Innovative and Cost-effective Tech-based Solutions for Program Dissemination & Evaluation

Nutrition Education for Children Division

- (1) Sarah Colby, PhD, RD
- (2) Lisa Franzen-Castle, PhD, RD
- (3) Lynn Fredericks, Founder & President
- (4) Marissa Burgermaster, PhD

Moderator: Virginia Stage, PhD RD

(1) Sarah Colby, PhD, RD

Dr. Colby is an Associate Professor in the Department of Nutrition at the University of Tennessee. She is a behavioral researcher with a focus on health communication through novel nutrition education strategies (including marketing, arts and technology). In addition to her focus on novel communication strategies, she has research experience with young children, adolescents, and young adult populations; community based participatory action research; Latino and Native American populations; food security, and environmental and economic influences on food behavior.



(2) Lisa Franzen-Castle, PhD, RD

Dr. Franzen-Castle is an Extension Nutrition Specialist at the Associate Professor level with the University of Nebraska-Lincoln (UNL) in the Department of Nutrition and Health Sciences. She is also a Registered Dietitian. Her research and scholarship goals are to conduct applied research in nutrition education and nutritional behavioral changes related to chronic disease for adults, ranging from young to middle-aged audiences. Her approach to Extension reflects applied collaborative approaches and psychological models of behavior theories that also guide her research. Extension and research activities focus on assessing and addressing individual and environmental factors that influence eating and activity behaviors.



(3) Lynn Fredericks, Founder & President

Lynn Fredericks is the founder and president of FamilyCook Productions (http://www.familycookproductions.com) and an award-winning pioneer in the field of obesity prevention and family nutrition. She is the author of Cooking Time Is Family Time (Morrow 1999) and Get Your Family Eating Right! (Fair Winds Press 2013). Since 1995, the hands-on culinary nutrition education efforts under FamilyCook Productions have reached over 350,000 parents and children through program licensing and instructor training to hundreds of locations across 30+ states of the US.. She has presented more than 30 scientific abstracts of original research on FamilyCook program efficacy at professional, obesity and nutrition-focused professional conferences. FamilyCook Productions was named 2017 Public Health Leader of the Year by the New York State Public Health Association and has just been awarded SNEB's Nutrition Education Impact Award for 2020.



(4) Marissa Burgermaster, PhD

Marissa Burgermaster is an assistant professor of population health at Dell Medical School and an assistant professor of nutritional sciences at The University of Texas at Austin. Her research applies data science and human-computer interaction methods to improve nutrition and community health. Dr. Burgermaster holds an early career award from the New York Academy of Sciences to support her work developing methods for psychosocial phenotyping. Prior to joining the faculty at UT, Dr. Burgermaster completed a postdoctoral fellowship in biomedical informatics at Columbia University Irving Medical Center where she conducted research on technologies for diabetes management among underserved New Yorkers. She was also the behavioral nutrition lead for the CUIMC-based team that developed "Taming Type 2 Diabetes Together (T2D2)," a voice application for personalized nutrition and diabetes self-management that was a finalist in the 2017 Alexa Diabetes Challenge and the 2017 World Cup of Voice Tech in Diabetes. Dr. Burgermaster holds a PhD in Behavioral Nutrition from Columbia University, where her research at Teachers College's Tisch Center for Food, Education, & Policy focused on improving the evaluation of school-based childhood obesity prevention interventions.





Get Fruved was a Community Based Participatory Research intervention designed to promote health and prevent unwanted weight gain among older adolescents using a non-diet approach focused on healthy eating, physical activity, and stress management.

FRUVED



United States
Department of
Agriculture

National Institute of Food and Agriculture

This project was supported by Agriculture and Food Research Initiative Grant no. 2014-67001-21851 from the USDA National Institute of Food and Agriculture, "Get Fruved:" A peer-led, train-the-trainer social marketing intervention to increase fruit and vegetable intake and prevent childhood obesity –A2101.

