married), and 17 lived alone. Eight mentioned challenges with activities of daily living (ADLs), and the two most frequently acknowledged were with cooking/preparing meals and money management. In this study, 24 interviewees expressed 63 different health issues: “I’ve never enjoyed a high quality of health” or “I am just having a lot of issues…” Most frequently cited were complications with high blood pressure (13), diabetes (12), arthritis (8), and hip/knee challenges (8). Four participants also expressed a concern for their family’s history of disease such as “Well, yes. I have a lot of stuff in my family history that I try to monitor”. Six participants felt that their quality of health was related to their living conditions: “I feel like it could be… I feel like I got mold here because the refrigerator keeps leaking and they haven’t fixed that yet.”

Conclusions and Implications: Health concerns among low-income elderly renters are likely to impact ADLs and their aging in place in the home environment. The study results are beneficial for gaining a better understanding of the health challenges among low-income elderly renters when it comes to aging in place/community. The findings of this project could be utilized by policy makers and housing professionals in assessing the needs of older adults for their later life. A follow up interview can be conducted to assess the changes in health conditions or living arrangements of the interviewees.

References

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Craft of Sophistication
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Learning traditional tailored jacket construction techniques is an important skill in the repertoire of any reputable fashion designer. In tailoring class, the most advanced fashion design course at Meredith College, I was taught these particular skills and given the assignment to design and construct a jacket. The jacket was required to have a combination piece necessary to create a whole ensemble. The ensemble is the most advanced piece I have ever made because of the amount of skill and time required for it to be functional and attractive.

Inspiration for the design originated from a length of interesting wool fabric that was donated to our department. This fabric resembled the wool used in classic looks such as the famous Chanel jacket. I was also inspired by edgy trends combined with traditional elements. A timeless and sophisticated design was chosen and leather was used to juxtapose this to create a unique combination. Unlike many of the Chanel jackets that do not have collars and lapels, the project guidelines required the inclusion of these two components. In my design, the collar and lapel tips were rounded for a softer look. The princess seam was also eliminated to make it less fitted. Fish-eye darts were included to give the body slight accentuation. A modern twist to the design was reflected in the use of leather for the undersleeves, pockets, collar and lapels. My combination piece, the skirt, is also made from leather and leather fringe to add movement and edge to a formally simple A-line silhouette.

When constructing the jacket, I gained an appreciation for the quality and craftsmanship of tailored jackets and tailored garments in general. Through techniques such as pad-stitching, bound buttonholes, intersecting/free seam allowances, mitered corners, and various hand-stitches, I understood the importance of mastering such techniques that are vital to the finished design. For the under-collar especially, pad stitching was used to form the 3D shape of the under-collar on its own. Following the correct steps and having patience was also key to this process because a lot had to be done structurally before the facing and lining garment could be sewn to the shell garment. Most importantly, it was vital to the final product for the lining not to interfere with the shell garment by hanging properly and with enough room for the wearer to shift their body.

My final ensemble was a display of skill and craftsmanship due to the rigorous requirements that go into creating a tailored jacket. Additionally, my fringe skirt and other elements of leather that created an interesting palette of textures followed through on my intent to add modern and personal elements to my classic inspiration. This outfit is versatile, classy, professional, and constructed with my most advanced skills to date.

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Red Transformation

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The purpose of this creation was to design and construct a garment ensemble and apply couture surface design techniques. In my senior level tailoring classes at Meredith College, the students were given the task of finding an inspiration that could be supported by research, by design development, and by construction with original patterns. The challenge of this assignment was to apply advanced couture techniques to this new creation.

Research for this project began with determining my inspiration and collecting information in order to come up with my ensemble. My design inspirations were the historical and traditional Indian wedding gowns. The intent of the project was to create a wedding gown that was extremely unique as well as culturally engaging. When conducting research on the bridal wear traditions in India, I found that bridal gowns are adorned with several extravagant elements such as the Sari and Lehenga. The Sari is a long, heavily embellished length of fabric that is wrapped around the bride or draped across her shoulders (Sari, 2014). The Lehenga is a floor length skirt that exposes the midriff and it is traditionally pleated (Anderson, 2015). Research showed that many of the traditional Indian wedding dresses contained a lot of ornamentation such as beading and embroidery. The primary color of these dresses or separates is red; white is sometimes used as well (Micar, 2014).

Once research was completed, the design of my wedding dress was created. Inspiration for the design included a historical perspective while also creating something with my own personal flare. The garment was made using red as the main color of choice with white accents. I created a floor length sleeve to reflect the draping of the Sari with the help of the white sash to continue the fluidity and wrapped effect. For couture techniques, I decided to create a beaded belt and sash to showcase the use of ornamentation used in the traditional garments. The belt also gave the sari movement with the bloused effect.

During the technical construction process of my design, pattern development was the first step. The application of flat pattern and draping techniques developed in my Meredith design classes were applied in my design. Once pattern pieces were created, the pieces were tested using a muslin garment. Corrections were applied to the pattern pieces after examining it on the dress form. Since my clothing construction skills are strong, I started with making the dress itself in the fashion fabric. In addition, construction of the belt and sash were completed except for beading. Beading for this garment was a rigorous and meticulous process demanded for creation of a couture technique. Symmetry was also essential. When all of the elements of the overall design were complete, my beading and construction skills had grown immensely.

The design demonstrates a cohesion of my inspiration, creative design skills, and technical skills. A key part of my inspiration had to do with embellishments which require quality and that is confirmed through the couture beading. In addition, the design development was uniquely original in relation to the traditional, historical wedding dresses of India. As a result of this project, my interest in couture beading and the use of inspirational research as a whole has increased.


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