

ABSTRACT

ANDERSON, ALYSSA NICOLE. A Case Study of Nutrition Educators' Perspectives on the Delivery of Virtual Community Nutrition Programming. (Under the Direction of Dr. Susan Barcinas).

Policies related to the COVID-19 pandemic shifted many extension programs from face-to-face delivery to virtual delivery. As a result, community nutrition programming offered through extension shifted. Despite the limited literature that currently exists related to the virtual delivery of adult community nutrition education programming, there are plans to continue this format of delivery in the future. The purpose of the study is to gain insight on how extension nutrition educators in a southern region state navigate the delivery of adult virtual programming. It investigates the following research question: How does the recent shift to a virtual teaching environment influence nutrition educators' experience with the delivery of adult nutrition education? This study uses a qualitative exploratory case study approach. Data collection includes 15 semi-structured interviews with nutrition educators, 43 program impact summaries from 2020-2022 written by nutrition educators, and virtual delivery program guides for four of the main adult nutrition programs offered through Southeastern State Extension. Engeström's Cultural-Historical Activity Theory (CHAT) served as the theoretical framework and helped guide data analysis and collection. Three key findings emerged from the data. One finding is that educators feel motivated to deliver programs when their internal values and skills align with their teaching environment, resources, and the organizational culture. Another key finding is that educators continue with virtual delivery when the curricula is favorable to partnering regionally with additional educators. Finally, educators prefer to have flexibility in program delivery. As practice and research continues in this field, virtual program delivery serves as a valuable tool for educators and the communities that they serve. This study's findings also support the need for

additional research related to best practices of virtual delivery, the inclusion of additional voices in this research, and the use of CHAT as a useful framework in the future to study nutrition education in-action.

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A Case Study of Nutrition Educators' Perspectives on the Delivery of Virtual Community
Nutrition Programming

by
Alyssa Nicole Anderson

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APPROVED BY:

Dr. Susan J. Barcinas
Committee Chair

Dr. Duane Akroyd

Dr. M. Jayne Fleener

Dr. Angie C. Smith

Dr. Susan Braithwaite

DEDICATION

To my parents - Janice, Ken, and Dawn. You all have encouraged me and played pivotal roles in my educational path. Thank you for your endless support, I love you so much.

BIOGRAPHY

My career path started when I was working on my master's degree and dietetic internship at Kent State University. It was through my coursework and internship experiences that I found my passion in community nutrition. I moved to North Carolina in 2015 for the opportunity to work with N.C. Cooperative Extension. I was drawn to the organization because it merged aspects of higher education and community nutrition. To improve my skills in this role and expand my knowledge, I decided to enroll in the Doctor of Philosophy (Ph.D.) program in Educational Leadership, Policy, and Human Development with a specialization in Adult, Workforce, and Continuing Professional Education.

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I am grateful to work within an organization that supports lifelong learning and provides the opportunity to attend graduate classes part-time. Through this career, I have gained numerous role models and mentors that demonstrate thoughtful, meaningful, and impactful leadership.

Finally, I would like to thank my family. There is great comfort in knowing that your parents are always there to support you. My sisters, Mer, Meg, and Emma. Thank you for always being only a phone call or group chat away. My partner, Nathan, for bringing me back to the present moment, taking nightly walks, and making sure we always have something fun planned. And, my dog, Turbo, and cat, Spaghetti, who were by my side and made the weekends and late nights of writing brighter.

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CHAPTER ONE: INTRODUCTION

The Cooperative Extension System was created by the Smith-Lever Act in 1914 as a partnership between land-grant universities and the United States Department of Agriculture. Extension extends the knowledge of land-grant universities into the surrounding communities. Due to its connection to land-grant university systems, this organization is present in every state. Extension has served communities in the area of non-formal education related to family resource management, youth development, and agriculture for over 100 years (U.S. Department of Agriculture National Institute of Food and Agriculture [USDA NIFA], n.d.-b). One program area within extension is Family and Consumer Sciences (FCS). In Southeastern State Extension, the majority of FCS Agents primarily focus on addressing the high rates of food insecurity and diet related chronic diseases in communities (Author Unknown, 2018). FCS Agents develop, implement, and evaluate comprehensive nutrition programs tailored to meet their county's needs. These programs aim to provide consumers with knowledge, skills, and access to purchase and prepare healthy foods (Author Unknown, 2019c). It is important to note that the area of FCS can cover a wide range of topics outside of nutrition education and the title of this area differs depending on the state extension program. To provide clarity on this, the term *nutrition educator* will be used in this paper to describe FCS Agents at Southeastern State Extension.

Prior to the COVID-19 pandemic, adult nutrition programs through Southeastern State Extension consisted of face-to-face programming and hands-on learning through cooking demonstrations. Over the last decade, research started to emerge about the need for extension to embrace technology in reaching new audiences and upcoming generations (Atkinson et al., 2010; Loehmer et al., 2018; Mirando et al., 2012; Raison, 2014). Despite this knowledge, very few studies have looked at adult nutrition programming in extension that is conducted in a virtual

setting (Dunn et al., 2014; Murimi et al., 2019). Many studies instead focused on hybrid models (Murimi et al., 2019). Some organizations with nutrition education goals similar to extension, such as the Special Supplemental Nutrition Program for Women, Infant, and Children, also started to explore virtual nutrition education in recent years (Au et al., 2016). However, research that looks specifically at nutrition educators' perspectives on the delivery of virtual nutrition education is limited.

In March 2020, the COVID-19 pandemic led to the Centers for Disease Control and Prevention (2021a) implementing social guidelines to prevent the spread of the virus. These guidelines resulted in new policies that shifted extension programming to a virtual environment (Author Unknown, 2020a). In addition, community needs related to nutrition were becoming more apparent due to rising food insecurity rates (Feeding America, 2021) and notable racial and ethnic health disparities (Centers for Disease Control and Prevention, 2021b; Feeding America, 2021). In response, nutrition educators adapted existing evidence-based programs to online platforms and created additional information to meet the changing needs within their communities (Author Unknown, 2020b). In Southeastern State Extension, a total of four state level evidence-based adult nutrition programs were available for educators to choose from. These virtual programs consisted of the same curricula as used in the past, but incorporated new virtual options that included prerecorded video lessons and cooking demonstrations, live webinars, hands-on cooking synchronously through online platforms, and optional virtual office hours with the county nutrition educator. Although some virtual nutrition programming has existed in the past, this sudden shift led to programming that was different from past years. This provided the opportunity to see the benefits and barriers to embracing technology in extension nutrition programming.

Problem Statement

Extension offers free and low-cost non-formal educational programming directly to communities throughout the state in the areas of food, youth, and agriculture (Author Unknown, 2019a). The organizational culture of extension embraces the ability to “provide high-tech, high-touch expertise to serve the unique needs of diverse clientele” (Author Unknown, 2021b). State level specialists and county educators carefully develop programs using evidence-based information to meet the needs of different populations. Because the unique needs of the community drive the direction of programming, the various aspects of the environment influence the program delivery. The COVID-19 pandemic altered the environment in many ways which resulted in extension adapting delivery of education to this changing system.

Prior to the pandemic, delivery of adult online nutrition education programming within extension was an emerging area of research (Case et al., 2011; Stosich et al., 2016). This changing environment created a drastic shift in technology utilized to reach clientele. In response to precautions taken around the prevention of spreading COVID-19, extension cancelled all face-to-face programming in March 2020. As a result, new barriers existed related to the delivery of programs for educators. For example, as demonstrated by the switch to virtual K-12 education, many community members struggled with limited access to the internet and computers or other devices (Turnbull et al., 2021). This changed extension’s culture by having employees move away from the traditional “high-touch” components of hands-on, face-to-face learning. As a result, extension leadership encouraged educators to learn and implement new technologies to try to keep programming “high-touch” in a virtual setting. Although “high-tech” has been a value since before the pandemic, it became much more important in moving forward with

programming. Overall, extension educators experienced a shift in how they approached community outreach and education.

In addition to this transition related to the delivery of programming, the communities that educators serve were also experiencing changing needs. With the rising rates of food insecurity due to the pandemic (Feeding America, 2021), decreased opportunities for many to be physically active (Bahl et al., 2021) and the adverse effects of obesity on COVID-19 health outcomes (Centers for Disease Control and Prevention, 2021b), the need for nutrition education within communities increased. At the start of the pandemic, food prices increased across the nation due to shortages, disruptions in the supply chain, and inflation (U.S. Bureau of Labor Statistics, 2020). According to the U.S. Department of Agriculture Economic Research Service (2022a), food prices are expected to continue to rise in 2022. COVID-19 outcomes have demonstrated the urgent need to address the growing impact of health disparities on some racial and ethnic groups (Centers for Disease Control and Prevention, 2021b).

Due to the COVID-19 pandemic, communities need nutrition programs now more than ever. Extension has historically provided non-formal education related to food and nutrition for over one-hundred years, making it well equipped to address this need. However, the shift away from face-to-face program delivery towards virtual delivery is new. While sparse research on non-formal adult online nutrition education programs has been explored in the past, very limited research currently exists on educator's experiences and perceptions with the delivery of these programs.

Purpose Statement and Research Question

The purpose of this exploratory qualitative case study is to gain insight on how extension nutrition educators in a southeastern region state navigate the delivery of adult virtual

programming. This is important for two reasons: (1) to contribute to the scant literature that currently exists related to the delivery of virtual nutrition programming and (2) to contribute to the improvement of future virtual nutrition programs so that they can continue to address community needs. It investigates the following research question:

How does the recent shift to a virtual teaching environment influence nutrition educators' experience with the delivery of adult nutrition education?

Research Design

Research related to applied fields commonly use a case study approach to highlight the context in which the studied activity is occurring (Merriam & Tisdell, 2016). This makes a case study approach appropriate for this research because this study focuses on looking at the delivery of programming within the field and is bound to the context of a specific organization and state. More specifically, this research uses an exploratory case study approach because little research has been done in this area. An exploratory approach allows for the exploration of concepts which are not clearly defined at the start of the study (Baxter & Jack, 2008). The Cultural-Historical Activity Theory (CHAT) framework guided the exploration of the interaction of elements within the learning system.

This qualitative study investigates nutrition educators' experiences and perceptions with the delivery of virtual nutrition education by using an exploratory single case study methodology. There were two methods of data collection: interviews and document analysis. Nutrition educators within Southeastern State Extension were recruited from across the state to participate in semi-structured interviews. Participants were recruited from all five districts across the state. Interviews were conducted through Zoom. One form of document included for analysis were educators' self-reported program impact summaries in relation to virtual nutrition education

for the years 2020 to 2022. These documents are available through a Southeastern State Extension System public database. Additional documents include curricula and delivery guidelines provided at the state level for use by educators. The interview guide was formatted to include components of the CHAT. Coding of interviews and documents was guided by a priori codes based on the categories within the CHAT framework.

Theoretical Framework

Cultural-historical activity theory (CHAT) is an appropriate choice as the theoretical framework for this study because it allows for examining the holistic system in which program delivery occurs. It conceptualizes human learning itself as a shared activity or activities with a shared outcome. In other words, we learn by ‘doing’ activities together. Nutrition education and the extension system have a rich history and established dynamic and the recent change to online delivery of nutrition education is not just a new way of learning, it is a change within the learning system and community itself.

Within the theoretical evolution, Engeström has developed three different generations of CHAT (Engeström, 2001). In the first generation, influenced by Vygotsky, the major unit of analysis is the individual or subject. In the second generation, influenced by Leont’ev, the CHAT model expands to include the activity system. The activity system includes how power structures and social interactions also influence the ability to achieve the set object of the system. In the third model, multiple activity systems are situated to explore how they interact and influence one another. These activity theory models have been used in a variety of formal and non-formal educational research studies in the past as a structure for analyzing learning and systems learning data (Postholm & Vennebo, 2020). In alignment with the social constructivist worldview, this study looks at the delivery of virtual nutrition programming holistically to ensure that the

differences in context and social influence of each educator's perspective related to program delivery is acknowledged. Given the dynamic of extension, nutrition educators, community members and community context, the curriculum, the available tools and resources, integrate as connected learning activity systems. Engeström's (2001) third generation of the CHAT framework was chosen as the model for this study.

This framework highlights that learning occurs within a larger system dynamic, and is contextually situated. Theoretically, CHAT is comprised of six main categories: tools, subject, rules, community, division of labour, and object (Engeström, 2001). Engeström and Sannino (2010) define these six components as follows:

- **Tools:** instruments that turn the object into an outcome
- **Subject:** “individual or group whose position and point of view are chosen as the perspective of analysis” (p. 6)
- **Rules:** “explicit and implicit regulations, norms, conventions and standards that constrain actions within the activity system” (p. 6)
- **Community:** “individuals and subgroups who share the same general objective” (p. 6)
- **Division of Labour:** “horizontal division of tasks and vertical division of power and status” (p. 6)
- **Object:** “refers to the ‘raw material’ or ‘problem space’ at which the activity is directed” (p. 6)

Specifically, this study framework will guide the analysis of movement of subject to object/outcome and examine how the remaining components (tools, rules, community, and division of labor) influence this pathway. One of the assumptions of this framework is that

internal contradictions can occur within the system (Engeström, 2001). These contradictions are seen as valuable and “the driving force of change and development in activity systems” (Engeström, 2001, p. 135). Changes in one area of activity can potentially impact the others. Ideally, the information gathered on contradictions in this study can be applied within Engeström’s (2001) expansive learning cycle to create a new process for virtual program delivery.

Significance of the Study

This study is of relevance both academically and practically. The findings can directly influence the degree of future delivery of extension nutrition programming, inform educators about the factors that may need to change in future delivery, and guide future academic research in the field by adding to the existing literature. Limited research currently exists related to the delivery of virtual adult nutrition programs in a community-based setting. Since virtual programming is relatively new to extension, little is known about the learning experiences and successes. By changing from face-to-face to virtual education, other factors related to the successful delivery of the program are likely to be affected. For instance, different barriers in reaching the community may arise or certain rules may need to be broken. As a result, both the educators and learners experienced a cultural shift due to the change in the process of delivery. In addition to this, the increasing need for nutrition security amongst community members during the time of this study also shifted the culture and outside environment. Lessons learned from this study will contribute to the guidance of future research in the area of virtual community nutrition programming. The information gained can be used as a guide to structure additional research and expand the reach outside of this southeastern state by replicating the framework of research in different settings. In addition to this, different perspectives could be looked at within

the subject category of the system such as program participants, managers, or community stakeholders.

Virtual program delivery brings challenges and benefits to educators and participants that are different from traditional face-to-face delivery. Based on the changing societal expectations for distance learning and the potential of reaching new audiences, virtual delivery may be appropriate to continue in the future. If approached in a thoughtful and well-informed manner, technology may provide better accessibility for some participants that have busy schedules or lack the transportation to attend traditional face-to-face programs. However, it is important to note, that some audiences may struggle with navigating or accessing technology. By expanding knowledge around virtual nutrition education through exploring nutrition educator's experiences in delivering the program, factors that inhibit or facilitate programming can be investigated. These factors are highlighted through the CHAT framework which considers how context influences educators' learning regarding program delivery. How the different elements interact within the delivery of education can reveal what is working in practice and where contradictions occur. As a result, future programming and research can be adapted to encourage facilitation and overcome barriers.

Finally, improving the knowledge related to the delivery of virtual nutrition education will result in greater positive outcomes and impacts for program participants and communities. It is important that delivery is done well because failure to do so could have negative impacts on communities such as furthering already existing health disparities related to race, ethnicity, and income. The COVID-19 pandemic has highlighted and exacerbated issues communities face around health equity, nutrition security, and food access. The focus of nutrition education delivered through extension has been to improve those issues and decrease the rate of diet-related

chronic diseases. By attending programs, participants are provided the opportunity to have a greater chance of improving health related habits and knowledge, which will reduce the risk of developing diet related chronic diseases. It is important that programs ultimately meet the changing needs of the community that they serve. This study can inform stakeholders on ways to improve the quality and access of future nutrition programming offered through Extension.

Summary

Next within this paper, chapter two will present and discuss the current literature related to community nutrition education as well as details related to the context of the study. Since food choices are highly influenced from factors such as the environment, policy, and culture, it is important that these factors are included through context specific to the case.

Chapter three will discuss the methodology of the research study. Understanding more about nutrition educator 's experiences with the delivery of virtual nutrition education will help to strengthen future programs by discovering what components should continue and what components should be changed. Using an exploratory single case study methodology allowed for data to be collected that is unique to the setting. The CHAT framework guided questions so that holistic information related to program delivery was gathered.

Chapter four starts by providing a brief narrative of each of the 15 participants and a brief overview of CHAT as it related to data analysis. Following this section will be the research findings based on the different categories of CHAT. These findings include excerpts from the educator interviews along with supporting text from educator program impact summaries and statewide virtual curricula guidelines.

Finally, chapter five starts with a discussion on the findings that emerged when the themes related to the categories of CHAT were arranged together within three distinct activity

systems: traditional, virtual, and emerging. This discussion includes how alignment and tension between categories within the different systems relate to other literature. Following this is a summary of the discussion depicting the three key findings. This chapter concludes with conversation on the implications for future research, theory, and practice.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter is organized into six main sections. It starts with describing the context of the study, which includes a discussion of the structure of extension nationally as well as specific aspects related to Southeastern State Extension. This section will also highlight how the program area of Family and Consumer Sciences fits within the overall goals of the organization. After this section, the discussion will focus on why the goal of improving nutrition security in communities is important to extension. Following this information will be a review of the purpose and history of extension education. After this there will be a review of what research has been conducted around virtual extension nutrition education already and where gaps currently exist within the literature. Following this will be an update on how the COVID-19 pandemic shifted delivery of education and impacted the needs of the community in relation to nutrition security. Finally, the last section will focus on the conceptual framework of CHAT and how it has been used in other contexts within adult education.

Extension Education

Extension services are available to citizens across all 50 states (USDA NIFA, n.d.-b). Extension's reach is statewide and through their services, they provide direct delivery of non-formal education to adults and youth. It is funded and guided by policies at the federal, state, and local levels. (See Appendix A). Because of this, the specific organizational structure and program areas of focus of extension varies between states due to funding differences and local community needs. However, national associations serve as a link between the states amongst the general program areas, such as Family and Consumer Sciences. For nutrition programming, the National Extension Association of Family and Consumer Sciences is the professional association

that supports Family and Consumer Sciences programming in extension. Because of the complexities of this network of organizations, nutrition educators base their work off national guidelines, state guidelines, and association norms. The following section will describe each of these in greater detail.

Nationally

Extension has adapted to serve communities across the nation as a non-formal educational resource for over 100 years (USDA NIFA, n.d.-b). Various congressional acts throughout time have shaped how the system operates across the United States. In 1862, the Morrill Act established land-grant universities in each state. Part of the mission of land-grant universities was to teach agricultural sciences (Knapp, 1916). Following this act, the Second Morrill Act in 1890 led to the establishment of historically black land-grant institutions. More recently, the Equity in Educational Land-Grant Status Act of 1994 provided land-grant status to tribal colleges and universities.

In 1914, the Smith-Lever Act established Cooperative Extension Services (CES) as a partnership between land-grant universities and the United States Department of Agriculture. The purpose of the creation of CES was to expand agricultural knowledge from the universities to members of the community that were unable to access or afford formal education (Knapp, 1916). Although terminology has evolved with time, CES has generally focused on the areas of agriculture, youth development, community development, and family and consumer sciences (Blalock et al., 1963; Knapp, 1916; Raison, 2014).