Sites and Primary Investigators

Intervention

Control

Consultants and Collaborators

University of Tennessee Dr. Sarah Colby

South Dakota State University

Dr. Kendra Kattelmann

University of Florida

Dr. Anne Mathews

West Virginia University
Dr. Melissa Olfert

Auburn University
Dr. Onikia Brown

Kansas State University
Dr. Tandalayo Kidd

University of Maine
Dr. Adrienne White
Syracuse University
Dr. Tanya Horacek

University of Nebraska Dr. Lisa Franzen-Castle

University of New Hampshire Dr. Jesse Morrell

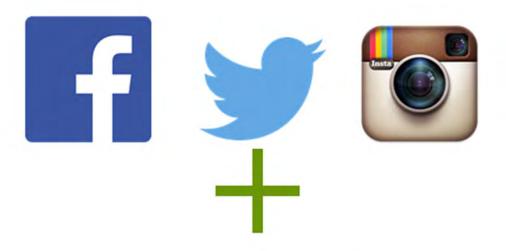
University of Rhode Island Dr. Geoff Greene

University of Florida

Dr. Karla Shelnutt

Rutgers University

Dr. Carol Byrd-Bredbenner



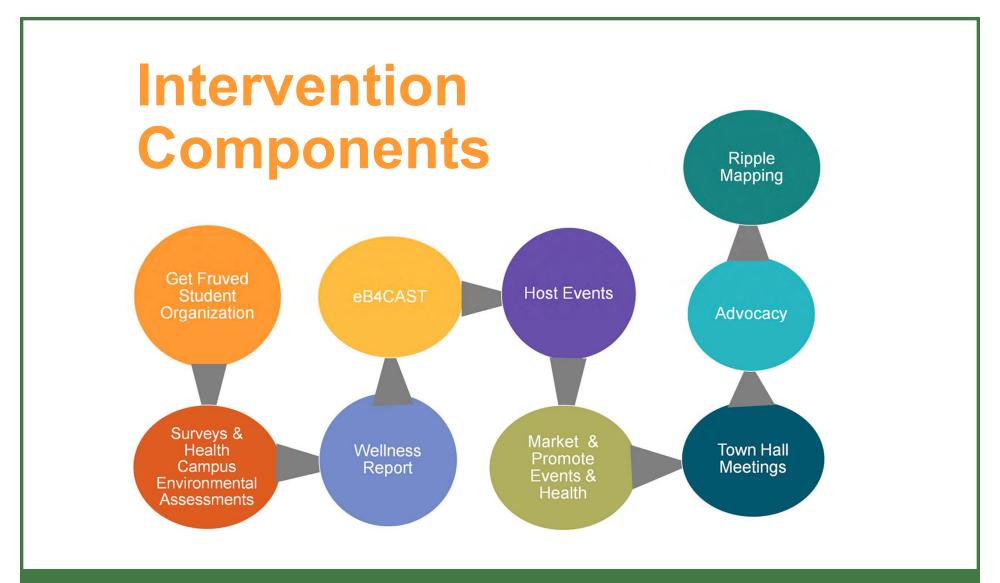
Environmental Change

Peer-Led
Community Based Participatory
Research Model

Project Overview

Year 01 Year 04 Year 05 Year 03 Year 02 Feasibility and ◆ Developed ♦ RCT Testing of ♠ RCT Testing of **Pilot Testing** Partnerships and ♦ Formative Pilot Intervention in Intervention in Intervention in Courses Testing to refine Colleges (n=37 High Schools (n=8 College (n=4 the intervention intervention and intervention and ◆ Developed intervention and 4 n=8 control) 37 control) Intervention control)

Assessed Students' Behavior, Priorities, and Readiness for Change and Campus Environments



Technology in Intervention Development

- Synchronous classes
- Zoom-based
- Blackboard



Technology in Recruitment

- Website (Canva, Wordpress)
- Emails
- Fillable forms



Technology in Program Implementation

- Website
- Digital Toolkit
- Zoom
- Online Fidelity Testing



Technology in Evaluation and Assessments

Online Surveys

NCI Fruit and Vegetables [19 items]
Cohen's Stress [14 items]
Readiness to Change [10 items]
Self-Reported Height and Weight [2 items]

Sleep Hours [1 item] CEPS [15 items] sHEI [18 items] IPAQ [6 items] Student Priorities [31 items] Demographics

HCEA



Technology in Communicating Results

- Website
- eB4CAST
 - Powerpoints, Large Poster, Banner



FRUVED Thank You!





iCook 4-H: A Program to Promote Culinary Skills, Family Meals, and Physical Activity Together for Obesity Prevention

iCook 4-H: Cooking, Eating, and Playing Together

- Program Overview and Features
- National 4-H Curriculum Review
- 4-H Mall as Platform for National Distribution
- eXtension Campus Self-Directed Course
- SNAP-Ed Toolkit Inclusion
- Additional Dissemination



What is iCook 4-H?



Direct education intervention intended for out-of-school settings and designed to reach the following objectives: *increase cooking skills and culinary self- efficacy, improve openness to new foods, increase frequency and/or quality of meal time with family members, and decrease sedentary time.*







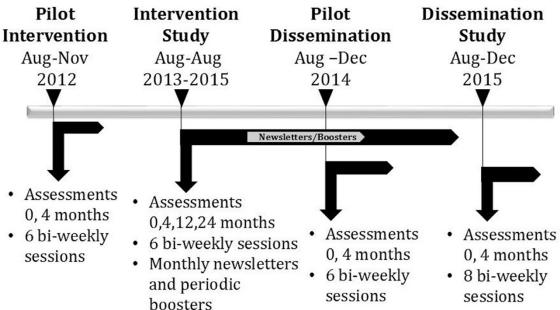
Maine, Tennessee, Nebraska, South Dakota, and West Virginia











2012-2017 (2018 no cost extension year)

Pilot tests of each study were carried out. Control participants completed assessments only. Intervention study treatment participants completed a 6-session *iCook 4-H* curriculum with follow-up newsletters and booster sessions. Dissemination study treatment participants completed the expanded 8-session *iCook 4-H* curriculum. Research and program evaluation assessments were completed for the intervention study. Program evaluation assessments were completed for the dissemination study. https://www.jneb.org/article/S1499-4046(18)30865-0/fulltext



Cyclical Curriculum Development Process

- Followed a cyclical development process across 4 phases.
- Initial curriculum plan was determined during the grant writing stage, with the final curriculum reflecting rigorous testing and multi-level feedback.
- A 5-state research and Extension curriculum committee was established and worked on the curriculum throughout the grant process.
- Technology included:
 - Website that incorporated program features
 - Video cameras for youths to document between-session highlights of cooking, eating, and playing together
 - Online program evaluation surveys
- Dissemination was built into the Extension/outreach plan.

Design

Literature review, previously developed curricula, additional resources, social cognitive theory, Experiential 4-H Learning Model

Review

Internal curriculum committee, multi-state partners, multimedia communications, and national peer-review

Develop

Instructional formats, standardized templates, leader and participant guides, trainings (written and visual)

Core Messages: Cooking Skills Physical Activity Family Meals & Communication Goal Setting

Evaluate

Process evaluations (closed and open-ended feedback), fidelity of implementation instrument

Implement

Four phases: Pilot, Intervention Study, Pilot Dissemination, and Dissemination Study

Monitor

CBPR team feedback from conference calls, training webinars, and curriculum committee meetings

https://www.jneb.org/article/S1499-4046(18)30865-0/fulltext

Youth aged 9-10 years old & their adult primary meal preparer

Using the dyad model provided opportunity for synergism and translation to the home environment as families cooked, ate and played together.



iCook 4-H Curriculum Overview





Grounded in the Social Cognitive Theory, interactions among youth, adults, and leaders provide opportunities for observational learning, reciprocal role modeling, and building self-efficacy.