Southeastern State

This study will specifically focus on Southeastern State Extension. This organization is a partnership between two land-grant universities and county and tribal governments (Author

Unknown, 2019a). Knowledge from the universities is extended to communities through local Southeastern State Extension centers. County extension centers are in all 100 counties plus a tribal community (Author Unknown, 2021c). Currently, programming throughout the state focuses on food and agriculture, health and nutrition, and 4-H youth development (Author Unknown, 2019a). Although information is more easily accessible than ever before with the advancement of technology, the need for extension programming is still relevant. Specifically, The Economic and Functional Impact of Southeastern State Extension report states, “Information is not synonymous with knowledge. True knowledge comes from accessing and understanding reliable, often objective research-based, information ideally from a source that is trusted and validated” (Author Unknown, 2019c, p.15). Extension serves as a free and valuable resource to help state citizens access research-based knowledge through the various educational programs offered.

Family and Consumer Sciences

Historically, the program area of Family and Consumer Sciences focused on a target audience of rural homemakers and families (Apple & Coleman, 2003; Hansen, 1965; Shultz & Riggs, 1972). However, as populations, family structure, and topics have shifted in this area, this target audience has expanded to include the needs of the entire community in rural, suburban, and urban areas (Atiles & Eubanks, 2014; Brown, 1997). Currently at the national level, Family and Consumer Sciences programming within extension focuses on topics such as food safety, nutrition, healthy lifestyles, parenting, and financial management (Atiles & Eubanks, 2014). The value statement of this organization is:

National Extension Association of Family and Consumer Science professionals provide families with evidence and science based programs, enabling them to improve their

family's well-being in health, financial management, food and nutrition, food safety, healthy homes and environments, family life and technology, improving their daily lives and creating vibrant communities in which they live. (National Extension Association of Family and Consumer Sciences, 2020, Value Statement section)

Within the southeastern state, Family and Consumer Sciences programming focuses mainly on the areas of food safety, nutrition, and physical activity (Author Unknown, 2018). According to The Economic and Functional Impact of Southeastern State Extension report, "...Extension works to empower individuals with the knowledge and skills to make informed decisions regarding their health, nutrition, food intake, safe food preparation and food preservation" (Author Unknown, 2019c, p.5). The recent state focus on areas such as, chronic disease management/risk reduction and food preparation was established due to the health concerns related to the rising rates of obesity (Author Unknown, 2019c).

According to the Centers for Disease Control and Prevention (2020), people who are classified as obese have an increased risk of diet related chronic disease. These diseases include diabetes, heart disease, and certain cancers. In particular, populations with incomes below the federal poverty threshold face an increased risk for developing diet-related chronic diseases (Singh et al., 2010). According to the World Health Organization (2020), these communities often experience a double burden of diet-related chronic diseases because, "it is not uncommon to find both undernutrition and obesity co-existing within the same county, the same community, and the same household" ("Facing a Double Burden if Malnutrition", para. 1). Many factors contribute to this hunger-obesity paradox including lack of access to healthy foods, skipping meals, overconsumption of energy-dense foods, stress, depression, low levels of physical activity, and lack of access to healthcare (Hartline-Grafton, 2015).

County educators at Southeastern State Extension are typically based in one to two counties and serve the residents of those counties (Author Unknown, 2019c). Each year, educators develop an individual plan of work that aligns with the state plan of work (Author Unknown, 2019c). In recent years, educators lead programs that aim to reduce certain risk factors related to obesity. The goal results of programming include enhanced individual health, enhanced public health, good budget management, and improved personal productivity (Author Unknown, 2019c). These programs are developed based on current evidence related to both nutrition education and program planning (Author Unknown, 2018).

Nutrition Security and Health Implications

The relationship between nutrition security and health is a complex relationship influenced by a variety of factors associated with poverty and health disparities. In the USDA's report on Household Food Security in the United States in 2020, food security is defined as "consistent, dependable access to enough food for active, healthy living" (Coleman-Jensen et al., 2021, p. 2). Some cross-sectional studies have shown an association between food insecurity and chronic disease (Gregory & Coleman-Jensen, 2017; Shaheen et al., 2021; Venci & Lee, 2018). Jia et al. (2021) found that food insecure adults had lower diet qualities than food secure adults and that food insecurity was associated with more hospitalizations.

Some research points to what is often referred to as the *hunger-obesity paradox*. The theory behind this is that those that are experiencing poverty and/or food insecurity are more likely to be overweight due to a poor-quality diet. Recent studies suggest that this paradox may highlight a gender disparity in which women are disproportionately impacted in comparison to men. Taylor et al. (2021) found that within food insecure families, mothers of children were more likely than fathers to compromise diet quality to feed their family. However, there was no

significant correlation detected between body mass index, depression, and food insecurity with either group. However, in a study of older adults, Hernandez et al. (2017) found that food insecurity and obesity tend to coexist among women with incomes below the federal poverty level but not men with similar incomes.

Because this paradox, “antihunger and nutrition/ public health advocates often have different perspectives, with food security and nutrition viewed as differing or competing priorities” (Mozaffarian et al., 2021, p. 1606). As a result, there has been a recent shift amongst public health professionals and organizations to use the term *nutrition security* in place of *food insecurity* and *food security* to merge the priorities together. Nutrition security is defined “having consistent access, availability, and affordability of foods and beverages that promote well-being and prevent (and if needed, treat) disease” (Mozaffarian et al., 2021, p. 1605). While most research referenced in the literature review uses the term *food insecurity*, and effort to shift the language to *nutrition security* is made throughout the discussion of this paper.

From 1939 until 1943, the first Food Stamp Program (FSP) was implemented in the United States and aimed to help with food assistance during widespread unemployment (U.S. Department of Agriculture Food and Nutrition Service [USDA FNS], 2018). In the years to follow, pilot studies were conducted and the Food Stamp Act of 1964 made FSP permanent (USDA FNS, 2018). The purpose of this act was to help with “strengthening the agricultural economy and providing improved levels of nutrition among low-income households” (USDA FNS, 2018, 1964 – Food Stamp Act Section, para. 1). In The Food, Conservation, and Energy Act of 2008, the name was changed to what we currently refer to as the Supplemental Nutrition Assistance Program (SNAP) (USDA FNS, 2018).

The goal of SNAP is to provide people with nutritious food with hopes that it will improve health outcomes (USDA FNS, 2018). However, research around SNAP's impact on health is complex. For example, Gregory and Deb (2015) found that self-reported health was better amongst SNAP participants in comparison to non-participants that are SNAP eligible. In contrast to this, Pruitt (2016) found that when looking at food insecure populations receiving food assistance through SNAP and food pantries was associated with having the poorest health and seeking no assistance was associated with the best health of the group. They note that reasoning behind this finding is most likely complex and that the findings do not imply that food assistance is the cause of poor health outcomes. Participating in the SNAP program is a voluntary action which makes it difficult to study how participating in the program may impact diet quality and chronic disease because studies that compare those that participate from those that do not participate but are eligible are essentially flawed in design. Despite efforts to improve nutrition and health, SNAP recipients face five main barriers related to access to healthy foods (Gearing et al., 2021). These are "lack of knowledge about healthy eating, lack of cooking skills, lack of kitchen equipment and facilities, lack of time for cooking and lack of time to shop for foods that are part of a healthy diet" (p.3).

Extension Nutrition Programming and SNAP-Ed

Extension nutrition programming reaches communities across the state from youth to older adults (Author Unknown, 2018). Funding for programs differs between programs. One of the major programs is SNAP-Ed which is shaped by guidance at the national and state level. SNAP-Ed first began in 1988 through the Cooperative Extension System in Wisconsin (USDA NIFA, n.d.-c). At that time, it was called, "Family Nutrition Program and Food Stamp Nutrition Education" (USDA NIFA, n.d.-c). In the following years, funding for programming that

supported the education of food stamp recipients continued to grow and by 2004, these programs were occurring in all 50 states (USDA NIFA, n.d.-c). The name change to SNAP-Ed occurred when the Food, Conservation and Energy Act of 2008 changed the name of the Federal Food Stamp Program to the Federal Supplemental Nutrition Assistance Program (USDA FNS, 2018). Nationally, the goal of SNAP-Ed is “to improve the likelihood that persons eligible for SNAP will make healthy food choices within a limited budget and choose physically active lifestyles consistent with the Current Dietary Guidelines for Americans and Food Guidance System” (USDA NIFA, n.d.-c, Supplemental Nutrition Education Program – Education (SNAP-Ed) section, para. 4). Currently, the USDA defines SNAP-Ed as:

The Supplemental Nutrition Assistance Program - Education (SNAP-Ed) is a federally funded grant program that supports evidence-based nutrition education and obesity Assistance Program (SNAP) through complimentary direct education, multi-level interventions, and community and public health approaches to improve nutrition. (USDA NIFA, n.d.-c, Supplemental Nutrition Education Program – Education (SNAP-Ed) section, para. 1)

Multi-level educational components include direct education, social marketing, and policy systems and environmental changes. The multi-level approach is influenced by the social-ecological model, which acknowledges that food and physical activity choices are influenced by various factors at the individual and societal level (U.S. Department of Health and Human Services [USDHHS] and United States Department of Agriculture [USDA], 2015).

Delivery of programming requires partnerships at the federal, state, and local levels. At the federal level, the program is a partnership between the USDA Food and Nutrition Services, National Institute of Food and Agriculture, and Economic Research Service. Each partner shares

different responsibilities such as creating policies and procedures for SNAP-Ed implementation, connecting resources across the nation, providing leadership, and evaluation guidance System (USDA NIFA, n.d.-c). These programs are then implemented at the state and local levels through various state agencies. State agencies that implement programs include Cooperative Extension offices, universities, state department of health, and food banks (USDA NIFA, n.d.-c). While different state agencies can implement the program, the majority have been implemented through land-grant universities and the Cooperative Extension System (USDA NIFA, n.d.-c).

Virtual Nutrition Education

The following section reviews why the delivery of non-formal nutrition education through a virtual platform has been of interest of researchers. Included in this is a review of the various perceived interests and barriers that exist in relation to this format of delivery along with how programs have been developed over time. The section concludes with a review of what information is missing from current literature regarding online program delivery. Settings for virtual delivery have included SNAP-Ed, WIC, and outpatient healthcare settings.

Beginning Interest in Virtual Nutrition Education

Over the past decade, virtual delivery of adult nutrition education has been a topic of interest of researchers (Atkinson et al., 2010; Bensley et al., 2011; Neuenschwander et al., 2012). Interest in this mode of delivery varies among researchers, but overall, there is a general interest in how it can be used to overcome participant barriers and increase program reach (Haynes-Maslow et al., 2019; Krall et al., 2015; Stotz et al., 2017; Swindle et al., 2014). For example, Atkinson et al. (2010) were interested in how technology could expand the reach in rural populations. Potential participant barriers to joining in traditional face-to-face education include lack of transportation, work schedule, and childcare. Virtual programming allows for more

flexibility of when education is received and therefore may serve as a solution to increase access. It is important to note that the delivery methods on virtual education may also have certain barriers. For example, synchronous meetings may not work with certain work schedules, but asynchronous methods may be used to better meet individual schedules.

In addition to overcoming participant barriers, this mode of delivery has potential to overcome organizational barriers as well. Some researchers suggest that offering virtual programming could be a cost-effective solution to increasing the reach and that future research is needed to explore the comparison of costs (Stosich et al., 2016). This is built from the assumption that it will take less work from the educator to reach more participants since they will not be taking the time to secure resources, such as food, space, and time, to deliver programming (Bensley et al., 2011; Gorczyca et al., 2022; Stosich et al., 2016). However, little research has been done to determine its cost effectiveness and gain educator's perspectives on how the workload shifts when the delivery method shifts. Gaining educators perspectives on this shift of division of labor and tools to deliver programming could help in future research that explores virtual programming as a cost-effective solution for increasing the reach and engagement of audiences.

Perceived Interest and Barriers to Virtual Nutrition Education

Research on the feasibility of online nutrition education has investigated the perceived interests and barriers to participants engaging and completing nutrition education through an online platform (Case et al., 2011; Haynes-Maslow et al., 2019; Jewkes et al., 2021; Krall et al., 2015; Stotz et al., 2015; Stotz et al., 2017; Stotz et al., 2019). A common limitation of many of these studies that looked at perceived interest and barriers has been that the samples lack racial and ethnic diversity and are comprised mostly of White female participants (Haynes-Maslow et

al., 2019; Jewkes et al., 2021; Loehmer et al., 2018; Stotz et al., 2017). Saqib et al. (2022) found that preferences in attending virtual or in-person education are influenced by environmental and social factors and therefore a systems approach for analysis should be taken in research that compares the two delivery methods.

One major potential barrier is access to the internet (Case et al., 2011; Loehmer et al., 2018; Neuenschwander et al., 2012; Stotz et al., 2015). Early in the research, when computers were the primary mode of accessing information online, access to technology was a potential barrier in reaching audiences with incomes below the federal poverty threshold (Case et al., 2011; Neuenschwander et al., 2012). In more recent studies, it has been found that audiences with high-incomes and low-incomes have similar access to the internet due to phones (Loehmer et al., 2018; UNC Center for Health Promotion and Disease Prevention, 2021). However, access remains an issue for certain people. Perrin (2021) found that while 91% of adults have access to the internet through broadband or smartphones, 30% of adults still sometimes face difficulties connecting to the internet at home. Stotz et al. (2019) found that participants often accessed free public internet through their phones in locations such as libraries, restaurants, and schools. Loehmer et al. (2018) found that certain platforms for virtual SNAP-education such as Twitter, Tumblr, Pinterest, Instagram and Vine were of little interest to all study participants. However, they found young and middle-aged adults expressed interest in Facebook, text messaging, and blogs. While access to the internet remains an issue for some, it is no longer as large of a barrier as it was due to increasing connectivity.

Another potential barrier is trust. Studies have shown that participants are more likely to make changes and value information when it is coming from a person that they trust (Loehmer et al., 2018). With face-to-face delivery, Haynes-Maslow et al. (2019) found that nutrition

educators who mentioned not being part of the community and being seen as an outsider perceived it as a barrier for successful program delivery. Trust is often built through face-to-face interactions and virtual programming risks losing this highly personal experience. In addition to this, extension programming is funded through the government. Some research suggests that communities may be hesitant in trusting the government with health messaging (Kowitt et al., 2017; Reynolds, 2010). One study found that participants suggested that to overcome this mistrust, scientific studies need to be referenced that support the information being shared (Leak et al., 2014).

While overcoming barriers is a major component to successful delivery of programming, participants also need a sense of motivation or interest to attend programs. While trust can serve as a potential barrier, it could also be seen as a motivator for choosing to participate (Leak et al., 2014). In addition to this, content must be of interest to participate (Stotz et al., 2017; Stotz et al., 2019). In one formative study, participants interested in virtual nutrition classes stated many motivators such as “manage weight, feel better with more energy, a better mood, feel more relaxed, and sleep better” (Jewkes et al., 2021, p. 44). In a study that looked at educators’ perspectives, they felt the participants engagement in the course increased when partnering with other organizations that have the training as a mandatory component to the services that they offer (Case et al., 2011). They also stated that online information needed to be engaging and entertaining (Stotz et al., 2015; Stotz et al., 2017). Although educators continue to feel engagement with participants in a virtual environment is one of the biggest challenges they face with program delivery (Hohlt, 2022). While being one of the earlier studies on interest of a virtual nutrition class, Case et al. (2011) found that participants stated that the addition of extrinsic motivators would be necessary to encourage them to participate. These included recipe

contests, prizes, and discounts on food. Hohlt (2022) found educators wanted a toolbox of resources to choose from when delivering virtual education.

Development and Delivery of Virtual Nutrition Education

Few studies have explored the resources needed to develop and deliver engaging nutrition education in a completely virtual setting. Stosich et al. (2016) recommended that SNAP-Ed curriculum developers who are employed in a university setting work with their university's e-learning resources team when creating virtual curriculum. Specific resources mentioned were those related to media production, web lessons, and data collection. From the participant's perspectives, Stotz et al. (2019) found that study participants preferred an asynchronous model that could be accessed by mobile device. Platforms such as Facebook offer the opportunity to provide asynchronous education and may save educators time spent on program delivery (Gorczyca et al., 2022). When looking at nutrition educator's perception, educational methods such as cooking videos, recipes, and step-by-step teaching tools were preferred curriculum components for a virtual setting (Hohlt, 2022; Stotz et al., 2017). This current research aligns with the model of virtual nutrition programming used within Southeastern State Extension.

Currently, seven online SNAP-Ed interventions are available nationally for states to use through the national SNAP-Ed toolkit (UNC Center for Health Promotion and Disease Prevention, 2021). These programs are evidence-based, with process and outcome evaluations completed. Five of these interventions include direct education. The other two only have website and social marketing components. While these are the only ones that have been approved for the national toolkit at this time, the website requests that states submit programming to share if the program has undergone the proper evaluation process. As this method of delivery grows, it should be expected that more programs will be available through the national toolkit.

Future Implications for Research on Extension Nutrition Education

While current research looks at the development and outcomes related to the delivery of online nutrition education, little research exists on the delivery of extension programs through this platform. Au et al. (2016) noted in their research that although the targeted low resource audience in their study expressed interest, this is different from them actually attending classes and completing the entire program. Because of this, they stated that more research needs to be done looking at the implementation and retention of participants. The shift to an online platform has sped up the process of developing and researching this mode of delivery due to a greater need for outreach that can be done without gathering in the traditional face-to-face setting. This study seeks to add to existing literature by looking at the perceptions of educators that are now delivering programs virtually.

The COVID-19 Pandemic and Changing Contexts

The COVID-19 pandemic led to a rapid shift in the environment and with daily operations of organizations as people implemented social distancing guidelines. Daily lives changed for communities and issues related to nutrition security were exacerbated. Extension professionals shifted to working from home and balancing their personal and professional lives. This section explores the different shifts in context that occurred during the transition to online learning.

Nutrition Security Related to COVID-19

The pandemic impacted the needs of nutrition programming. Within just weeks after COVID-19 was declared a global pandemic, “tens and millions of people lost jobs or saw declines in hours worked” (Feeding America, 2021, p. 2). As a result, food insecurity rates increased drastically during the start of the pandemic and continued to be felt in the following

years (Feeding America, 2021). This topic received national attention and made headlines as food banks and food pantries faced increasing demands and challenges in providing food to those in need (Har, 2021). Factors that contributed to the increasing demand included unemployment rates, high food prices, and supply chain issues (Har, 2021). According to a 2021 report from the U.S. Department of Agriculture Economic Research Service (USDA ERS), the rate of food insecurity continues to fluctuate:

The prevalence of food insufficiency (low and very low food sufficiency) rose from about 10 percent in August and September 2020 to 13.4 percent as of December 21, 2020, before declining to 8.0 percent as of April 26, 2021. Food insufficiency had increased to 9.6 percent as of June 21, 2021 before declining to 8.4 percent in September 2021. (USDA ERS, 2021, Prevalence of Food Insufficiency section, para. 1)

It is important to note that food insufficiency is different from food insecurity. The USDA defines food insufficiency as “a household did not have enough food to eat sometimes or often in the last 7 days” (USDA ERS, 2021, Food Sufficiency During the Pandemic: The Household Pulse Survey section, para. 2). While similar in definition, food insufficiency is of greater severity than food insecurity (USDA ERS, 2022b).

Within populations with incomes below the federal poverty threshold, researchers often refer to a *hunger-obesity paradox* (Hartline-Grafton, 2015). Factors that influence this paradox between hunger and obesity include: a lack of access to healthy foods, skipping meals, overconsumption of energy-dense foods, stress, depression, low levels of physical activity, and lack of access to healthcare (Hartline-Grafton, 2015). The Centers for Disease Control and Prevention (2021b) determined that adults that are considered overweight or obese are at an increased risk of COVID complications. Excessive weight increases risk of the illness being

severe, the need for hospitalization, and the chance of death (Centers for Disease Control and Prevention, 2021b). This means that populations with incomes below the federal poverty threshold were not only at higher risk for not having nutrition security but also for complications related to COVID-19.

Both factors are also highly related to the racial and ethnic disparities that existed prior to the COVID-19 pandemic. The Centers for Disease Control and Prevention (2021b) highlights that “Hispanic and non-Hispanic Black adults have a higher prevalence of obesity and are more likely to suffer worse outcomes from COVID-19” (Obesity Disproportionately Impacts Some Racial and Ethnic Minority Groups section). “Feeding America projects that 21.6% of Black individuals (1 in 5) may have experienced food insecurity in 2020, compared to 12.3% of white individuals (1 in 8)” (Feeding America, 2021, p. 5). The higher rates of food insecurity experienced by Latino, Black (non-Hispanic), Native American, and recent immigrants from certain Asian countries are related to factors influenced by structural racism and discrimination (Feeding America, 2021). The start of the COVID-19 pandemic brought the already existing issue of nutrition security and related health disparities to the attention of many Americans as the prevalence suddenly increased and made national headlines.

General Challenges with Transitioning to Virtual Education

The sudden shift from face-to-face to virtual learning as a result of COVID-19 was felt across many sectors. Majority of the current literature in education focuses on challenges faced by educators and students in K-12 and higher education. Extension education is similar to public school education in that it is intended to reach equally across communities. When conducted in a face-to-face setting, barriers to access can be overcome by careful selection of locations based on walkability and transportation. However, access barriers looked different in a virtual setting.

Barriers specific to a virtual setting include participant familiarity with technology, access to a computer or device, and access to internet (Catalano et al., 2021; Francom et al., 2021; Turnbull et al., 2021). These barriers put students in disadvantaged communities at even greater risk for disparities (Catalano et al., 2021).

Educators also faced barriers. Depending on geographic location, some educators also struggled with internet access (Catalano et al., 2021). In addition to this, some educators faced lower levels of online competence compared to others (Turnbull et al., 2021). This competence was important in adapting curriculum to new learning management systems such as Google classroom, Moodle, and Canvas (Francom et al., 2021). Other technologies that helped to reach students included Zoom, email, and text messaging (Francom et al., 2021). These platforms impacted social interactions and some experienced difficulty in promoting student engagement and participation (Francom et al., 2021). Plus, institutional policies often influenced which platforms educators were able to access and use (Catalano et al., 2021). The shift in delivery format meant that both educators and the community had to adapt to a new cultural norm surrounding educational delivery and learning.

State Level Extension Adaptations

COVID-19 changed the course of business and daily life across the world. For the purpose of this study, this section will focus on how these changes impacted Cooperative Extension programming at the state level and the implications for Family and Consumer Sciences programming related to food and nutrition. Towards the beginning of the pandemic, the Centers for Disease Control and Prevention (2021a) began sharing guidelines with the public that focused on ways to slow the spread of COVID-19. These guidelines included wearing a mask that covers the nose and mouth, staying 6-feet away from others, avoiding crowds, and avoiding

poorly ventilated indoor spaces (Centers for Disease Control and Prevention, 2021a). In response to the changing environment, on March 16, 2020, the state Cooperative Extension announced that employees would be working remotely and guidelines that aligned with the Centers of Disease Control and Preventions' advice went into effect (Author Unknown, 2020a). This guidance meant that all employees across the state's multiple county centers had to transition quickly to an online environment to keep in contact with the community and that traditional face-to-face programming had to be put on hold.

By September 2020, some programs started to meet face-to-face (Author Unknown, 2020a). However, many regulations were still in place such as wearing a face covering, keeping a 6-foot distance, and group gathering size limitations put in place by the state. Also, food served at events was strongly discouraged because it requires the removal of masks (Author Unknown, 2020a). It is also important to note that because of the structure of extension, each county center across the state was directed to follow university guidelines along with specific guidelines from county government (Author Unknown, 2020a). The guidelines that took priority were those that were the strictest (Author Unknown, 2020a). In response, programming models look slightly different between counties across the state.

By March 27, 2020, nutrition educators with Southeastern State Extension were quickly adapting their programming to include virtual educational methods such as videos, healthy recipes, and online cooking classes (Author Unknown, 2020b). Throughout the nation, Extension Family and Consumer Sciences programs started to reassess the needs of the community due to the pandemic and adapt their delivery of programs. For example, Bahl et al. (2020) formally assessed how the COVID-19 pandemic impacted the needs of consumers in relation to food and nutrition. They used this information to immediately adapt their existing programming to meet

these needs. In Southeastern State Extension, the SNAP-Ed team at the state level worked with nutrition educators to record video lessons and create an online version of their adult nutrition program (Author Unknown, 2021a).

As educators shifted to working from home, they faced additional barriers in their professional roles. For those with children, childcare centers and schools closed early in the pandemic. To balance their roles as both parents and professionals, many spent the day time helping their children with schoolwork and then their evenings/nights on work (Johnson et al., 2021). Many professionals were feeling the emotional toll of the pandemic which included high levels of stress and exhaustion (Israel et al., 2020; Johnson et al., 2021). In general, both extension professionals with and without children felt stress associated with difficulty in balancing personal and professional needs (Israel et al., 2020). In addition to personal changes, extension professionals had to adapt to the use of new technologies associated with working remotely. The majority felt supported by leadership and prepared to make the transition (Sampson et al., 2020).

State Level Virtual Nutrition Education Adaptations

In Southeastern State Extension, each program varied in resources available to guide nutrition educators to program delivery in a virtual setting. All program curriculum remained the same as prior to the pandemic, however tools and resources were developed to help transition to the new method of delivery. One exception to this was with the Healthy Cooking Program. No formal guidance currently exists for transitioning this program to an online environment. However, the flexibility in delivery and the relevant topics led to some educators adapting this program themselves for virtual delivery.

The SNAP-Ed program adapted to COVID-19 through offering flexible delivery options for curriculum. For the adult curriculum, lesson content, length, and the number of sessions remained the same as it was prior to COVID-19 and was taught through pre-recorded online videos (Author Unknown, 2021a). Videos featured different extension educators throughout the state. In addition to this, cooking videos featuring different recipes were made to supplement cooking demonstrations and tastings. Videos are available through private YouTube links and are designed to be shared through the weekly emails for participants to watch when convenient. Participant engagement through weekly live discussions is used for tracking program attendance. Platforms suggested include Zoom and Google Hangout. In 2023, this modified curriculum continues to be used across the state.

Mediterranean Nutrition Program classes include a PowerPoint presentation and either a food demonstration and/or cooking instruction (Author Unknown, 2022). By April 2020, a resource that was developed by state specialists was available through Google Docs for educators that wanted to offer Mediterranean Nutrition Program in a virtual setting. Suggestions for delivery included live virtual sessions, live streaming through social media, pre-recorded video lessons, or a mix of these methods. This document contained links to supporting resources for educators related to delivery platforms including Zoom, Facebook Live, and Google Hangouts. It also included strategies for marketing, evaluation, and program accessibility.

Programs in Southeastern State Extension

SNAP-Ed. The SNAP-Ed program is funded through SNAP-Ed funds. It aims to reach low-resource populations. In 2020, programming was implemented in 51 counties across the state and reached 5,453 adults and children (Author Unknown, 2020c). In comparison, in 2019 the program was implemented in 59 counties and reached 7,392 youth and adults (Author

Unknown, 2019b). This suggests that the shift in 2020 impacted the delivery of programming due to various reasons. One likely reason being that programming was not available for virtual implementation until a few months after the COVID-19 program policies that limited face-to-face interactions went into place. In 2020, as a response to extension policy related to COVID-19 safety precautions, the adult education SNAP-Ed program was modified to be taught in a virtual setting (Author Unknown, 2021a).

Healthy Cooking Program. The Healthy Cooking Program is an evidence-based curriculum for both adults and older teens that is offered through extension (Author Unknown, 2014). The program uses food demonstrations and hands-on food cooking to encourage individuals to prepare meals from home. The highly hands-on nature of the class aims to increase participants' skills to prepare nutritious foods at home. In addition to improving knowledge related to cooking techniques, lessons also include information related to stocking a healthy pantry and planning meals. It is unique from the other programs in this research in that it was designed so that the twelve hours of instruction could be adapted to meet the instructor's needs. Unlike the other programs, no formal guidance was given to educators for delivering this program in a virtual setting.

Mediterranean Nutrition Program. Mediterranean Nutrition Program is a six-session evidence-based program that focuses on a healthy Mediterranean-style eating pattern to protect against diet related chronic illnesses (Author Unknown 2022). This program was piloted in Southeastern State Extension and is now available for extension professionals to teach nationally. Classes include a PowerPoint presentation and either a food demonstration and/or cooking instruction. In April 2020, a resource developed by state specialists was shared through

Google Docs to help nutrition educators to transition to offering Mediterranean Nutrition Program in a virtual setting.

Discussion

Historically, extension has been delivering direct education nationally to communities for over a century. Throughout time FCS programming has been focused on strengthening families by connecting them to relevant and current research-based knowledge. It is imperative for the future of extension that educators continue to meet the rapidly changing needs of the community. In 2020, the COVID-19 pandemic caused a drastic shift in communities that continues to impact the environment over two years later. Communities face new challenges related to food access and health. Racial and ethnic health disparities that existed prior to the COVID-19 pandemic worsened during this time. Factors that contributed to this were rising unemployment, changes in the supply chain of food, and the increasing costs of foods.

While community needs increased, challenges to reach the community also started to rise. To protect against the spread of COVID-19, employees started working from home. During this transition, educators were adapting to the setting by learning new skills related to technology and balancing family life. Social distancing guidelines meant that traditional in-person programming could no longer occur. The gap created in programming meant that educators were striving to find new ways to immediately help their communities as they witnessed an increasing need for their services.

As a result, many FCS programs transitioned to virtual delivery so that audiences could continue to be reached and the gap in services was minimized. Already existing evidence-based programs were quickly adapted for delivery in a virtual setting. The platforms and resources available varied by program. While virtual nutrition education had been explored prior to the

COVID-19 pandemic, there was no urgency to shift until social distancing guidelines went into effect. As we move forward, the environmental changes that happened due to the COVID-19 pandemic may have lasting cultural changes related to the future delivery of nutrition programming to communities. It is important that this programming is done in a thoughtful, informed, and impactful manner so that current health disparities in communities are not exacerbated. The next section will discuss how cultural-historical activity theory helps to navigate the intricacies of complex learning systems. By looking at how nutrition educators are learning to deliver programming in a virtual setting, we can examine the current situation and make recommendations for the future.

Cultural-Historical Activity Theory

Cultural-historical activity theory (CHAT) is a learning theory that conceptualizes the activity system with the outcome being the learning. Chapter two will highlight the history of CHAT and how the model has evolved over the last 100 years. This chapter will also discuss how this learning theory has been implemented in similar research studies. Chapter three covers the application of CHAT in this study.

History of CHAT

This paper focuses on Engeström's (2001) model of CHAT which he credits to the earlier works of Vygotsky and Leont'ev. In 2000, Engeström promoted activity theory as a framework that addresses the issue that "many boundaries are collapsing in the world of work and, correspondingly, in the conceptual frameworks of research on work" (p. 960). This form of framework is unique in that it looks at learning by doing with the community, also known as activity system, analysis rather than the individual (Engeström, 2000). Throughout Engeström's (2018) studies, he found that literature related to activity theory was developed throughout three

generations of research. This section will discuss the development of the CHAT framework and how it has been applied to research across various disciplines in recent years. Since this research study focuses on the field of education, this paper will highlight research completed within this field that utilizes CHAT as a framework. Specifically, it will be reviewing research with adult educators as the subject of the activity system.

First Generation

The origins of CHAT began with the works of Vygotsky (Engeström, 2018). Vygotsky's primary work in this area occurred in the Soviet Union the 1920s and 1930s (Vygotsky, 1978). During this time, Karl Marx's theory of society influenced the work of Vygotsky (Vygotsky, 1978). Marx's theory recognizes how "historical changes in society and material life produce changes in 'human nature' (consciousness and behavior)" (Vygotsky, 1978, p. 7). The first generation of CHAT was developed around the Vygotsky's idea of mediation (Engeström, 2018). This idea is displayed through a triangle diagram that shows how a stimulus leads to a reaction in an individual (Vygotsky, 1978). Instead of a direct reaction occurring from the stimulus, Vygotsky states that "the structure of sign operations requires an intermediate link between the stimulus and the response" (1978, p. 39). Therefore, "the direct impulse to react is inhibited, and an auxiliary stimulus that facilitates the completion of the operation by indirect means is incorporated" (Vygotsky, 1978, p. 40).

These mediating artifacts were what allowed for culture and cultural artifacts to be brought into learning theory. By using mediating artifacts, it "leads humans to a specific structure of behavior that breaks away from biological development and creates new forms of a culturally-based psychology process" (Vygotsky, 1978, p. 40). Figure 2.1 shows how Vygotsky's

first-generation action triangle (right) along with how it is commonly drawn (left), using the terms subject, object, and mediating artifact.

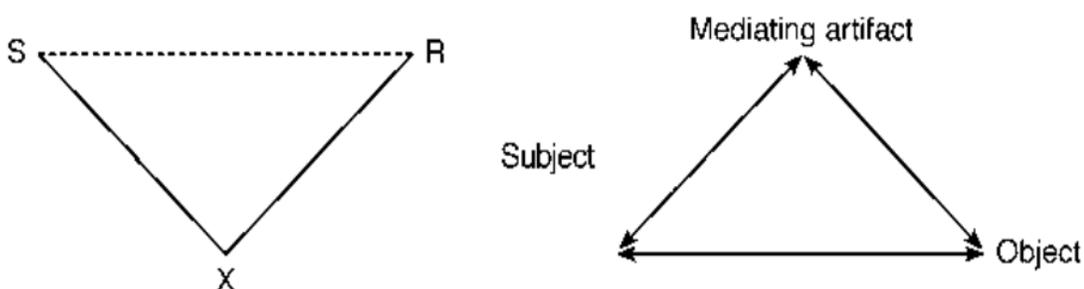


Figure 2.1. First-generation CHAT (Engeström, 2001, p. 134).

Second Generation

Vygotsky worked closely with colleague Leont'ev in conducting experiments related to learning (Vygotsky, 1978). Vygotsky died in 1934 and shortly after his death the government had banned reading much of Vygotsky's work until in late 1950s (Smagorinsky, 2010). Leont'ev continued the work of Vygotsky by expanding the subject of learning from an individual to a collective group (Engeström, 2018; Leont'ev, 1978). In his critique of Vygotsky's work, Leont'ev (1981) states "they expressed an approach to a problem rather than its solution" (p. 254). Smagorinsky (2010) suggests that this continuation of theory split activity theory into two different trajectories with Vygotsky focused on the individual and Leont'ev on group action. Leont'ev (1978) discusses how social interactions shape decisions and actions. For example, he states:

If the individual in given life circumstances is forced to make a choice, then that choice is not between meanings but between colliding social positions that are expressed and recognized through these meanings. (Leont'ev, 1978, p. 94)

Leont'ev's (1981) work highlights how socio-historical factors influence human behaviors, including adding the role of labor into the activity system.

Although Leont'ev developed the theory further, he did not create a graphic to display the changes in the model (Engeström, 2018). To address this need, Engeström (1987) later updated the model to display collective action. Figure 2.2 shows the human activity system associated with the second generation of CHAT and is adapted from Engeström's original model (1987, p. 78).

According to Engeström (2018), from the 1970s to 1990s the second generation of CHAT was starting to be more commonly applied by Western researchers. During the time, “when activity theory went international, questions of diversity and dialogue between different traditions or perspectives became increasingly serious challenges” (p. 48).

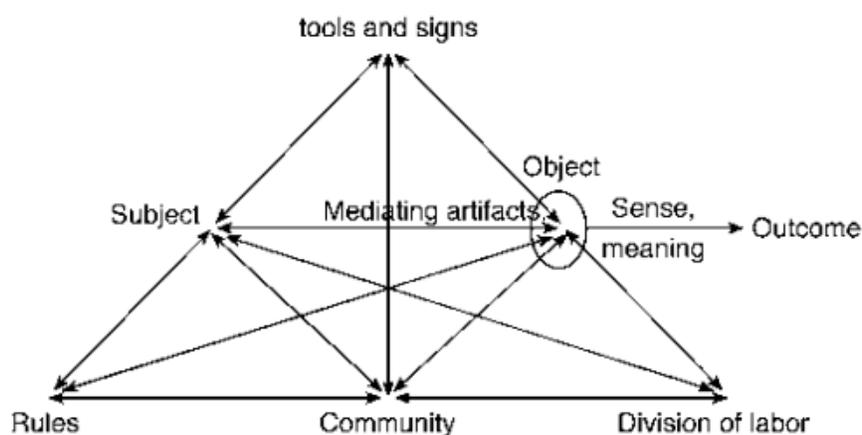


Figure 2.2. Second generation activity theory model (Engeström, 2001, p. 135).

Third Generation

The third generation of CHAT was developed as a way of addressing these challenges and includes a minimum of two activity systems that interact with one another as seen in Figure

2.3 (Engeström, 2018). According to Engeström (2018), the third-generation activity model contains five main principles:

1. the collective activity system serves as the prime unit of analysis;
2. activity systems represent multiple viewpoints and voices;
3. activity system's history shape it's development gradually over time;
4. contradictions or tensions within the activity system promote innovation and change;
5. over time these contradictions and tensions can lead to transformations within the activity system.

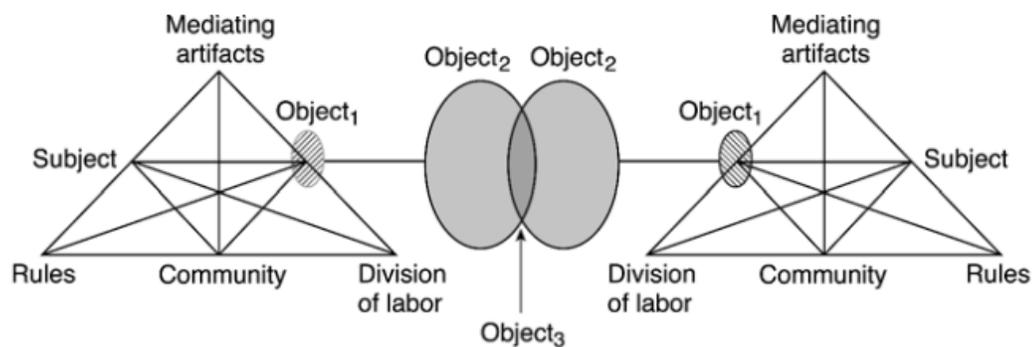


Figure 2.3. Third generation activity theory model (Engeström, 2001, p. 136).