- Includes eight, two-hour sessions.
 - Food preparation, physical activity, family engagement/communication, and goal setting are part of each session.
 - Leader guides and participant packets, with handouts, activities and recipes for each session.
- Families encouraged to continue activities at home and between sessions.
- Outcome assessment tools for leaders to use with youth and adults.
- Ripple Effects Mapping (qualitative evaluation technique) incorporated into Session 8.
- Fidelity of implementation tool is included to see whether programs are implemented as intended.

National 4-H Curriculum Review

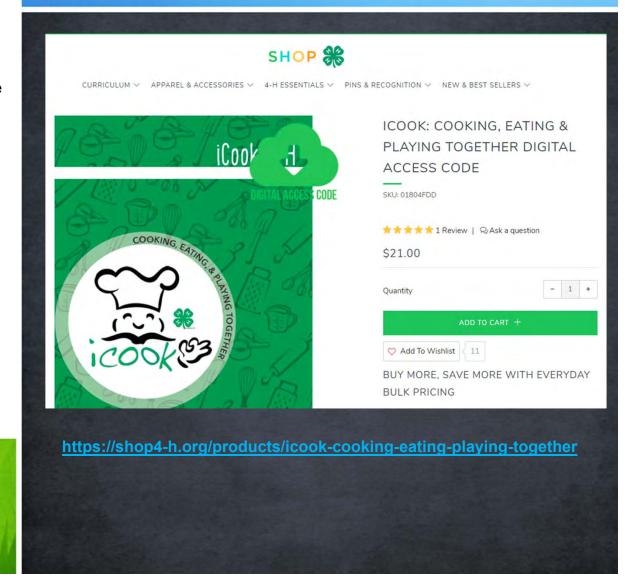
In 2014 two sample sessions were submitted to get initial feedback.

In 2017, the final curriculum was submitted to the online National 4-H peer review process and received approval.

- Goal of the Review is to maintain standards of quality, provide credibility, and ensure integrity of 4-H youth curriculum and professional development materials.
- Individuals who utilize the system must be a 4-H professional or must be working in collaboration with a 4-H professional, which the iCook 4-H study had specialists and educators in the 4-H arena.
- 4-H learning materials should always have intentional educational objective(s) that support one or more outcomes of the 4-H logic models, with iCook 4-H supporting the Healthy Living and Physical Activity and Healthy Eating logic models.
- Three reviewers were assigned to items submitted to the online form. Reviewers are certified through a national training to become part of a database as content experts.

iCook 4-H Curriculum on the 4-H Mall

- National 4-H Supply Service that is the e-commerce and mail order catalog unit of National 4-H Council.
- In 2018, curriculum was posted to the 4-H Mall and available for purchase.
- Worked with 4-H youth development specialist on project and support staff from Nebraska Extension to facilitate discussions regarding platform.
- Had meetings with 4-H Mall representatives prior to posting.
- Since this was a 5-state project, it provided a neutral platform
- 4-H Mall provides quarterly sales reports and the curriculum has been purchased 116 times so far.



eXtension Campus

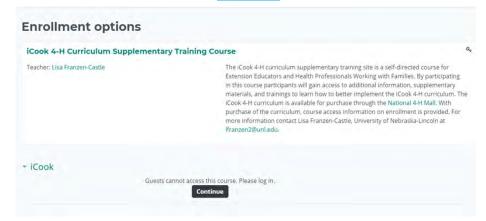
Benefits of using an online course platform

- Anyone in the world can enroll
- eXtension provides hosting and support
- Makes courses available 24/7/365
- Provides a single site for all extension courses
- Allows for multi-institutional collaboration in development
- Provides incorporation of competency frameworks
- Uses a commercial storefront for sale of feebased courses

Who can offer courses on it?

 Anyone employed by an eXtension member institution and who has eXtension ID.

iCook 4-H Curriculum Supplementary Training Course:



Course access: An enrollment key (password) is required and provided with purchase of curriculum from the 4-H Mall.

Users registered for the course: 32 users have registered for the course so far.

Geographic representation of users: 15 different states as well as Puerto Rico and the Virgin Islands.

eXtension Campus

The eXtension Foundation offers employees of its member institutions free use of its online course system for the sale and delivery of courses, including the incorporation of competency based curriculum.