The collective system represents the different voices and perspectives of multiple systems that interact to shape the object. The term object “refers to the ‘raw material’ or ‘problem space’ at which the activity is directed” (Engeström & Sannino, 2010, p. 6). Within these interactions consists varying degrees of tensions, negotiations, and innovations as the subject moves towards to object of learning. Rules, community, division of labor, and tools from the different perspectives all influence this process. And, as time moves forward, these systems change and

evolve. This evolution occurs in relation to contradictions within the system. Engeström (2018) states:

When an activity system adopts a new element from the outside (for example a new technology or a new object), it often leads to an aggravated secondary contradiction where some old element (for example, the rules or division of labor) collides with the new one. (p. 50)

Long term, these contradictions then lead to larger transformations within the activity system. The third generation of CHAT represents how culture, history, and the different elements of the activity system shape learning outcomes over time. In chapter three, this model is applied to the context of this study. The diagram illustrates how nutrition educators (the subject) learn through the process of delivering nutrition education (the object) within the systems of virtual delivery and face-to-face delivery.

CHAT in Adult Education

CHAT has made theoretical contributions to adult learning theory, specifically in relation to applied learning. In adult education, it has been used to extend situated cognition and gives researchers the opportunity to study learning in context. Situated cognition recognizes that learning does not occur in a vacuum. Rather, it is influenced by the context, tools, and the activity itself (Merriam, 2018). Because the context in which learning occurs almost always involves other people, the idea of communities of practice are often included in this theory (Merriam, 2018). This makes it an appropriate choice when looking at learning that occurs within a group that is part of an organization. CHAT provides a specific lens to use when looking at learning as it occurs in a specific context and with a specific group of people as the subject. For example, activity theory can be used in research as a lens for analyzing qualitative data.

Within the adult education setting, CHAT has been used in both qualitative (Ramanair, 2016) and mixed methods research designs that look at teacher education (Mwalongo, 2016). The research questions of many of these studies were focused on where contradictions or challenges occurred within the activity system specifically related to the integration of new technology (Lewin et al., 2018; Marwan & Sweeney, 2019; Ramanair, 2016). For example, Marwan and Sweeney (2019) aimed “to investigate the contradictions related to teachers’ integration of technology into their English teaching practice” (p. 118). In contrast, Mwalongo (2016) focused on the positive outcomes within the activity system specifically looking to answer the research question “what are student teachers’ perceptions of effective ways to promote critical thinking through the use of asynchronous discussion forums?” (p. 22).

Concluding Discussion

Nutrition educators within extension continue to adapt to the changing needs of the community. The COVID-19 pandemic has increased the needs of food and nutrition programming in the community to help those impacted by rising rates of hunger and malnutrition. As delivery models change for future programming, it is important that they reach the needs of the community and contribute in a positive way. The traditional system of face-to-face programming was developed to reach the entire population, especially those that are already experiencing health disparities related to social inequities. Changing the system through using new delivery methods could impact populations differently depending on access to internet and technology. It is important that the delivery method does not result in the exclusion of any already vulnerable population.

As educators navigate the implementation of programming using new technology related to virtual education, they are learning together. Socio-historical factors related to the context

influence the delivery of programs and can be captured with CHAT. If developed carefully, there is potential for the virtual format of delivery to help expand the future reach of extension due to its flexibility in delivery and the increasing access of technology. This new trend in delivery is already being seen as extension moves out of pandemic restrictions and educators choose between the different methods of delivery. Moving forward, understanding how both the traditional face-to-face activity system and the virtual activity system work together in the delivery of nutrition education can help to inform what should continue with virtual programming in the future and what could be improved.

CHAPTER THREE: RESEARCH DEVELOPMENT AND METHODOLOGY

Introduction

This qualitative single exploratory case study investigates and provides an in-depth analysis of nutrition educators' perspectives on the delivery of virtual nutrition education in Southeastern State Extension. The CHAT framework used in data collection and analysis explores the system that influences nutrition educator's delivery of virtual programming. A single case study was chosen because it provides the opportunity to explore the depth of the activity system related to nutrition programming in a southern region state (Merriam & Tisdell, 2016). This chapter presents an overview on the methodology, research design, data collection, analysis, and rigor.

Research Design

Purpose and Research Question

Little research exists on the delivery of extension nutrition programming with adults in a virtual setting. The recent increase in virtual program delivery provides a unique opportunity to expand literature in this area. The purpose of this exploratory qualitative case study is to gain insight on how extension nutrition educators in a southern region state navigate the delivery of adult virtual programming. The following research question guides this study:

How does the recent shift to a virtual teaching environment influence nutrition educators' experience with the delivery of adult nutrition education?

Statement of Positionality

As a qualitative researcher, it is important that I recognize and regularly reflect on my own construction of reality and acknowledge that implicit biases I hold. I have lived most of my life in a suburban community in the Midwest. I moved to the South for the opportunity to work

with Extension because I felt the organizational values aligned well with my personal values.

While living in the South, I have lived in both rural and urban communities which has increased my awareness of how location can impact access to resources and the community culture.

Having worked with Cooperative Extension for eight years in the Southeastern region of the U.S., I have formed trust and rapport amongst my colleagues and consider myself to be an insider to the population I am studying. I believe this is beneficial to the study because participants may be more likely to share detailed information due to this connection. I am already aware of the unique technical aspects of work and the intricacies of the organization.

As a past Family and Consumer Sciences Agent, I have worked in the context of three different counties and I bring an insider perspective to the study. This relationship between participants and myself aligns with the constructivist nature of inquiry (Guba & Lincoln, 1994). I am very passionate about my work in the community and have experienced frustration when merging theory related to teaching nutrition education into the context of the community. I feel this frustration stems from the highly positivist/postpositivist epistemological view traditionally held in the field. I found that this paradigm of thought influenced my approach when starting as a new professional and then quickly realized how the intricacies of the context and social aspects influenced outcomes. My view on my role in nutrition programming shifted when I learned about the constructivist worldview and learned from other fields that are also invested in this work. For instance, instead of presenting programs to participants of what they “should do”, I started working with communities to have their input and experience help guide the direction of my work. These new learning theories based in constructivist thought help to guide that process.

Because of my desire to merge theory to practice within the field, I changed careers during graduate school. Recently I started programming at the state level with SNAP-Ed as an

Extension Associate. This position has allowed for me to see the activity system involved in nutrition education from a different perspective as a state level program planner, becoming more aware of the different federal and state policies that shape program delivery for SNAP-Ed.

Nutrition curricula are developed at the state level and implemented by county extension educators. Because of the varying contexts of counties, each of us have different experiences in program delivery. In my role as an agent and educator in three different rural counties, I have learned to understand how the various contexts throughout the state can facilitate and inhibit the delivery of programming; programming is often highly influenced by local politics and resources available within the community. Through this position, I've also experienced the shift of programming during the COVID-19 pandemic. While I found it to be stressful and filled with uncertainty, I also really enjoyed the opportunity to work remotely and apply new skills. I became hopeful that this experience would encourage the organization to transform to better align with current technology and become a more creative culture. As someone without children, I recognize that the experience I had with making this shift differed from those that were also finding a new balance related to their family roles during the pandemic.

I believe the organization has done it's best to shift contexts quickly in a short amount of time and work collaboratively. This excites me because it allows for us to quickly advance in our model of innovation and programming by offering virtual opportunities. However, I also recognize the value of gaining insight from various educators to help ensure that this delivery method of programming still reaches and benefits audiences as intended. I believe nutrition educators serve as a valuable resource in understanding what practices need to be continued in the future and what practices may need modification to improve. I have personal vested interest in this study because I feel Cooperative Extension is a valuable resource to the community and

that this unique circumstance has brought as an opportunity to learn to and grow in our approach to programming. I value how Cooperative Extension has the potential to continue to link research to practice due to its connections to the university and local communities.

Inquiry Worldview

This study is based on a constructivist worldview that acknowledges that the reality of the individuals being studied is developed through social interactions, culture, and history (Guba & Lincoln, 1994). Each educator in this study brings unique perspectives that are shaped through generational differences, geographic location, educational level, education background, and personal world-views. In addition, the populations that they serve and community needs vary between counties and these components also shape perspectives. This case study is specific to the context of a state in the southern region of the U.S., although within this state additional sub contexts occur geographically. This study highlights the learning that occurred within this group of educators as they shifted to the virtual delivery of nutrition education and how that learning will potentially shape the future of extension program delivery. To reflect the intricacies of this process within different communities, multiple educators' perspectives on the experience of delivering virtual nutrition programs are taken into consideration.

Theoretical Framework

This case study explores nutrition educators experience with delivering virtual nutrition education. By changing from a face-to-face to virtual environment for delivery, other dimensions within the context of learning are affected. Therefore, a learning theory that captures the entire system in which learning occurs is needed for this study. The third generation Cultural-Historical Activity Theory (CHAT) is an appropriate choice for a framework because it highlights how we

learn by doing things in a situated context. For the purpose of this study, this framework is applied in the formatting of data collection and data analysis.

Aligning Interviews with CHAT Categories

Participants were asked to think about their experience with delivering virtual nutrition programming, where contradictions occurred within the system, and whether it functioned as a barrier for delivery or if innovative solutions have been adapted to overcome this tension.

Interview feedback was coded based on a scheme aligned with CHAT categories. For instance:

- **Tools:** program curriculum, food demonstration videos, pre-recorded lessons, email, Zoom, social media, and additional web platforms used to enhance teaching strategies and facilitate communication
- **Subject:** Nutrition Educators
- **Rules:** guidelines nationally from USDA, guidelines from state to nutrition educators, county government policies, explicit and implicit community norms, explicit and implicit organization norms
- **Community:** state associates, organizational partnerships, other county educators
- **Division of Labor:** Extension's structure – roles of state specialists, county directors, advisory councils, and county educators
- **Object 1:** Face-to-face nutrition education
- **Object 2:** Virtual nutrition education
- **Outcome:** Nutrition program delivery

CHAT Categories Working as a System

Figure 3.1 demonstrates how the categories listed above work together as a system. This framework allows for the researcher to study the movement from subject to object. In this

process, exploration of other factors within the system that influence this movement occurs. These additional factors included tools, rules, community, and division of labor. The subject in this study was the nutrition educators. The object varied depending on the activity system. Traditionally, this object has been face-to-face programs. However, as the context shifted the object became virtual nutrition education. Both objects share the same outcome which is delivery of an adult nutrition program.

As the nutrition educators move towards the object, they are influenced by their environment. Extension has a unique environment that tends to have a hierarchal division of labor and high sense of community. Since it is a government funded organization, the highly bureaucratic nature of program delivery means that many times specific rules exist for the educators to follow. Specific examples of each category of CHAT are included in the diagram below. However, they are not limited to the examples given and other examples arose during the interview process.

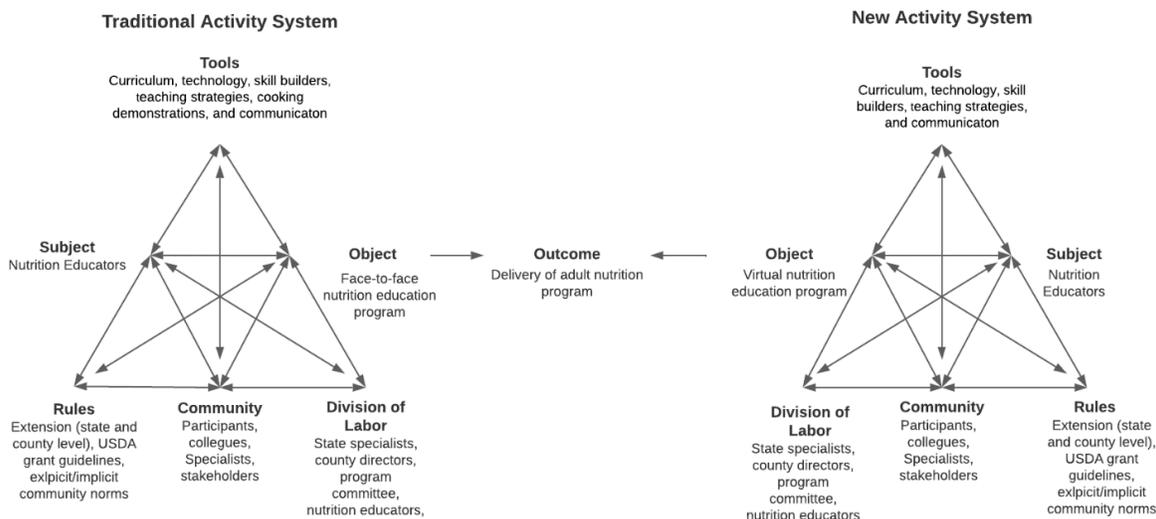


Figure 3.1. Activity system model adapted to context of study.

Note. Adapted from Engeström's model (1987, p. 78).

Using this model provided participants with the opportunity to highlight how the unique context in which they work influences their delivery of virtual nutrition programming. Although the subject remains the same in both models, this format captures how the educators are operating within two different systems that ultimately both impact the delivery of nutrition education. Documents related to the areas of rules, tools, and division of labor will be gathered to enrich the data gathered through interviews.

Qualitative Design

The research design for this study is a qualitative design. In alignment with the CHAT framework, this design takes a constructivist approach which “assumes that reality is social constructed” (Merriam & Tisdell, 2016, p. 9). The population of focus for this study, nutrition educators, share certain cultural, historical, and social norms associated with Southeastern State Extension. By using this method of research, the realities of nutrition educators can be explored through interviews and program impact summaries that capture their perspectives related to the delivery of virtual nutrition education (Guba & Lincoln, 1994).

Case Study Method

Case studies contribute value to the field of education because they produce context-dependent knowledge (Flyvbjerg, 2006). Flyvbjerg (2006) argues that context-dependent knowledge is practical and concrete and therefore serves more value in social sciences research in comparison to predictive theories. In addition, a single case study approach is common in applied fields because the topic is relevant to the specific work setting (Merriam & Tisdell, 2016). Merriam and Tisdell (2016) define a case study as “an in-depth description and analysis of a bounded system” (p. 37). For this case study, the CHAT framework will help to establish and define the boundaries of the system being studied. The system or “what” in this case study is

adult nutrition educators' experience working within a specific state extension located in the southeastern region of the United States. The results of this research can be used to directly inform the development of future virtual nutrition education programs developed and delivered through this state's extension.

One major criticism of using a case study methodology is the lack of consensus amongst methodologists in regards to best practices for design and implementation (Baškarada, 2014; Yazan, 2015). To address this concern, the approach used for this study will primarily align with the works of Merriam due to the constructivist nature of her approach. Merriam's approach has five stages of design: "conducting literature review, constructing a theoretical framework, identifying a research problem, crafting and sharpening research questions, and selecting the sample (purposive sampling)" (Yazan, 2015, p. 149). Different categories and classifications of case studies exist and are dependent on the purpose of the study (Baškarada, 2014). There is little literature that currently exists related to this paper's research topic. Therefore, an exploratory case study is used because it allows for the exploration of knowledge which at this current time is not clearly defined (Baxter & Jack, 2008).

Data collection

Site and Participant Selection

The following section outlines the procedures taken to gather data relevant to the research question.

Site selection. This study was open to Southeastern State Extension's Family and Consumer Sciences Agents who deliver nutrition education. By focusing on the entire state as the setting for this case study, an in-depth analysis of aspects unique to this organization is explored. Adding other states to the study was considered, however programming and

organizational structure varies between states and there is a risk of losing important details related to the context of delivery when generalizing to a larger context. With the CHAT framework, it important to gather the intricacies of the context. To ensure that the entire state is represented in this study, recruitment focused on drawing participants from all five districts of the southern state. These districts represented the following regions of the state: west, north central, south central, northeast, and southeast. Interviews with nutrition educators across the state were conducted via Zoom.

Participant selection. Study participants were comprised of Family and Consumer Sciences (FCS) Agents with Southeastern State Extension and selected through purposeful sampling. There are an estimated 70 FCS Agents statewide. A summary of participant selection procedures can be found in Table 3.1.

Table 3.1. Process for participant selection.

Selection Element	Research Criteria
Inclusion Criteria	<ul style="list-style-type: none"> • Teach nutrition education • Have worked with Extension for a minimum of 3 years
Target Sample Size	<ul style="list-style-type: none"> • Ten to fifteen educators
Recruitment	<ul style="list-style-type: none"> • Email through FCS state listserv

Specifically, criterion sampling was used. According to Patton (1990), this type of sampling should be used “to review and study all cases that meet some predetermined criterion of importance” (p. 178). Not all FCS Agents teach adult nutrition education. To qualify as a potential participant, the inclusion criteria was agents must teach adult nutrition programming

and have worked with Southeastern State Extension for a minimum of 3 years. Email invitations were sent through the FCS state listserv (see Appendix B). Because of higher rates of job turnover in recent years, the population being studied study has become a niche group. For this reason, all participants that express interest in the study will be invited to an interview through Zoom.

Fifteen educators participated in the study and represented the five districts across the state (see Table 3.2). One educator chose to drop out of the study prior to the interview taking place. This number of participants is within the goal of ten to fifteen, which was based off the current number of educators while taking into consideration the recent high rates of retirement and turnover of these positions. According to Patton (1990), this approach to sample size aligns with qualitative research because qualitative research is judged on context rather than generalizability. In addition, Fusch and Ness (2015) discuss how data saturation is different for every study and dependent of methodology. Rather than focusing on sample size for data saturation, the focus should be on richness and thickness of data (Fusch & Ness, 2015).

Table 3.2. Participant location.

District	Number of educators
Northeast	2
Southeast	3
North Central	3
South Central	5
West	2

Data Collection Strategies

Interviews and documents. Semi-structured interviews were conducted virtually through Zoom. Interviews with participants provided a total of 19 contact hours and took place as safety precautions related to COVID-19 were lifting. The interviews were recorded in Zoom and audio recordings were transcribed for analysis. In addition, documents were collected for analysis. Documents were chosen to align with the components of Engeström's (2001) CHAT model. These documents included virtual curriculum implementation guidelines and resources for four statewide adult nutrition programs. The curriculum guides serve as auxiliary documents because they reinforce what was discussed by educators but do not represent the experience of educators. Auxiliary documents add value to the data but are not the primary focus of the study (Merriam & Tisdell, 2016).

In addition to this, program impact summaries on virtual adult nutrition education classes reported by all nutrition educators in Southeastern State Extension's Extension Reporting System from 2020 – 2022 were collected. A primary document source is one "in which the originator of the document is recounting firsthand experience with the phenomenon of interest" (Merriam & Tisdell, 2016). The program impact summaries serve as primary data sources because they were written and submitted by the educators. These stories highlight various programs delivered by nutrition educators and were created to with the intention to share program successes with stakeholders. A search was be done that gathered all stories related to virtual adult nutrition programming that occurred between March 2020 and September 2022 for a total of 43 stories.