- Package of two integrated sites, <u>Campus</u> (a Moodle 3.7+ platform) and <u>Catalog</u>, a store front facilitating fee-based access to courses on Campus.
- The online course site is located at <u>https://campus.extension.org</u>, while the catalog is at https://catalog.extension.org.
- Getting help with questions or to get started using this system: Send an email to <u>campusadmin@extension.org</u>.

https://impact.extension.org/tools-for-extension-professionals/campus-getting-started/



SNAP-Ed Toolkit

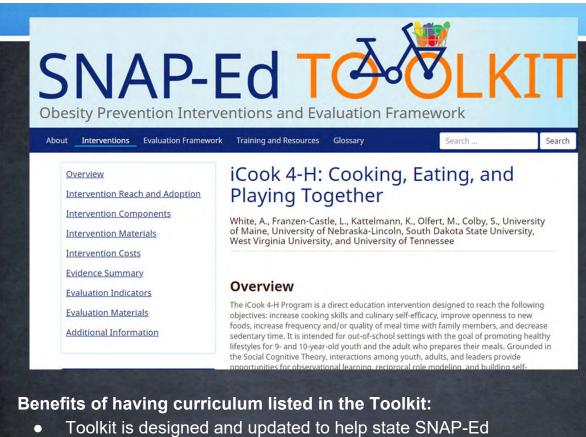
In 2019, the curriculum was submitted to and selected for inclusion in the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) Toolkit

Online collection of evidence-based interventions reviewed by:

- USDA's Food and Nutrition Service
- Association of SNAP Nutrition
 Education Administrators
- National Collaborative on Childhood Obesity Research

To learn more about submitting an intervention go to:

https://snapedtoolkit.org/interventions/submit-an-intervention/



- Toolkit is designed and updated to help state SNAP-Ed administrative and implementing agencies identify evidencebased obesity prevention programs, strategies, and interventions.
- Use identified programs, strategies and interventions in their SNAP-Ed Plans to comply with the requirement that plans must include multi-level interventions or public health approaches.

Other Dissemination Efforts

Presentations

- Professional and academic national meetings and conferences
- State, local, and regional venues

Publications

- Professional and academic refereed journals
 - Highlight on Open Access JNEB Supplement: https://www.jneb.org/article/S1499-4046(19)30024-7/fulltext
 - Development of the iCook 4-H Curriculum for Youth and Adults: Cooking, Eating, and Playing Together for Childhood Obesity Prevention https://www.jneb.org/article/S1499-4046(18)30865-0/fulltext

Outreach Events

- iCook Booth at USA Science and Engineering Festival. Washington DC
- iCook Booth at SNEB Annual Meeting
- iCook Booths at local participating institutions



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Agriculture

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2012-68001-19605. State experiment stations in Maine, Nebraska, South Dakota and West Virginia also funded this research.











Leveraging Technology to Innovate and Scale



Strong, evidence-based interventions leverage scarce program development dollars by scaling up

FamilyCook emerged in mid-90s exploring outcomes early on

- Multi-award-winning Teaching Kitchen pioneers
- Design, implement and scale evidence-based culinary nutrition education for preschool through adult since 1995
- Identified the "10 Experiential Drivers of Behavior Change" published in Health Promotion Practice in Feb 20201
- Have codified and applied this 'Secret Sauce" across US to hundreds of sites in over 30 states
- FCP research includes longitudinal study with past participants up to 7 years post program demonstrating significant weight loss₂





Used technology since 2012 to scale program and evaluation capability

Dissemination has been our model since 2002 – embracing technology has been key to make that reality:

- Training needed to become virtual to be affordable and attractive to schools, nonprofit and SnapEd partners
- Evaluation is also critical to justify dissemination – yet we rarely have funding for efficacy evaluations



Let's add some cooking/food imagery here - without 'junking it up' Lynn Fredricks, 6/23/2020 LF1

Successfully employed technology to scale and evaluate 2 FamilyCook programs across the US



Teen Battle Chef – Since 2006

"From Student to Teacher" – TBC youth carry new knowledge to their family and community

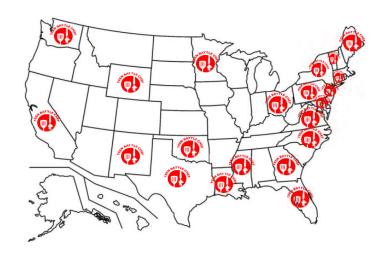
- **HEALTHY EATING:** 87% of participating youth have shown improvements in overall dietary changes³
- **HEALTHY INFLUENCE:** 90% of participants positively influence the food behaviors of friends and family⁴
- ACADEMIC SUCCESS: Hight graduation and 10% higher attendance rates, and improved reading & math SAT test scores⁵
- **SUSTAINED EFFECT:** 74% achieved a healthy weight at time of interview (up to 7 years post program) as compared with 54% when they were in high school
- OTHER ACHIEVEMENTS: 2020 AWARD WINNER: SNEB Nutrition Education Impact Award; SnapEd Toolkit



Role of Technology in scaling Teen Battle Chef to 20+ states

3-Step Instructor Training Process

- 1. Distance learning 'pre-training'
 - Online modules with quizzes 2.5 hours
- 2. LIVE training
 - In-person (5 hrs.) or virtual (3 hrs.) using 2 way webcams
- 3. Program management webinar
 - Equipment management; food procurement; class facilitation techniques



Advantages and Disadvantages of Virtual Culinary Nutrition Training

Pros:

- Eliminate travel costs
- Can train large groups of people at once
- No geographical boundaries can disseminate nationally and internationally
- Separating program management from hands-on was more effective – participants more focused at a later date.



Cons:

- Less personal
- Shorter timeframe can prepare fewer recipes
- All recipe are not modeled in 'real time' instructors need to rely on pre-recorded videos to see how to make some of the recipes





Role of Technology in TBC 2016-17 Alumni Sustained Effect Study

Alumni Interviews – Young adults living and working across 5 boroughs of NYC

- Recruited via email and Facebook
- Scheduled interviews by phone/text
- Used free software to audio record phone call
 - Transcribed and coded data
 - Made 30 interviews feasible and convenient for participants
- Used electronic signing to sign consents as most interviewees did not have access to a printer



Slide 41

can we change the image here to maybe show a timeline and concept of teens becoming adults? I think it will be stronger Lynn Fredricks, 6/25/2020

Willow: Helping Kids Plant Seeds for a Healthy Life Since 2011

- ➤ HEALTHY EATING: Quantitative evaluations and qualitative data demonstrated Willow character created a positive association for young children with seasonal produce.
- ➤ HEALTHY INFLUENCE: The positive association with seasonal produce resulted in increased farmers market coupons redemption by Willow participants as compared to non-Willow participants.

"The bunny encourages kids to eat. My daughter says 'Let's do what Willow does'!" Mom, Milwaukee



Role of Technology to Scale Willow to 13 States

4-Step Instructor Training Process

- 1. Distance learning "pre-training" videos
- 2. Hands-on, in person knife skills using nearby culinary school instructor (no tech)
- 3. Virtual LIVE session practice Requiring presenting effective mime puppetry skills while conveying content
- 4. Program management webinar + best practices manuals for WIC center director



Let's change the photo in the screen to one of mercedes with Willow. I can send you screen grabs to choose somehing Lynn Fredricks, 6/24/2020

Advantages of Virtual Training

PROS

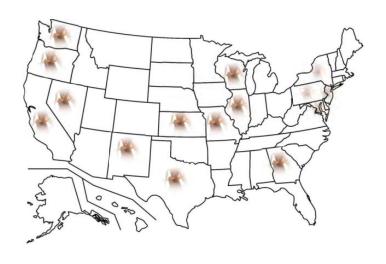
- WIC environments have frequent staff changes offer 3-4 training times a month with a google form to sign up.
- Can train MORE staff than would actually teach the class.
 All WIC staff could share Willow strategies with WIC moms to reinforce.
- We train staff from multiple sites simultaneously, taking turns to present the lesson – staff watching the first 'presenters' were learning while watching. Last presenters were always the best!