Interview protocol. A semi-structured guide was used to guide the interview (see Appendix C). The interview was conversational in style to promote self-authorship of

participants (Baxter Magolda & King, 2007). The guide was designed so that components of CHAT will naturally arise from conversation. However, prompts were included in the guide to help guide conversations in this direction if needed. The semi-structured format allowed for follow-up questions to be asked if necessary to gain richer data based on participant responses. These follow-up questions were worded based on the language used by the interviewee to elicit a more authentic and neutral response (Roulston, 2018). The structure of the interview guide is reflective of Roberts (2020) guidance for novice researchers. The first section consisted of orienteering questions which “conveys to the research participant the researcher’s expectations as well as respect for them and their role within the process” (Roberts, 2020, p. 3192). The following section consisted of the main questions which started off broad and then became more focused. Follow-up probes to these questions were based on Engeström’s (2001) second generation CHAT model categories. Specifically, the questions focused on educators’ perceptions of how tools, rules, division of labor, and community influence the nutrition educator in the process of virtual program delivery. There was no time limit to answering prompts.

Data Handling

Data management and security. To ensure security of interviews, the computer used during the interview process was connected to NCSU’s VPN. The next step was to log into the NCSU Zoom platform before starting the interview. Zoom video recordings and automatically generated transcripts from the interviews were used for analysis. Because minor errors are common in the automatically generated interview transcripts, they were edited to ensure accuracy. This was done by playing the recording of the interview on one screen while editing the transcription documents on a different screen. Two copies of transcripts were kept. One on a home computer with password protection and the other as backup on an external hard drive that

is password protected. All participants were given a pseudonym and all identifying factors of participants were removed from transcripts. Zoom recordings are kept on the cloud associated with NCSU Zoom and are automatically deleted after 1 year.

Data analysis. ATLAS.ti was used to organize all data, including the interview transcripts and supporting documents, for the coding and analysis process. Miles et al. (2014) *Qualitative Data Analysis A Methods Sourcebook* was used to guide the coding process and formation of a network display for data analysis. Using a constructivist lens when analyzing the data helped focus the data on participant perspectives in the interview transcripts and program impact summaries. Using this lens also helped in capturing how these perspectives evolved over time as cultural and social norms shifted to adapt to a more virtual world.

Coding strategies. Prior to starting the coding process, the first step of analysis consisted of reading through the data and writing memos on initial thoughts and questions that naturally arose. Following this step, data was analyzed by framework coding. Framework coding was based on the theoretical framework of CHAT using a priori codes based on the six categories of CHAT: community, division of labor, subject, object, rules, and tools (see Appendix D). Following this, a second round of open coding for each category allowed for themes within each category to emerge. Finally, these categories and themes were made into a network display using the CHAT framework so that the holistic activity system working together is represented in the discussion.

Rigor

Trustworthiness. Krefting (1991) discusses four important components to address rigor in qualitative research: credibility, transferability, dependability, and confirmability. Having an insider perspective is a strength because the close rapport that already existed led to more honest

feedback in interview questions and thus increased credibility. However, this close relationship also had potential to be a threat if the subject responded with what they thought was the preferred social response. To prevent this, it was important that participants understood the confidentiality of the study so they could speak openly about their experiences. Triangulating data also helped in building trustworthiness. The triangulation of data strengthened the findings by increasing both credibility and confirmability. To enhance transferability, a rich description of participants and the study's context were provided.

As a researcher, I hold a level of power in sharing the experiences of participants with stakeholders that fund and support the role of nutrition educators across that state. Because of this there is a degree of risk if the narrative of educators does not align with the rules, policies, and procedures in place. Because of this, it is my ethical responsibility as a researcher that I acknowledged this power and assured them of confidentiality and their rights as participants in the study.

When coding and analyzing data, I periodically reflected on my personal biases and how these influenced my thought process. Merriam and Tisdell (2016) specifically mention the importance of thinking through how one's positionality, and social location shapes the interpretation of data and then taking steps to guard against this bias. This reflection and thought process has been recorded in the memos created through ATLAS.ti and referenced when I considered study limitations. In addition, I worked closely with my chair to gain additional perspective and feedback on the coding process.

Triangulation. Data triangulation occurred through the comparison of interview results to relevant documents. Data triangulation was used because the question being investigated is complex in nature. This is necessary to yielding higher quality because,

“When seeking to answer complex questions concerning the quality, implementation, outcome and impact of a programme, the ability to draw from multiple inputs can provide a wider range of information and a significantly broader insight into the issues underlying the complex questions.” (UNAIDS, 2010, p. 25)

The program impact stories that represent educators’ experiences with virtual delivery statewide adds to the credibility of the data collected through the interviews because major themes within both sources aligned. The auxiliary document analysis for this study falls into two categories of Engeström’s (2001) CHAT model: rules and tools. These documents include the virtual program delivery guidelines for four statewide adult nutrition curricula. Comparing what is being shared by nutrition educators to the written rules helps to strengthen findings related to contradictions within the system. For example, if what was being reported as a barrier or contradiction within the activity system has a written policy or rule that relates to it, it was examined in greater detail. This helped in making recommendations on changes for future improvement.

Member Checking. Because the paradigm of this study is based on social constructivist thought, it recognizes that realities are constructed based on interactions with others and cultural norms (Guba & Lincoln, 1994). A case study is an appropriate approach because it recognizes the context and perspectives that shape these realities (Creswell & Miller, 2000). It highlights how the knowledge of this group that has been influenced by local history, culture, and social learning through rich description. Member checking was used so that participants were given the chance to make sure that these descriptions were accurately represented in the interview transcripts. Member checking was done by sharing the transcripts with participants to review and make corrections or clarifications to their responses if desired. Corrections made as a result of

member checking were minor and related to specific details educators were unable to recall during the initial interview.

Study limitations. The design of this study has its limitations. One of the strengths of Engeström's (2001) third generation of CHAT is that it highlights multiple voices impacted through learning. As educators move towards the object, the delivery of programming, others are learning with the educators. This learning is influenced by additional groups such as program participants and program developers. Including these voices directly in future studies would help to capture even more detail related to the delivery of virtual nutrition programming.

This study features educators' experiences with the delivery of nutrition education. Although the program has been delivered, this study does not measure how effective virtual nutrition education is in creating behavioral changes. As was discussed in the significance of the study, it is important to make sure that programs are creating positive impacts in the community and not contributing to negative unintentional consequences due to poor delivery. Therefore, it is important to note that although delivery is an important component, other areas related to the program planning model of adult education should be considered in future research.

Study strengths. One strength is that the system view of CHAT allows for learning to be studied within the context it occurs. Learning occurs by doing activities together, and the CHAT framework captured this dynamic in the data and findings. The results are practical and can be applied to improve future practice within the field as nutrition educators continue to learn through the delivery of virtual nutrition programs.

Another related strength of this research is my past personal experience as a Family and Consumer Sciences Agent. This experience helped me to understand the nuances of the position and allowed for participants to provide detailed answers. Because this field encompasses a

variety of programs and program areas, my knowledge helped to ensure that the conversation remained relevant to the research topic and helped in gathering rich data specific to the context.

Summary

This chapter described the qualitative research design for the study. Data was gathered through virtual interviews with extension nutrition educators that are delivering virtual adult nutrition programming. These interviews occurred as safety precautions started to lift and nutrition educators were starting to navigate a new way of programming. In addition to interviews, program impact stories and curriculum delivery guidelines were gathered to help strengthen the credibility of the data from interviews. CHAT was used as the framework for data collection and for the data analysis.

CHAPTER FOUR: RESEARCH FINDINGS

Introduction

In March of 2020, the COVID-19 pandemic resulted in the implementation of public safety measures that limited face-to-face interaction. As a result, everyone was shifting to a highly virtual environment to stay connected. In Southeastern State Extension, educators responded to this need by abruptly changing delivery of adult nutrition curricula from face-to-face to virtual. This chapter discusses the study's research findings and highlights nutrition educator's perspectives on the delivery of virtual nutrition education in Southeastern State Extension. At the time the interviews took place, many of these public safety measures were being lifted and educators were holding a mix of in-person and virtual programs.

This chapter starts by providing a brief narrative of each participant. Following this section will be a brief overview of the CHAT framework. This framework guided analysis to explore the system that influences nutrition educator's delivery of virtual programming. The final section presents the research findings which include excerpts from the educator interviews along with supporting text from educator program impact summaries and statewide virtual curricula guidelines.

Profiles

A total of fifteen nutrition educators participated in semi-structured interviews. Participants educational backgrounds were in the areas of Health Education, Nutrition and Dietetics, Early Childhood Education, Public Health, and Family and Consumer Sciences. Participants had varying levels of experience working with Southeastern State Extension with a range of four to almost twenty years with the organization. While majority of participants only taught programs in English, some participants were bilingual and taught programs in both

English and Spanish. Curricula taught by educators is unique to the needs of the county they serve. While all educators have had the opportunity to be trained in the delivery of the four adult nutrition curricula that are focused on in this study, actual teaching experiences related to these varies amongst the educators. All participants have taught various programs in both in-person and virtual settings. The following section highlights each educator's unique situation by describing their background with extension and then how they shifted to virtual program delivery.

Crystal

Crystal started her career working for a county health department. In this role, she often partnered with extension and was attracted to the classes she saw being taught by the Family and Consumer Sciences (FCS) Agent with Southeastern State Extension. She especially valued how extension classes could be customized to the county based on the needs. As a current employee of Southeastern State Extension, she is grateful for the organizational support she receives. She describes her connection to the University as valuable and views the state-level programs as relevant to her community. Within her time with extension, she has developed strong volunteer support and the rural community within her county knows her well. She has experience in teaching all four adult nutrition education curricula in-person and has delivered a couple of the curricula in a virtual setting.

Looking back to the start of the COVID-19 pandemic, she viewed Southeastern State Extension as ahead with technology in comparison to other organizations, but she also feels they were behind where they needed to be. Currently, she feels extension is better prepared to adjust programs to a virtual environment because of the numerous tools now in the organization's toolbox. Other educators inspired her when making the shift to virtual programming. Having

years of experience with in-person programming, she is thankful that this shift pushed her out of her comfort zone to learn the technology needed for virtual programming. Going forward she sees the option of virtual programming as a helpful tool for her to reach more people and has programs planned in this format for the upcoming year.

Carly

Carly has worked with Extension for over a decade and serves a rural community. She really enjoyed the switch to virtual programming because it was a challenge, allowed for greater work-life balance, and offered opportunities to be creative. She feels that both in-person and virtual programming offer value to the community she serves. She has experience teaching a variety of adult nutrition program curricula in both in-person and through virtual settings.

She often works with teams of nutrition educators in surrounding counties and finds that this is the primary form of support she has when implementing programs virtually. She plans to continue to offer programming in both formats in her county. She currently has mostly in-person programs scheduled but also plans to work with neighboring educators to deliver a virtual program together in the upcoming months.

Tonya

Tonya started with Southeastern State Extension working with youth programming. She has been with the organization for over 25 years. It was through her work with youth that she learned about the FCS Agent position. When the position in the rural county where she was working became open, she applied and was hired as an FCS Agent. Prior to COVID-19, she delivered a couple of the extension adult nutrition curricula in-person. She currently is in graduate school and feels she can apply and understand what she learns in class to her programming within the county.

She felt her experience and skills with technology prior to COVID-19 were very limited. When shifting to virtual programming, she preferred to use her own educational programs that she developed in partnership with neighboring nutrition educators over the statewide curricula that was available. She really enjoyed the ability to be creative with these programs. She learned the most in shifting to virtual through other nutrition educators and other program area educators in her county. She describes herself as being cautious when she learns new technology. She sees there is a place for components of virtual programs, such as videos, in extension in the future. Moving forward, she does not plan to continue to teach virtual programs.

Bethany

Bethany started as an agent in a different program area before becoming an FCS Agent and has worked for Southeastern State Extension for almost 20 years. She was interested in changing positions to FCS because of the opportunity to work with older adults. She also felt that FCS programming allowed for greater work-life balance when raising a family. She has taught adult nutrition extension curricula both in-person and virtually. Most of these curricula were developed by the extension state team. To better meet community needs, she also utilizes curricula from other state extensions.

The biggest challenge she faced in teaching virtually was managing family needs due to working from home with children in school. This shift was a major learning curve, but one that she felt was necessary to stay connected to the community. She was not afraid to make mistakes as she became familiar with different technology and utilized a variety of resources offered by extension and outside of extension to help her learn. She plans to continue to offer both virtual and in-person programming in her rural community in the future because she feels it allows her to better balance her time, reach, and community needs.

Leslie

Leslie started with extension about ten years ago and originally worked in a different program area. She originally found out about extension through her family's involvement in local agriculture but was not aware of the FCS Agent position until she started working with Southeastern State Extension. She was drawn to the position because it allows her to work in the areas of nutrition, family, youth, and local foods. Her values align with extension's organizational values of extending research-based knowledge to communities through education. Most of her programming utilizes adult nutrition extension curricula. However, she does create her own programs to meet the additional needs of the community.

To help make the transition to virtual learning, she utilized skills she had developed prior to COVID-19 when delivering professional trainings on a virtual platform. She also frequently utilized resources available through the university IT department. Within her rural county office, she was the leader in making this transition to virtual programming. In the future, she sees virtual programming as a method to continue to reach populations with incomes below the federal poverty threshold.

Patricia

Patricia started her career in nutrition working with the health department before joining Southeastern State Extension as a program assistant. She still considers herself new to the organization. She has about five years of experience with teaching adult nutrition curricula both in-person and virtually. She works in one of the few urban counties across the state.

Because many positions outside of extension were experiencing layoffs during COVID, she felt motivated to show her worth and ability to work in a virtual setting. As she shifted to virtual programming, her biggest support was state level extension staff and trainings. Working

with other nutrition educators also helped her in classroom management in the virtual setting. Moving forward, she plans to offer community partners the choice of virtual, in-person, and hybrid for program delivery.

Erika

Erika started with Southeastern State Extension as a program assistant before becoming an FCS Agent. In total, she has been with extension for a little over fifteen years and describes herself as a seasoned agent. In her starting position, she worked very closely with the FCS Agent. At first, she did not want to move into an agent position, but overtime with support and encouragement she decided to apply for an FCS Agent position in a rural county. In this position, she has taught a variety of extension adult nutrition curricula in-person.

During the shift to virtual, she shifted away from the state curricula and preferred to use programs that she created with other nutrition educators because it allowed for her to tailor the programs to current community needs and requests. She had experience prior to COVID-19 with video-based nutrition education which helped her in making the shift to other methods of virtual education. Although she plans to offer future programs primarily in-person, she does plan to continue to film videos and feels the virtual option is a tool available if the need arises. She fears that if extension does not embrace technology moving forward, they will fall behind in providing what the communities need.

Shelby

Shelby started her career working with the local health department. In this role, she frequently partnered with the FCS Agent to deliver community programs. When the FCS Agent position became open in her rural county, she decided to apply because it allowed for her to

focus on nutrition education. She has worked for extension for just under 5 years. She has taught extension adult nutrition curricula in her county both in-person and virtually.

Since she was still relatively new to her role, she proceeded with caution when starting to learn how to teach in a virtual setting. She learned through watching others, using guides, and hands-on learning of virtual tools. During this time, she was also attending online graduate school and learned about various tools and methods she could apply to teaching virtually in the community. In the future, she sees herself mostly teaching curricula-based programming in-person unless the community partner requests virtual. However, she plans to continue to do one-time virtual programs that she creates and designs.

Teresa

Teresa started her career with Southeastern State Extension working as a program assistant. She was excited to become an FCS Agent because it offered her the opportunity to teach a greater variety of programs to her rural community. She has now worked with extension for just over ten years. She has delivered a variety of extension adult nutrition curricula in-person and virtually.

While she did not enjoy the shift to virtual programming, she did recognize it was a chance to be creative in programming. She felt comfortable with virtual platforms during the shift to a virtual teaching setting because she had prior experience using the platforms as a learner during professional development trainings. While she finds that teaching in a virtual setting requires less preparation on her end, she still prefers to teach in-person programs. Despite this preference, she plans to continue to offer virtual programming in the future because she feels it sets extension apart from similar community organizations.

Amber

Amber became an FCS Agent because she was interested in providing nutrition education but did not want to become a Registered Dietitian. It was through interning with extension that she learned about this position. She has worked with Southeastern State Extension in a rural county for almost five years. She has only taught extension adult nutrition curricula virtually but has plans to teach them in-person in the future. Prior to the shift to virtual, she mainly focused on teaching shorter in-person programs.

She describes her transition to virtual teaching as self-taught. She currently feels fatigue and lack of motivation to use technology due to lower community participation within these programs. As a result, she has returned to in-person programming. She does have one hybrid regional program planned and sees value in being able to offer the option of virtual programs if needed.

Carrie

Carrie started her career as an educator for the local health department before applying to an FCS Agent position. She has now worked with Southeastern State Extension for about 5 years. She has taught a variety of extension nutrition adult curricula to her rural community both in-person and virtually.

More experienced nutrition educators in surrounding counties helped her in making the shift to a virtual setting along with training offered through state extension IT. She describes her learning to shift to virtual as learning by doing. Moving forward, she sees virtual and hybrid programming as a way to accommodate community needs in the future. She has no virtual programming planned but hopes to utilize her office's high tech kitchen space to offer virtual programs to different community partner sites

Monica

Monica wanted a position as an FCS Agent with extension and the opportunity to work with communities. She has been with Southeastern State Extension for under 5 years and is new to the region where her rural county is located. She has more experience with delivering extension adult nutrition curricula in a virtual setting rather than in person. She enjoyed using technology with programming.

Prior to COVID-19, she was creating virtual education content which helped her in making the shift when COVID-19 precautions went into place. She felt the technology platforms in combination with the already developed curriculum and tools helped her in making the shift easily. However, she feels her most successful virtual program was one she created in partnership with another agent. She also enjoyed the opportunity to partner with other nutrition educators to lessen the workload because it allowed her to offer a greater variety of programs. She sees virtual programming as valuable in the future and has plans to implement some programs virtually this upcoming year. She envisions extension offering on-demand online programs in the future as an option for communities.

Maria

Maria started her career working in a different sector of nutrition. She described this setting as one that was not right for her and started looking into other positions. That is when she discovered the FCS Agent position with Southeastern State Extension. When the position became open in her suburban county, she quickly applied. She has been in this role for about five years and loves working with people and feels energized in this role. She has taught a variety of extension adult nutrition curricula both in-person and virtually.

She felt the state-level staff at extension were very supportive in taking the tools already available to nutrition educators and adapting them to help educators with virtual delivery. As far as learning how to deliver programs in this setting, she relied primarily on neighboring nutrition educators for guidance. She does not enjoy virtual programming because she feels it is difficult to build relationships with participants. Moving forward, she plans to offer mostly in-person programming. She has plans to offer a hybrid program with neighboring nutrition educators in her region this upcoming year.

Kayla

Kayla knew about extension for a while through her family's involvement in local agricultural. She interned with extension in college and then decided to take a position within a different sector of FCS. When the opportunity came up for her to be an agent in her county, she applied for the FCS position. She really enjoys the ability to partner FCS and Agricultural work through the organization. She has offered extension adult nutrition curriculum in a virtual, in-person, and hybrid setting.

Prior to COVID-19, she was comfortable with technology such as Zoom and finds she is quick to learn new technology. She prefers using curricula developed by the university because all the materials and tools needed for delivery are provided. Recently, she has shifted to teaching most programs in-person but has plans for a hybrid program in the future to help work around a scheduling conflict. She sees virtual programming being a tool extension will continue to offer to communities.

Wendy

Wendy describes herself as a people person. She started her career working within a different sector of nutrition and soon discovered she wanted a job that allowed her to stay

connected to clients. She started with Southeastern State Extension as a program assistant and has worked with the organization in a suburban county for over ten years. She has taught a variety of in-person and virtual extension nutrition adult curricula.

The shift to using virtual delivery methods was easy for her because her prior work position gave her experience with virtual nutrition programming and she was already utilizing this skill in extension prior to the COVID-19 pandemic. In addition to this, working with other nutrition educators and training through extension and professional organizations helped her to adapt the programs to a virtual setting. Her plans are to continue to offer both virtual and in-person programming. She hopes that future programming can be delivered in-person with the option for people to join virtually if it works better for their schedule but feels she currently does not have the capacity to do this.

CHAT Framework

Cultural-historical activity theory (CHAT) captures the holistic system in which program delivery occurs. In this study, this framework was used to look at how nutrition educators at Southeastern State Extension share the activity of learning to deliver nutrition education programming in a virtual setting. Southeastern State Extension's nutrition education programming existed prior to this shift to a virtual environment. Its rich history and established dynamic meant that online delivery of nutrition education wasn't just a new way of learning, it was a change within the learning system and community itself. The different categories within the system related to the traditional and virtual systems shape this delivery and are highlighted through the framework. Figure 4.1 provides an overview of how these two activity systems interact.

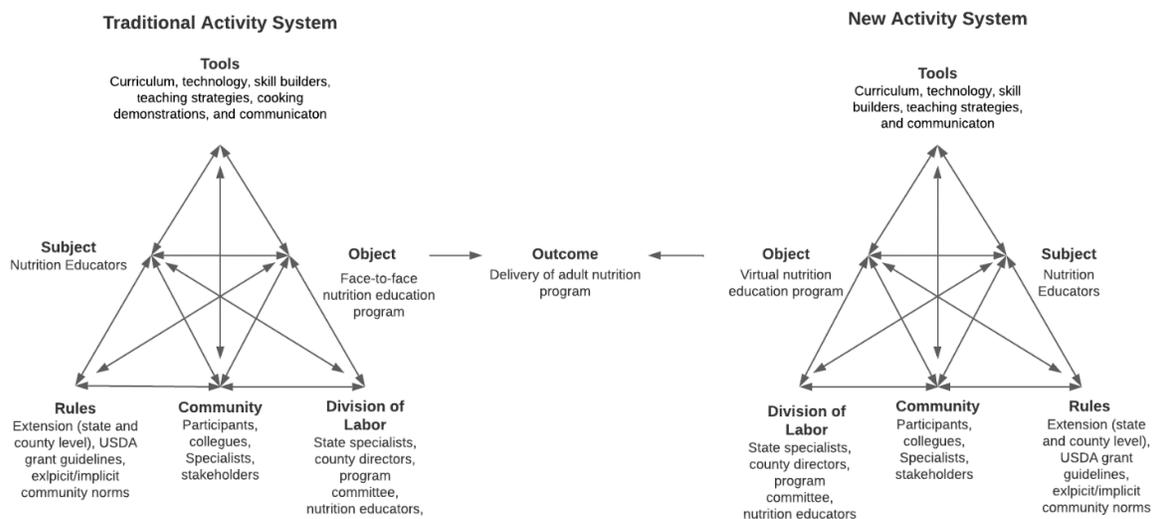


Figure 4.1. Activity system model adapted to context of study.

Note. Adapted from Engeström's model (1987, p. 78).

Categories of Findings

The findings of this study represent themes that emerged from interview transcripts, educator program impact summaries, and documents related to the delivery of virtual nutrition curricula. A priori coding of these materials was completed to highlight the different categories within the CHAT framework (see Table 4.1). While the categories will be presented in a linear manner to organize the dialogue around the different themes that emerged, it is important to note that the model does not represent a linear process and each category continually interacts with others within the system. The following section starts by looking internally at the subject, nutrition educators, and will build on this experience of the educator through the addition of subsequent categories. They will be presented in the following order: tools, rules, community, division of labor, and object.

Table 4.1. CHAT categories and properties of categories discussed in interviews.

Category	Description	Property
Subject	Nutrition educators' implicit attitudes, values, and predisposition to program delivery	Comfort level with technology Uncertainty of a pandemic Motivation to learn Connection to others Creativity Time management
Tools	Technology, training, program curriculum, and supporting videos that impact program delivery	Physical tools used for delivery Internet access Teaching kitchens Digital platforms for delivery, engagement, communication, and evaluation Technology user guides Curricula Supporting videos Professional development related to technology and virtual delivery
Rules	Guidelines, rules, policies, and implicit and explicit norms that influence program delivery	Organizational culture COVID-19 safety precautions Organizational reporting systems Program guidelines Grant guidelines
Community	Organizational, local, and programmatic level people that share the desire of successful program delivery	Internal extension community Local community members Partner organizations Advisory committees Program participants' traits, engagement, feedback, and need for adaptations
Division of Labor	Division of tasks related to roles within the organization that related to program delivery	Organizational structure State and county interaction Roles within county Changes of responsibility within the system
Object	Delivery of nutrition education	Asynchronous and synchronous Face-to-face, virtual, and hybrid

Subject

The subjects within this activity system are nutrition educators that work with Southeastern State Extension. Therefore, the presentation of data within all categories focuses on the perspective of nutrition educators. Specifically, the category of subject looks at internal conditions associated with nutrition educators and how this shaped their experience with shifting to the delivery of virtual education. It is important to note that nutrition educators within this study share the formal title of Family and Consumer Sciences (FCS) Agents. Participants frequently refer to *FCS Agents* or *agents*, when they are sharing the experience of other nutrition educators within the organization. Participant's experiences with virtual programming were influenced internally through personal predisposition, goals, and motives towards virtual education.

Educators mentioned varying skill levels and comfort with technology that evolved over time as they learned how to deliver programming within the virtual activity system. When asked about their initial experience in making the shift to virtual program delivery, many personal predispositions associated with the traditional activity system were mentioned as impacting that experience. Tonya did not see need for her to be comfortable with technology prior to COVID-19 and shared “a lot of my work was on the floor, not a lot of computer skills needed because that’s not what we focused on”. Erika mentioned leaning on a younger generation for help, “and I’m like forty-five years old. So...what technology? I’m not the best one. I love technology, but I got a lot of help”. A similar viewpoint was also shared in a program impact summary submitted in 2020:

I, the FCS Agent have been somewhat lacking in technology savvy. When I needed information posted or sent out, I would ask our administrative assistant to take care of it. However, working from home due to COVID-19 helped me realize I was going to have to depend much more on myself. (Program Impact Summary, 2020)

These educators mentioned lacking skills at the start of the shift to a virtual environment which led to an overall discomfort with the transition. Patricia summarizes this initial experience as “I think many of us were very hesitant trying something new.”

As a result, many educators expressed feeling pushed out of their comfort zones during the shift to virtual programming:

I am, again, I guess not as technologically savvy as some of my younger coworkers. So, I had more of a learning curve on some of these things, and in all honesty, I didn't want to do it virtually, but I know it was a necessity, so I was probably a little bit more resistant. (Maria)

I thought that that was the push we all needed to force ourselves out of our comfort zones, and so I really really enjoyed it. (Carly)

I would think I speak for many different people, especially my age, is because of COVID, it certainly pushed me out of my comfort zone to learn all these things now and have to learn how to do it. (Crystal)

I kind of felt like we were just pushing through it, like it's like a this is what you have to do now kind of deal. (Leslie)

It was difficult at first, because I also had a little bit of nervousness to be like on camera, because I never really taught like that before and I'd also dodged being filmed like pretty well my whole career [laughter]. So, it was a little difficult. (Shelby)

So, I think it was...just overcoming some fears. (Patricia)

While developing comfort with technology was a new experience for some educators, others were already tech savvy from the start. Monica describes her learning style as “crash course learning by doing” which was influenced by her comfort with technology. According to her, “nothing felt overwhelming about the technology”. In Bethany’s case, when referring to her county office, she shared “nobody else was tech savvy or anything like that”. The transition was difficult for her and described as a “complete and utter nightmare”. Unlike the other participants she was comfortable with technology but that comfort led to “a bit of extra work from me, more so than some of the other agents, just because they didn’t have that expertise”.

Educators took different approaches to learning the new technology. Bethany's comfort and confidence aligned with her approach:

And I've never been one to be afraid. I'll click on every button and try something once because I'm like, I'm not gonna...I'm not gonna break it. I'm not going to you, know, ruin it. And if not, I know how to X out of it and start it back up.

Similarly, Shelby described learning as “kind of also just like a trial of like error, and just trying to figure out stuff” and Amber “adapted as I went”. Maria echoed Monica's “learning by doing” approach.

Participants acknowledged that this transition also occurred during a worldwide pandemic, which influenced the emotions they were experiencing during this shift:

You had so many things on your plate. Your family, your health, you know, and then trying something new. Um, I think we were very very stressful. Now, I think, like I saw, we've learned from this past, you know, two years that we can make it work. (Patricia)

I think that the most difficult thing was really just balancing it all, because you know I did have kids and they were at home at the same time. So, trying to do things as well as now I am a teacher, you know, and balancing also. I mean it took a bit of time. (Bethany)

The pandemic has changed the way I work, learn, and interact as social distancing guidelines have led to a more virtual existence, both personally and professionally. (Program Impact Summary, 2020)

When we were sheltering in place, part of me had to show that we were busy at all times. I don't know if it's the same for everybody. And so, for me, when an email came in from my boss, that's the first thing I have to do is respond because I felt accountable to let them know I'm still doing my job here. And so, that mentality is still here. (Leslie)

Many participants described themselves as social people. The virtual setting meant that the motivation they got from teaching in a face-to-face setting changed during virtual delivery. When Maria referenced her preference for in-person programming she described how it was a source of “energy” for her. Wendy shared “the transition was not easy for me because, again, I'm the people person”. Amber feels she fulfills her “maximum educator role” in the traditional face-to-face activity system because she “love[s] talking to people”. When connecting with people

virtually, she described feeling “zoomed out and virtually kind of done” because she is “one that really likes to connect”. Carly mentioned a similar feeling of “we felt like we were Zoomed out for a while”.

A positive that a few participants had mentioned about this time was that it provided a space for creativity. Teresa described this as “I guess I’ll say it was probably one of the...one of the most creative times in my life probably”. Carrie saw this creativity as “challenging too, just because you could be as creative as you wanted to be to make it work the best we could.” A 2020 program impact summary stated “but with the stay-at-home order, agents had to be creative in how to deliver programming to the community”.

Participants all had varying levels of skills related to teaching in a virtual format at the start of the pandemic and those varying skill levels still existed at the time of their interviews. However, all participants also discussed the learning that occurred and skills they developed during that time. These skills continue to influence their comfort and preferences regarding adult nutrition program delivery. The subsequent sections will discuss how other categories within the activity system shaped educators’ perspectives associated with virtual delivery over time.

Tools

A variety of tools were involved in the transition to virtual nutrition program delivery. The most brought up tools were technology used in virtual delivery. Other categories included adult nutrition curricula, educational nutrition videos, and formal trainings offered to nutrition educators. Some of these resources were made available at the organizational level, while others were sought out or created by educators to meet their needs. The availability of these tools influenced nutrition educators’ chosen methods for effective delivery. Monica acknowledged

that many of these tools and platforms that were utilized were in place prior shifting delivery methods:

And so that was really helpful to have outside tools and outside of platforms that were just there, ready and waiting like, can you use us? Do you know how to use us? And if so, bring your curriculum on over and we'll do it this way. So that was helpful, because it's not like my organization had to scramble to make some sort of platform that we could then deliver things digitally on. They were all there, so that helps. (Monica)

Although they were all available, the way they were used looked different before the shift to a virtual setting. As Maria points out “it's like we had tools in place, but we weren't really utilizing them and then we put them into practice”.

Technology

The equipment, digital platforms, and knowledge on how to effectively utilize this technology were all areas that nutrition educators discussed throughout the interviews.

Technology was key to making virtual delivery possible. Kayla describes how these areas work together to ensure success in delivery:

And then from there, I have to make sure that I had everything together as far as to do the Zoom, to make sure that everyone can see my laptop screen, have another- my iPhone, or an iPad nearby, that I could connect and run through all that and make sure that it actually works well before the class starts.

These decisions and tools were unique to each educator’s situation. One of the curriculum guides for virtual delivery, Guidance for Offering [Mediterranean Nutrition Program] Online Programming, recognizes this and provides an overview of options and allows the educator to “decide which virtual tools and platforms to use for presenting / sharing the components of your class series.”

Equipment. Equipment refers to technology related physical tools that were used to promote program delivery. Carrie listed the necessary equipment needed as “a laptop and wireless internet and microphones and headsets and video cameras for sure”. This list

summarizes what most educators mentioned as necessary equipment. Although, some found ways to delivery programming with less equipment while others had relatively complex set-ups.

For people to connect virtually, the internet or cellular service must be accessible. In some rural communities, internet access continues to be a major barrier. Leslie was “running on satellite” at the beginning of her shift to a virtual setting and describe it as being a difficult transition. However, due to the increase in demand for access to broadband internet, she shared that in the past couple of years “the system has gotten better”. In Crystal’s case, her rural county’s system improved prior to her transition:

The town actually set us up on fiber internet here, fiber optic internet here about a year before COVID. And that was great, too, because I don't know what would have happened. We had not had good internet but at my house, I had to use our Internet there, and it seemed to do okay. But it's, I mean, I live out in the country, and sometimes it can be hit or miss.

Carrie also points out how the quality of the connection matters, “broadband would be a nice resource. The high-speed internet or more connectedness... cable internet out in the rural communities for sure. So that would be ideal in a perfect world I guess”.

Another resource that became a necessity to the transition to a virtual setting was a laptop. Southeastern State Extension provided laptops or computers to many county-based employees. However, this resource could vary based on contracts in place between the county government and Southeastern State Extension. Maria talked about how her laptop was her major tool she used, “our MacBook pros are awesome, and being able to do all kinds of things.” Crystal shared this experience, “thank goodness I had that because I could do it do virtual anywhere. Um, I don’t know how the agents that didn’t have laptops did it.” Amber was one of the educators that was in this situation of not having a laptop. She shared, “we didn’t have a Mac contract with [University] and [Rural County] and so my personal computer was the one that I

was doing the program off of, and it's just not the best quality like camera". Leslie was in a similar situation, "So um for me the biggest thing is just having this quality webcam. I didn't have a good...I didn't have a webcam on my computer at all, so trying to get that".

Cameras, another commonly mentioned piece of equipment, ranged from ones that were already built into devices such as laptops and phones to additional stand-alone equipment.

Bethany described her simpler set-up at the start of virtual program delivery as, "my iPad or my phone or just something rigged up there". It took her "a little bit of time" to start looking into additional equipment such as a camera and microphone to help improve the quality of video images and sound. Erika, "started basically with cell phones and things like that. And I could sit at home with a tablet". Patricia's set-up "had the iPad, and then I had my laptop, so I was using the laptop so that they could see from one angle". Educators began to find set-ups that worked with the resources they had access to:

I had really like three devices because I had one where I'd have my presentation, one where I could see the camera, and then one where I could see the chat, too. So you kind of need that many if you're doing it on your own. (Kayla)

So, I've got this phone, I've got it set up over top of the preparation area, and then I have my computer where they can see me but they could also see the prep area. (Crystal)

I don't know if this was the right move, but sometimes I still do it if I'm in a pinch. I would sign up, especially if I had someone else helping me host this. I would say, okay, I'm going to log in twice. I'm going to log in. Ah, I'm going to join this zoom meeting under my personal email, and I would have my cell phone set up under that, and that would be my second camera. And then my professional email would be this one, the main one that I'm giving the presentation on. But I could switch to my other self as the other camera. So, there are ways that if you can't afford another camera from your budget, there are ways that you can create another camera, so to speak. (Monica)

Certain accessories in addition to cameras such as lights, tripods, and microphones were referenced. Amber, who was hesitant to purchase equipment at first, eventually started "investing

in like camera lights or different video equipment”. Crystal found “the stands, the ring light, those types of things, they made things very helpful”.

Some educators had access to more sophisticated equipment but found they were not using it. Crystal’s county had a video kit. She found “it’s just a lot to set up and take home” and “it was just easier for me to use my phone or computer”. A few participants referenced having access to video conferencing cameras:

We have a new equipment that we purchased that it's called the Owl, and it's supposed to get like a 3-D, you know, just everybody that's involved surrounding each other. Um, it's kind of been a little challenging on that one. I tried it once, and I really didn't like the way...I didn't like the way it reflects on the monitor but that's an option there. (Patricia)

They've got that...it was something that every office received, so like, say, for example, if we're doing a Zoom and we want to um zoom in and zoom out for more people. But like over in the conference room, we can do it, and I'm not sure what that is called. But I can ask [County Extension Director] and email you the information on that. But it supposedly allows us to involve more people. (Teresa)

Although they have access to these tools, these educators chose set-ups they found more simplistic due to person preference.

Most county offices across the state have teaching kitchens. Many of these teaching kitchens were built around the traditional model of program delivery. However, some of the newer or updated kitchens had new equipment in places that was conducive to virtual program delivery. Participants frequently mentioned utilizing the teaching kitchen in their county or a neighboring county. Typically, this decision depended on the technology available. Erika described her county as having an “amazing kitchen equipped with the cameras and everything”. Tonya has “a really nice demo kitchen with the cameras and TVs”. Carrie continues to plan to hold virtual education because her county has a “beautiful new teaching kitchen here”. Because of the shift to virtual programming, Kayla’s office updated their county kitchen within the last couple of years with the addition of cameras specific to that space.

However, not all educators had access to a teaching kitchen that is favorable to virtual delivery:

At my office, you know, we don't have... like the kitchens back here, so I'm like "hey everybody" [turns around], you know, and it doesn't even really have a good setup where I can put this here. The lightings not right, so it was just my kitchen is really old. And then, one of my offices I don't even have a kitchen. (Bethany)

Patricia currently does not have these features either but is getting upgrades to her teaching kitchen and is "hoping to encourage them to invest in a camera. You know whole system".

Wendy highlighted that overall, there is a need for "better spaces in terms of the technology available, the equipment to do either videos or virtual, you know. Yeah, and that means money most of the time". It is important to note how available equipment often relates to county specific budgets.

While certain equipment and technology assisted in making virtual programming possible for educators, they also had the potential to cause new barriers to programming. Carrie shared that "technology just wasn't wanting to work one hundred percent sometimes". Monica recognizes that challenges may arise in both virtual and in-person settings. However, the response is different in these settings. She described it as:

And I feel like It's become a cliché in this virtual world where you're just like in the middle of the something. You're like "technology, you know what I mean, it's great if it works." And like it's just been like how many times have I said that. [laughter] But it's, you know, I think it's just easier in person when something goes wrong, you can shift, you can maneuver, you see the people in front of you.

Educators suggested spending time planning to avoid this situation. When asked how she would mentor a new agent wanting to deliver a program virtually, Crystal listed specific things that could go wrong, such as "your internet at your house is terrible" or "you've got, you know, problems with your computer". However, by practicing and planning carefully one could know "those types of things ahead of time". Erika's advice was "technology is really good, but there's

sometimes that it's not going to work, and you just have to be flexible and have more than one plan and go with the flow”.