Willow: Multi-Site Qualitative Efficacy Study

Conducting focus groups in WIC centers across US would never have been feasible without technology

- No no funding to conduct a multi-site study
- Collaborated with University of Tennessee colleague DI program.
- Study protocol used a distance training for how to conduct focus groups; tech insured IRB requirements followed



Slide 45

this is a good place for the map with Willow in the 13 states Lynn Fredricks, 6/25/2020 LF7

Willow Qualitative Study

A range of technology was embraced:

- Distance learning videos trained:
 - Study purpose and goals
 - The steps to conduct the interview per IRB
 - How to conduct an effective focus group
- Live, virtual 2-way focus group training using "Go To Meeting" for live role-play to practice asking open-ended questions
- · Audio-recording of focus group
- Electronic capture of informed consents
- Of 20 individual sites recruited, had usable data from 8



Slide 46

LF3 I can send a screenshot to insert in screen here of the training

Lynn Fredricks, 6/24/2020

COVID:19 Program Transformation

The 'Big Pivot' – FCP redesigns all programs for a virtual, LIVE instruction delivery TBC

- Previous use of tech totally informed our approach
 - Best tech platforms
 - · Used our 10 Drivers of Behavior Change Framework to guide reworking of curriculum
- Team Effort FCP team + DI interns
 - Used interns working remotely to support new visuals needed for online delivery (PowerPoints, Do Now, Gamified reviews"
- Program impact children learned how to cook and could conduct a cooking demonstration











IS 528 Beef Chili

IS 528 Chicken Chili

IS 528 TBC Chef

IS 528 Pasta

IS 528 Fried Rice

Slide 47

LF3 I can send a screenshot to insert in screen here of the training

Lynn Fredricks, 6/24/2020

COVID:19 Willow Redesign

Recorded Video and Live Sessions

- · Hybrid model with live instruction of children and parents; with some video shown live
- Children were as empowered through virtual live class as when in the classroom
- Children with supportive parents were the most adventurous
- Exciting to watch them taste and eat radishes and other veggies













LF3 I can send a screenshot to insert in screen here of the training

Lynn Fredricks, 6/24/2020

References

 Fredericks, L., Koch, P. A., Liu, A. (Alicia), Galitzdorfer, L., Costa, A., & Utter, J. (2020). Experiential Features of Culinary Nutrition Education That Drive Behavior Change: Frameworks for Research and Practice. Health Promotion Practice, 21(3), 331–335. https://doi.org/10.1177/1524839919896787

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 Affecting Adolescent Nutrition and Program Intervention Efficacy, Masters
 Thesis, Institute of Human Nutrition 2013

 Park, H., Efficacy of Teen Battle Chef Program to Shift the Academic Performance and Health Behaviors in NYC HIGH SCHOOL Students, Masters Thesis, Institute of Human Nutrition 2014

5. Sliva, N., Using knowledge and skills-based intervention to improve the cooking skills and self-efficacy in adolescents, Masters Thesis, Institute of Human Nutrition 2014

Thank you!

About FamilyCook Productions:

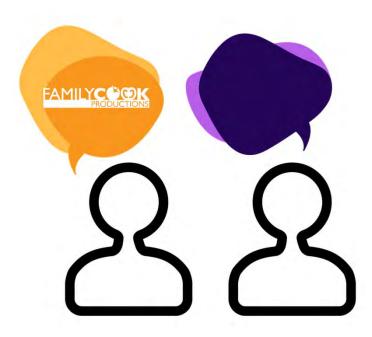
- Impact
- Health Promotions Partnerships
 - American Kidney Fund Nutritional Recipe Development
 - Teaching Kitchen Collaborative

Contact:

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Phone: 212-867-3929







COVID19 could be a technology-based nutrition education dissemination accelerator





How?

Leverage technologies people are already using