In summary, equipment that helped educators with the delivery of virtual programming included primarily a laptop with camera and internet. The availability of additional cameras, devices, microphones, lighting, and modern teaching kitchens helped in increasing the quality of program delivery. However, some educators perceived this additional equipment as cumbersome and opted out of using those items.

Digital Platforms. Participants recognized that many digital platforms were already available through the organization prior to the COVID-19 pandemic. The platforms included Zoom, Google Workspace, Eventbrite, and Active Campaign. Bethany described the initial transition to virtual delivery as being influenced by these platforms, “thankfully, at that same time [state university] was you know, had that whole Eventbrite, it was like okay we're going to jump into this. And we're going to play with this and do Zoom”.

Zoom was mentioned by all participants and in numerous program impact summaries. Carly described it as the “go to platform”. When Patricia was asked what helped her in making the shift to virtual programming, she shared “it would be Zoom. I think that at that time the [University] was...that's what we used. It was the Zoom platform. So that's what I used”. Teresa was familiar with using Zoom prior to the shift to virtual programming in the community because she used it for professional trainings through the University. It was also frequently mentioned as technology that educators plan to continue to use into the future. Teresa plans “to continue to use my technology that is provided to us by [University], our Zoom”. Kayla doesn't feel she will “ever stop using Zoom”. Amber recognizes that these platforms have the potential

to change over time. She stated, “unless like a really cool program or format comes out, I think I’m pretty okay with using Zoom in that setting”.

A similar platform mentioned by interviewees for live class delivery and the sharing of information was social media, specifically Facebook. The Guidance for Offering [Mediterranean Nutrition Program] Online and the virtual program guides both offer social media as an option for programming. Shelby chose this option and created closed Facebook groups. She felt “it’s good for them all to do stuff together, but not for you to put like information out on, because it just gets all mixed up”. Leslie no longer uses Facebook Live because she “learned how unprofessional Facebook Live was”. Meanwhile, Crystal mentioned avoiding using this platform “because not everybody has a Facebook account”.

Google Workspace was another frequently discussed resource that was provided by the University. For all her virtual programming, Shelby shares with participants a Google Drive that has “a running page of resources”. Carly utilizes Google Drive in a similar manner:

I’m obsessed with Google Drive because that was just that’s how I pretty much store and organize and for a program. Have all my recordings and resources, and you know, it’s almost like my program is right there in a folder.

Meanwhile, Amber used Google Sites to house videos and information shared in her programs.

At the state level, Google Docs were mentioned within the curriculum guide for offering the Mediterranean Nutrition Program and the Healthy Cooking Program:

The above link leads to another section in this document where you will find links to a google spreadsheet and a google calendar where agents can share their online [Mediterranean Nutrition Program] programming plans, as well as share ideas and requests for [Mediterranean Nutrition Program] online programming collaborations. (Guidance for Offering [Mediterranean Nutrition Program] Online Programming)

Additional platforms were discussed by nutrition educators that they sought out on their own. Feedback was mixed. Carly shared “Canva, that was great to have, a great resource”. Tonya

also used Canva to help the development of her program slides, “we found a program called Canva and we utilize that to create our... because we all have a hand in creating the PowerPoint presentation”. Educators did not share positive experiences in using Moodle, which is commonly used in the virtual delivery of formal education. Crystal shared, “one of the things that was presented to me to use was the Moodle on our [university] website that we could develop programs. And that to me is...it's just way too difficult to try to use”. Carly noted a similar experience, “yeah, I didn't use Moodle anymore. I just wasn't as comfortable with, with Moodle”.

Other platforms, such as polling platforms, were mentioned for the purpose of increasing participant engagement. When asked to pretend I was a new agent that she was mentoring, Bethany presented a series of questions related to these, “are you going to do a poll? Are you going to use the whiteboard? And, you know, the Mentimeter? You know, any of these little technology things”. Shelby shared her preferences with these tools:

Menti or things like that. I don't really use that as much. I do like to use the questions in Zoom. And then or the text, I can't think of what it is when you text the number and answer the questions.

According to Erika, “there's so many, you know, games and apps and things like that that you can use so people can participate during the presentation”.

Although not related to direct delivery of programs, Active Campaign and Eventbrite were platforms encouraged by the University. Active Campaign helped with asynchronous communication with program participants. Carly mentioned using it to “communicate with our participants in between classes” and Crystal would use it to “release weekly their lessons”. Eventbrite created what appeared to be mixed feelings between educators and was part of programming prior to virtual delivery. This platform allowed for participants to share information about themselves and register for programs. Maria highlighted how having this in

place was helpful when that shift did happen, “they didn't have to come in and give a check, you know. And all these things were in place for virtual education if we needed to do an Eventbrite registration for things. So, we had those tools”.

Additionally, different platforms were discussed to facilitate program evaluation. The SNAP-Ed online delivery guidance encouraged educators to send out pre and post evaluation links through the data system, Program Evaluation and Data System (PEARS). Teresa mentions this system when pretending to mentor me on SNAP-Ed program delivery, “now, on your first day, you normally want to do your pre-survey, and there's a link that you can send them to PEARS where they can um log in and do that”. The Guidance for Offering the [Mediterranean Nutrition Program] Online Programming encourages educators to use tools associated with social media sites or through Google Forms. Aligning with this, Google Forms were mentioned as a useful tool by educators:

So, if it's just a program that I'm doing, you know we do pre- and post-evaluation. You know, I would use [state evaluation specialist]. Or I've got... I've actually put his on Google Forms where I can send that out, and um have people fill out the evaluation. Send me back...well on the Google Form it records it there. So, trying to make sure you use all those evaluations so that you have something to report. (Crystal)

I always do a Google form and then send it out. And sometimes I drop it in the chat too to get people to go ahead and do it. We have done polls, but I do think that the Google form is a little bit...it's definitely more streamlined as far as getting all the information, but folks may not be as likely to do it as they would be a poll at the end. (Kayla)

The main platforms being utilized by educators for virtual delivery appear to be the ones provided by Southeastern State Extension and encouraged in the virtual program delivery guidelines. At the time of this study, these specific platforms are Zoom, Google Workspace, Eventbrite, and Active Campaign. These platforms existed in the traditional program delivery setting and when everyone shifted to virtual delivery. Educators sought out additional resources,

such as apps to increase participant engagement, when they saw a need for improvement in delivery. The long-term usage of these resources they sought out on their own appears mixed.

User Guides. Technology, such as the platforms just discussed, has limited use for educators without the knowledge and skill to utilize it. Leslie felt strongly about this concept and provided an example to represent this:

I would say the training behind those materials is the key, because you can hand me a phone, right? You can hand me a smartphone, but it's only going to be as smart as you are. So, having those trainings and how to use the equipment really was really key in the things that we do.

Leslie gained her knowledge by seeking out guides on her own, “I had to like Google it. I had to YouTube it. I had to like, read the help columns and all that stuff just so I can get some stuff done”. Zoom was mentioned by Shelby as having “very good videos on their help page” and Patricia shared “Zoom also offered a lot of training on how to use Zoom”. Educators were provided with links to technology related user guides through the Guidance for Offering [Mediterranean Nutrition Program] Online Programming and [SNAP-Ed] Logistics. These included links to resources for multiple online platforms such as Eventbrite, Zoom, social media, Adobe Premiere, and Google Workspace. In addition to self-paced learning through user guides were opportunities for more formal training. These trainings will be discussed in greater detail in the *Training* section.

Curricula

The state extension offices provide the educators with multiple pre-developed curricula choices. Educators, such as Tonya, value the fact that they are evidence-based. She shared, “so the main reason for [Mediterranean Nutrition Program] is because there's so much research with that program”. Curricula developed through the organization were created with the intention of utilizing traditional program delivery methods. Wendy felt that in this regard, “the University

was not prepared. They were not prepared. There was nothing virtual”. This shift to a virtual format was propelled by both state level program staff and county level staff. According to Leslie, “a lot of it was agents just saying, ‘let’s turn this into a virtual format and see how that goes’ and so we were kind of creating materials as we go”. A few educators shared that not much needed to be created or changed within the different curricula to shift to virtual delivery:

But it really wasn't that difficult to do with the technologies that we had in place, and pretty much we were kind of spoiled with [Mediterranean Nutrition Program] because it is all there for us, ready to use virtually or in person. (Maria)

I think a lot of our adult curriculum was easily like adapted to fit virtual programming because it had those PowerPoints that you can easily share on Zoom. Then we're all kind of used to doing food demonstrations. So, it's just doing that kind of, you know, finding that angle to do it. So, I would say our curriculum could easily translate into virtual programming. (Amber)

Some nutrition educators worked with state level staff to make adaptations as a team. Crystal utilized the resources developed through these teams, “I did do the [SNAP-Ed] curriculum virtually, and that was a success, because of... throughout the state, the [SNAP-Ed], um, staff had agents make videos for each class”. There was also mention of educators that were fluent in Spanish helping to create and translate virtual materials for state level staff so that the materials could be delivered to the communities in a timelier manner.

With time, state level staff worked to create spaces that shared curricula materials in a virtual setting and provided guidance to the delivery:

They've been on that with trying to see us and meet us as agents and go, “well, they're delivering virtually, so let's step up the ways in which they can do that”. So, they've been great about that, and even speaking as somebody who hasn't fully delivered [SNAP-Ed], I know that those resources are there. (Monica)

[Mediterranean Nutrition Program] had the Google Doc with all this, all these additional resources that helped us to evaluate online, and already had like the surveys written up to where you could just copy it. (Kayla)

We've got videos for everything. For [Mediterranean Nutrition Program], they've got a virtual component. For our [SNAP-Ed] ...for everything. (Teresa)

These statements align with all the program delivery training guides made available to nutrition educators. The Guidance for Offering [Mediterranean Nutrition Program] Online has information for both Mediterranean Nutrition Program and the Healthy Cooking Program linked within a Google Doc. The Healthy Cooking Program provides educators with slide decks and notes, videos, marketing materials, evaluation templates, material order forms, and recipes. The Mediterranean Nutrition Program provides educators with slide decks and notes, videos, marketing materials, evaluation templates, links to handouts, and access to a consumer facing webpage with recipes. For both SNAP-Ed programs, the information is shared through the website portal and referenced in the [SNAP-Ed] Online Program Logistics document and the Logistics document. These curricula provide links for videos, handouts, and evaluations. Both SNAP-Ed programs also provide pre-written email templates to send out weekly to participants and also has a document on educator discussion prompts when teaching virtually.

Many educators shared that they found it helpful navigating the resources virtually to have all this information kept in one space. For example:

Where things were. "Where is this? Where is that?" Yeah, especially for [Mediterranean Nutrition Program], some of the resources with the links. I have a virtual sheet that I can get to just things like that. "Where are things?" "It's over here." So that was the biggest thing. Just helping locate things, I think. (Carrie)

When discussing the curricula Kayla has decided to use over the last few years, she shared, "typically, if it already has everything you need, the PowerPoints, the evaluation, the handouts, that's what I'm going to choose first because that's a lot easier than making it myself." While the curricula discussed in this study focuses on adult nutrition programming developed through the state extension office, it is important to note that other states' extension curricula are also

available to educators. Although not every educator seeks out curricula from other states, Bethany shared why she often does, “there's a lot of times that [university city] doesn't have a curriculum that suits the needs of my clients, so I will go and find a different curriculum from another university”.

Using a state developed curricula also influence the program planning process of educators. This theme emerged when discussing how each educator would mentor me if I was a new agent wanting to deliver a program virtually. Crystal shared it's important to “plan out what I'm going to do for each session” and that with certain curricula “those sessions are already planned out. You get all of your supplies ready, copies made, and then get your evaluations”. Similarly, Erika discussed how she spends time “studying the whole curriculum, or checking the whole curriculum before I'm going to teach”.

For part of this planning process, the educator needs to decide how they would like to deliver the curricula. The online delivery guides for all four programs give educators options of meeting synchronously through Zoom or sending out recorded videos for asynchronous lessons. In addition to this, the [SNAP-Ed] Online Program Logistics states that “agents are encouraged to set up discussion group time with the class or office hours to provide participants an opportunity for reflection on what they have learned”.

According to Monica, the organization of the “nutrition education piece and then you do the recipe” is “what makes the curriculum. That's what drives at home”. Bethany, however, questioned if these pieces were as necessary as previously thought, “we always have to feed them. And I'm like, but if they're throwing half the food away, do we have to feed them? Maybe that's not the most important piece”. For the Mediterranean Nutrition Program and Healthy Cooking Program, the curriculum guides suggest including an education component related to

cooking skills through sharing videos of cooking demonstrations, holding live demonstrations, assigning homework to make a program recipe between classes, or even organizing cook along style classes. Each educator navigated these choices in curricula delivery differently:

I think the videos work good depending on how much content you're teaching, because there's a lot of content there. There are a lot of slides for one class, and we can sit down and see which are the most important, and which information you can send in a handout so you don't have to talk all about that. So, then we can put a video that shows how the dish is done. So, if you think it's a dish that you can do in ten minutes or fifteen minutes, you can have part of it preprepared and then show the rest of it, and then they can see it. (Wendy)

It gives you the opportunity to do it as a cooking class, it gives you the opportunity to do it as a demo, it gives you the opportunity to do it as a taste test. I've done all of those and that's what made it really versatile, I think that's the right word, as far as being able to easily pick that up and make it virtual because it is so flexible in how you can teach it. (Carly)

If you really want them to try the recipes, the food kit is the way to go. If you... to me, that one was a little bit, I felt like it was...it made a bigger impact just because you're on the Zoom with them live, you're cooking the food, and then everybody's tasting it, tasting it at the same time. Because of that though, you're not...you don't have as much time to do the content for the class. So, the other style, which was... we introduce, we do the video, and then they have a recipe to go by and do themselves. Most of the weeks when we would talk to them, they didn't actually try the recipe. There might be one or two that did, but the rest did not. So, in my experience, if you can get them to taste the food, they're more likely to continue on that track of trying new foods that are healthy. (Crystal)

I taught it and then I might have used the food demo video that [university city] had but I didn't use their PowerPoint. Like they had, you know, the recording where an agent did it. I didn't use those. I kind of like fast forwarded to the last five minutes where [nutrition extension associate] or whatever had done the food demo. (Bethany)

In my experience, I found that if you can do the demo with them there, because they've just sat and listened to you likely go through an entire PowerPoint, you build your relationship with them. And then to switch gears to a video might feel a little impersonal, right? Because they've just sat and listened to you. (Monica)

Pre-recording those videos just showing a quick snap of a recipe tends to fit better in the virtual delivery than the cook-along. (Maria)

So, when I was doing the [SNAP-Ed] with the Hispanic group that first for four weeks I was using um [Nutrition Extension Associate] videos to show them because I wasn't

doing the live at that point. But I think I've since then learned that they do enjoy the live. (Patricia)

Program impact summaries provided additional insight into these decisions made by educators across the state:

Each week the participants were assigned a challenge to complete and were to email a picture of the completed project to receive credit for completing the assignment. A Google Document was created for the participants that included all of the weekly handouts, recipes, recipe videos, and Q&As from the 6 sessions. (2020)

The agent led two virtual hands-on cooking programs that covered topics related to nutrition, cooking techniques, and budgeting skills. (2020)

Family & Consumer Science Extension Agent held a virtual 8-week [SNAP-Ed] program with weekly lessons, cooking demonstration videos, and handouts distributed through weekly emails. (2020)

As part of this program, the agents provided educational presentations using the curriculum provided from NC State, as well as created and shared video recipe demonstrations to show participants how simple it is to cook these delicious and satisfying meals, and to educate them on various food preparation techniques. (2020)

Each week participants received handouts related to the weekly topic, along with a copy of a Mediterranean recipe, and a food demo video for the recipe. Each session was recorded and participants received a link for each weekly recording as well. (2021)

Monica made an analogy relating this virtual style of teaching and watching cooking shows, “it exists out in the world before, so it's not like unfamiliar to people. It's not an unfamiliar concept to watch somebody do something on a camera”.

However, many educators, including Monica, still worried that these demonstrations do not provide the same learning opportunity for participants that the hands-on cooking used the traditional delivery method provides:

The only thing that, of course, is a miss, as somebody who does nutrition education, is that food demo piece. It really doesn't hit home the same way, because you're not in person. They can't smell it. They can't experience it. But they can watch you cook it. (Monica)

I think that's one of the biggest promoters, something that will really stick and educate people is them actually having to cook the foods. I mean, you can utilize lots of skills there, cooking skills, especially someone who doesn't cook a lot and help them be comfortable with being in the kitchen. But I'll say one thing in particular is letting them try the food. So, you know, food is really expensive right now and you want to make sure you like the dish before you go out and spend you know money on it just to not like it, and you know throw it away or whatever. (Tonya)

The hands on. In my classes, I've always let the participants do the recipe. We all read it together, and then I let them do a hands on, just so they can gain those measuring skills, and, you know, practice reading the recipe, and so that doesn't happen in the virtual setting, and therefore, you're missing out on some of the feedback that you might get instantly. (Teresa)

Some educators chose to not do any kind of food demonstration while teaching virtually and focused primarily on delivery of the PowerPoint lectures. While Teresa prefers face-to-face delivery, she found that virtual was “easier for me to as an instructor because I mean if I've got my slides there, we're not doing the hands-on meal, we eliminate all that, I'm clicking my slide, and I've got notes”.

A few educators mentioned that they found that they were using the notes section of the PowerPoint more frequently when in a virtual setting and saw this as having a negative effect on their delivery:

So, I think that's the biggest thing with virtual is that it makes us.... it's an easy way to just pop up our PowerPoints. No one sees our notes, and I've seen a lot of other people just read straight from their notes section. So, it's a way of like, okay, I'm looking at my notes, but they don't know I'm just speaking verbatim like all of my notes kind of deal. But then, when I'm outside of it, I'm finding it hard to not rely on notes for program when I once didn't have to. That was my biggest learning experience was how to teach how to see the difference between a virtual educator and like an in-person educator. (Amber)

The crash course part was okay, you need to understand how you put your face up there, and you need to understand how you share your screen and get this PowerPoint going, and I felt like I was reading a lot more than I would in-person. (Monica)

Another important part of the curricula that was discussed were materials for participants to take home. These included handouts and educational extenders. The Guidance for Offering

[Mediterranean Nutrition Program] Online Programming encourages educators to share virtual copies of handouts with class participants. Although digital options were available, Amber chose to have local participants pick up handouts and additional items from her county office:

[Mediterranean Nutrition Program], you know, we have really nice program folders, and you know the shopping list. So, when I did the virtual one, I opened it up to our local people, and I said, “hey, people from [Rural County], come, pick up your program folder”, and I had a couple of people pick it up. But those people that were more regional couldn’t pick it up kind of deal. (Amber)

Programs that offered educational extenders in the traditional face-to-face format, encouraged nutrition educators to gather handouts, educational support items, skill builders, and cookbooks and find ways to distribute them to participants (2020 Logistics; [SNAP-Ed] Online Program Logistics). Bethany mentioned that a virtual environment took away from the stress and planning she felt related to educational extender distribution:

So, I have to like take the wagon, fill it up, take the wagon to the car, take everything else, fold down the wagon, you know, maybe shove it in my tiny little car then take it, you know. And that's not counting, okay now I've got the incentives and I got the surveys and I got the handouts.

While a variety of curricula can be taught by nutrition educators, this study focused on adult nutrition curricula developed by Southeastern State Extension because these curricula are available for all educators to deliver. Delivery options are flexible and consider different parts of the activity system. Adjustments to curricula based on the activity system will continue to be discussed when presenting the findings of the other categories.

Supporting Videos

Videos and recordings are resources that are mentioned in all the curricula. While some were developed through state level extension staff, educators developed many additional videos. Educators expressed a level of uncertainty in some interviews as to whether these videos were considered virtual adult nutrition education. Shelby expressed her uncertainty, “I don't even

know that I do like necessarily count it as virtual learning or teaching, but like just recording videos like the food demos”. When Monica was discussing a series of cooking videos she did, she stopped to think through where these videos fit within her programs, “so that wasn't...it's virtual education, but it's like more impersonal I guess because you're not holding us like a Zoom class”. Teresa expressed strong views concerning the what she observed as a widespread use of videos as a primary form of virtual education:

Everybody's making videos, that's all well and great. But I mean those videos were like one-time things. Nobody's actually teaching, you know. And that's where I think the virtual education component suffered. You know we got a thousand videos, and then let's just say if I wanted to actually show one, I could never find it. I'm like, where are they located? I couldn't find the videos, and everybody said, “oh, yeah, I made a video blah blah blah”. They've done these one-time videos of recipes, cooking, but who's teaching?

Program impact summaries aligned with the statement that many videos were being created by nutrition educators during this time:

I've recorded several cooking videos which can be viewed on [Suburban]County Cooperative Extension's county page, Facebook page, and on YouTube. (2020)

All registrants received links to the recorded sessions and will be able to access them as needed now and in the future. All recipe demonstrations were uploaded to YouTube and participants and community members will be able to access them as needed. (2020)

During this class, recipe videos were created that could be used by other agents across the state to virtually educate citizens about healthy eating, either through classes or social media. (2020)

As seen in the program impact summaries above, when talking about videos, educators typically categorized them into two types. The first are shorter videos, often of food demonstrations, that are meant to be added to a live lesson or shared through social media. The second are recordings of curricula lessons that can be shared with participants who missed the live session or shared with the community as needed for what Kayla referred to as “on-demand learning”.

Videos gave educators an element of control over the timing of their program and the content being shared within that time:

Some of the times what I did as well is I didn't want to do it, a live video, so I would make my video ahead of time. And then I would hit play. So, I'm not showing somebody else's video, I'm showing me actually doing this. But there's so many things that could go wrong with live that this way I can tweak out any of the bad stuff or mute it if my kids came in the middle of the video and started talking or any of those kinds of things. (Bethany)

Bethany also recognized that program participants did not expect the video to be perfect and “if I made a mistake, it made them feel more human”. Wendy valued the imperfections that naturally happen when teaching in a live setting and felt that having videos prevented those important opportunities from arising:

What I have learned is that if you do video, video can be very time consuming. In person is different because what happens will, you know, happen. One time I was doing with a colleague an in person canning class, and it was her time to share. And her canner - all of a sudden the safety valve went out and it was steaming all over. That canner is not good anymore. So, it was a teaching moment. But when you are doing video to present, you have to cut the video. You have to do the sound. So, it's more time consuming.

This idea for a need of perfectionism in relation to professionalism and quality in videos resonated among other educators as well:

And because I am a perfectionist when I know how to do it right...but when it's something new, it was just so hard, and it took me so long until I was like, “okay, that...I like that”. Like even when I was at home making videos with my children I was “no, let's do it again,” and “let's do it again and let's do it again”. It drove me crazy because I'm like, you know, it's something that I don't know, and I should have gave me a break but no, I wanted quality videos. (Erika)

Um, with a video, you would need to do that, um, set up and have it a little bit more professionally done where you are more conscientious about the visual as far as what they're going to be seeing because they're going to be watching the video. (Crystal)

In addition to creating these shorter videos, educators also discussed how recording their sessions created the potential to reach the community in new ways without adding a lot of additional work. Bethany shared, “if they can’t attend live, I told them, ‘tell me a topic you

want'. I probably talked about it within the last two years so I've got a recording somewhere". Leslie shared how she wanted to "create a video library" of these recordings that she has. Although she has yet to do it, Kayla visualized a similar library where, "you just convert the recording to an on-demand video and folks have to register".

Educators acknowledge that videos serve purpose in virtual delivery of programming. However, the perception of the importance of that purpose in learning varies based on the educator. Educator's comfort with technology, availability of equipment, and views on what makes a video "professional" all influence their use of this tool. In addition to this, the quotes presented above have hinted at how rules related to traditional programming have also influenced their perceptions. This will be revisited in greater detail within the *Rules* section.

Trainings

During the shift to the delivery of virtual programming, educators referenced utilizing various trainings to help them with delivery. These trainings covered topics that primarily focused on how to use equipment to continue to provide the community with education. Shelby shared that, "at first it was like Zoom after Zoom after Zoom after training after videos". Teresa describes a similar experience, "we have so much professional development. I don't know if it was specifically all geared to online teaching". However, educators highlighted that there is a difference in learning how to use equipment and being able to effectively integrate it into the delivery of nutrition curricula. For instance, Amber stated, "in my opinion, I don't think there was really any trainings that were like propel your program into a virtual world". And Maria reflected in a similar manner, "I don't know if I had a lot of training with the online delivery. But it didn't really seem too much different".

Many educators quickly referenced attending a training on creating videos prior to COVID-19 and how the skills they gained in this training helped them in making the shift. Maria discussed taking a training led by the Video Extension Specialist “four to six months before COVID” and that “we had the training in place. It was there” to help them when they shifted. Although this training was not meant for the virtual delivery of programming, the skills translated nicely into this setting:

It doesn't necessarily have to do with virtual delivery format. But it does have to do with video production, and that's something that can benefit you. Especially, say you decide to record your own standalone videos to use this demo videos at the end of [Mediterranean Nutrition Program] delivery those are skills that you will need to know to make your video as appealing and intriguing as it should be. (Monica)

Crystal shared how this training also helped because as a result, “we had equipment, we had all that”. And she points out that mastery of the skill takes time, “but because we didn't have to do it before your...your skills aren't quite there yet. So, there was a big learning curve there for about a year, definitely”. Amber stated that the training focused on being “more familiar with being kind of behind a camera and the angles of things, the lighting, if you have to video edit anything”.

In addition to video training, the Extension Information Technology (EIT) department offered various trainings on how to use different platforms and many of these trainings were available prior to COVID-19. The Guidance for Offering [Mediterranean Nutrition Program] Online Programming encouraged educators to “sign up for a EIT Zoom 101 training”. Nutrition educators mentioned utilizing these different trainings often:

I think that extension probably gave us the Zoom, Eventbrite and every sort of meet and greet thing, and like weekly and training. And oh my gosh! I remember the beginning of COVID, I feel like I did so many trainings on so many different platforms. (Shelby)

I started attending all the little Eventbrites once a month. The little help IT things. The Active Campaign. I was using that a little bit ahead of time, but definitely started using it a lot more as I was building up my email list. (Bethany)

Professional development opportunities at virtual conferences were another source of training. Shelby attended a session on “tips and tricks of keeping people engaged”. Leslie mentioned a session at a faculty/staff institute that covered “how you should have your layout on your computer” and the instructor “explained about how you want to be prepared. How you want to have your notes here. Don't look here because you're not really looking at the camera”. Wendy attended a continuing education session outside of extension that helped build her motivation to shift to virtual delivery and expanded her knowledge on what additional tools she needed to purchase, “she explained how she did it, and I'm like, ‘oh, my gosh! I can do that!’ But then you know, that's when I bought all those things”.

Educators mentioned attending trainings offered through Southeastern State Extension and professional associations. These trainings helped increase their comfort in utilizing the necessary tools needed to make the shift. However, there appears to still be a need for educator trainings related to virtual pedagogy.

Rules

The rules category is comprised of implicit and explicit norms that exist at national, state, county, and programmatic levels. These rules have influenced educators’ values and practices in relation to delivery of virtual programming along with how they use the different tools described above. Because extension is a partnership between federal, state, and county government (see Appendix A), many different external guidelines and policies impact the work of educators. When aligned with other components of the activity system, rules have the potential to direct and guide nutrition educators. However, when contradictions occur, they can become a barrier to

program delivery. This section will look at how implicit cultural norms, external policies, and external guidelines influence nutrition educators' experiences and perception in relation the delivery of virtual education. Specifically, the culture of Southeastern State Extension, COVID-19 safety, the Extension Reporting System, programmatic guidelines, and SNAP-Ed grant guidance will be discussed.

Culture of Southeastern State Extension

Throughout the interviews, educators often referenced the organizational values of Southeastern State Extension which have been and continue to be focused on the delivery of education to community members. Maria shared, “well, the culture of extension is all about I feel like education”. The traditional program delivery method for education is engrained in this organizational culture. As Erika stated, “they still need that, you know, handshake that we used to say”. Providing face-to-face programming within the community is what attracted educators, such as Carly, to her position with Southeastern State Extension. According to her, “one of the best things we offer in extension is the hands-on learning”. Carly reflected on how virtual delivery was not originally part of this culture. She shared, “it wasn't really promoted to even utilize social media, the way we do now. I would have never thought 11 years ago that I would one day do an extension program through Facebook live”.

Although still focused on delivering education to the community, the shift to virtual impacted the overall culture moving forward. Wendy shared how extension “has shifted so much. It has changed so much” and felt that “the University was not prepared for it”. Compared to other organizations in her county, Maria felt that “we were kind of better situated for the shift to virtual” because the organization “had to figure out a way to still stay connected because we are a service agency”. Whether or not Southeastern State Extension was prepared, this strong

desire to continue to serve the community assisted with this adaptation to virtual delivery. In relation the FCS program area, Leslie felt, “speaking specifically within FCS I will say this: I like to think that FCS is really resilient”. Meanwhile, Carrie feels “we are still progressing”. Moving forward, Amber feels that virtual programming “definitely sets us apart’ from other community organizations. With the new virtual delivery activity system more widely used, the culture of Southeastern State Extension has started to shift and reflect this as a strength of its organizational identity.

COVID-19 Safety Precautions

Safety guidelines related to COVID-19 were the primary motivator for this drastic and sudden shift to a virtual setting. Over the course of the last three years, these guidelines have continued to change based on the circumstances and delivery has changed accordingly. Program impact summaries from 2020 documented the original impact these policies had on educators’ decisions to make this shift:

In March 2020, a "Stay at Home" order was delivered from [State Governor] mandating that families remain in their homes and limit contact with other people. (2020)

Also, during this time, all face to face programming was suspended because face to face contact was prohibited. (2020)

As a result of COVID-19, Food Safety and Nutrition programming, which is usually taught in person to include hand-on learning and taste testing, needed to be retooled to virtual learning to prevent the spread of the disease. (2020)

These mandates made nutrition educators, like Bethany, feel “forced to do it”. She also felt virtual delivery “would have never worked unless we've been forced”. Monica voiced a similar view of “COVID really pushing us into a virtual world”.

Policies related public health safety were being directed from state government, county government, and at the organizational level through Southeastern State Extension. While the

strict policies at the state level helped in giving educators clear direction, they faced many challenges in navigating program delivery decisions as they started to lift. Amber shared that, “during the pandemic it was kind of follow whose policies were stricter”. Each county handled policies differently. For example, Maria described how she was not allowed to work from home, “I know in other counties they, you know, kind of shut down. We weren't closed one day during the whole pandemic”. While her office remained open to employees, she clarified that they still were not doing face-to-face programming, “at that time we couldn't do anything in person”. While for some, like Crystal, “the buildings were shut down and locked” and the only option was to work remotely from home. Once statewide mandates lifted, Southeastern State Extension highly encouraged and mandated certain policies for continued safety in the counties. Each county office was also navigating how to align these procedures with the county government policies and guidelines. When these policies and guidelines directly conflicted, this caused a difficult area for nutrition educators to navigate because it directly impacted the safety of themselves, the safety of community participants, and maintaining job security.

These policies that came from different levels caused added stress for nutrition educators as they chose between continuing virtual delivery or returning to in-person delivery. Amber’s county was “very lax in a sense, but then we had kind of the state telling us we can't do it”.

Tonya felt like she was in the middle of navigating this with her county director:

We had specialist saying “it's not a good idea. Don't do this”. Then we would have people in our county that were in full blown meetings, doing things, you never knew anything was happening. What do I do? Then we had somebody else say, “technically, you need to do what your county is doing.” But if your county is like “let's do this. This is what they want,” that's what you need to do. So, there was that battle going back and forth. That just about did me in because that was real stressful because I didn't want to be the cause of why people got sick but I also didn't want my life to be miserable because people felt like I should be doing things.

Tonya was feeling pressure from her county to make the shift back to in-person programming.

As guidelines started to lift, some nutrition educators tried to resume in-person classes with new precautions in place:

When we did have guidelines with mask, and once was able to go back to the congregate meal sites, we did in distance and spacing out, and that sort of thing and checking temperatures. So, there are some policies there that just helped with feeling safe, for sure, and especially with the aging adults were important so, and my churches have not gone back. (Carrie)

They became a lot more not as strict there at the adult day care center. So, with like their food policies, like they were still just sharing food, and they weren't social distancing. And so when we're being told from [University] perspective, it's like when you do any type of programming, you have to have them six feet apart. Like you can't do anything food related. Yet I have a population and a partnership that wanted me to come back. But I couldn't ask.. I couldn't expect that they would follow it, knowing that adult day center population. So, I think that was kind of...there was a weird gray line of like, who do we, who do we listen to when it comes to it. And how do we continue doing our work and make those decisions? (Amber)

Kayla's county guidance aligned with Southeastern State Extension's guidance and she appeared to be less stressed about navigating these policies. She shared, "they really just follow whatever the current health guidelines are. So, when it was advised not to have many things in person that was what they were doing". As these restrictions have lifted, Kayla stated they are now "kind of just moving back towards in-person".

These rules around social distancing and safety during the COVID-19 pandemic are what shifted Southeastern State Extension into utilizing a different activity system focused on virtual delivery of nutrition programming. However, these rules have evolved and lifted over time, meaning that current programming choices regarding virtual delivery are no longer primarily influenced by this category but rather others within the activity system. It also means that the traditional activity system has reemerged along with a hybrid system that incorporates both methods of delivery. This will be discussed in greater detail in the *Object* section.

Extension Reporting System

The Extension Reporting System (ERS) has been in place since before the shift to virtual programming. While this tool was built around the traditional activity system, it was then adapted to meet the needs of a virtual environment. In ERS, educators are required to report monthly the number of contacts they have made in the county. As a result, the rules and guidelines associated with this tool have also impacted the culture of extension. And, according to Maria, “for extension numbers speaks very loud”. Monica shared why this reporting system was important to her:

That's when you can really say, and you can really connect the dots for folks particularly stakeholders, where we put this out here. People are definitely accessing it. Here's all the numbers that prove it, and it's from every single, you know, folks from every single group in our our county.

Educators emphasized the importance of reaching a larger number of people. A program impact summary form 2020 demonstrates this value in relation to the reporting system, “through these new skills I have been able to maintain an educational presence with clientele with even higher numbers that prior to COVID-19”. Patricia shared that this is one of the reasons she enjoys virtual delivery, “that's why I think that when I do some of the virtual ones, it helps me with those with those numbers, you know”. Monica discussed in great detail about wanting a tool and additional training on tracking the demographics of who views videos and program recordings so that the numbers can be reported in ERS. At the end of this conversation, Monica shared how her personal views as an educator do not align with what she also values in relation to reporting guidelines; “the numbers are not why I do what I do. I do what I do because I care about people's relationships with food”.

The rules around reporting in ERS also relate to Southeastern State Extension's promotion of using the Eventbrite platform for program registration. Patricia mentioned it as a

mandatory component of programming, “you need to go through that Eventbrite. That’s how they are keeping record of numbers”. Shelby tries to “do most of my registration on Eventbrite” because “there’s this beautiful thing where you can just go to Eventbrite and hit a button, and it creates this whole reporting system’.

Reporting in the system is captured by county but educators can also report programs that were done together across multiple counties. According to Amber this team reporting allows educators to “say that it served both your county and the other county”. Despite team reports, Amber felt “very unmotivated because my numbers for virtual programming, especially when it’s regional supported”. She reported that many people signing up were from other counties and as a result she “felt like I wasn’t doing my job for reaching my specific community members”. Meanwhile, Shelby worried that if she held a virtual program on her own and someone from an outside county registered, she would be “stealing someone else’s county’s people”. However, she also acknowledged that this gave her “more contact hours” to report.

In addition to contacts, program impacts are also captured through ERS. For instance, the program impact summaries analyzed in this document were retrieved from the ERS system. Carly shared how program evaluations can be used to “show greater impact” and that her overall goal was to “show that bigger impact”. Erika felt that “when we start doing virtual programs, it was harder to measure impacts”. Teresa felt “your goal should be to have some kind of behavior change even though you’re doing it virtual. That’s what I would like to see. The impacts from some of the virtual programs”. More information of the struggles of measuring program evaluation will be discussed later in the *Community* section under *Program Participants*.

General Program Guidelines

When asked about the need to adapt programming to audiences, some educators brought up caution. Wendy described how “you have to have certain fidelity to the program”. Monica stated a similar statement, “there are certain ones that you have to preserve the integrity of the curriculum”. Erika is “all about the rules” but then followed up with “when I cannot do something, I’ll figure out ways to do it”. She further explained her thinking:

So, you know, sometimes we hear something or we hear the rule, and we think that that rule means something. But we need to kind of dig more to see if it's something that is going to benefit the community, we need to figure out if that rule can be changed, or you know we can do things in a different way, so we can help the community. So no, rules don't stop me.

Bethany displayed confidence in her approach to program delivery and shared, “I just kind of I do my thing and I don't really ask for permission. I don't really ask for forgiveness, either. But I know what I'm allowed to do and what I'm not allowed to do”.

Educators voiced understanding the rules in place for program fidelity and shared the importance of these being flexible. However, their perception of the flexibility of current curricula differed. For example, Amber felt that greater flexibility and guidance written into the curricula would be helpful for her with future delivery:

So, it's really helpful when the program developer has kind of like “go, whoa, slow” kind of deal with, or like “red light, green light, yellow light” of what we can adapt with still keeping the validity of the program.

Meanwhile, Crystal feels program flexibility is a strength of Southeastern State Extension:

One of the nice things that we have in this state is that, working for extension, is that we are given freedom to be able to do our own programs based on what the county needs. So, that's good. And I think our state office or specialists are pretty good about knowing that, too, and not trying to put too many rules and regulations on us.

When looking at the program delivery guidelines for virtual delivery, policies existed around accessibility, professionalism, and branding. For example, the Guidance for Offering

[Mediterranean Nutrition Program] Online Programming stated “always use professional (not personal) social media accounts and pages. This helps protect your privacy and professionalism”. Despite current policies existing, educators shared a desire for more direction going forward. For instance, when asked about policies in place that impact virtual programming, Teresa was unaware of any. She then added, “I think if there wasn't a policy, there should be one moving forward, saying, you know, if you're going to do video content, let it be for something that's ongoing towards this curriculum”. Crystal, who values program flexibility, still feels the need for “just basic guidelines. I think we've got some of that already in place. But any kind of basic guidelines for virtual programming”.

SNAP-Ed Grant Guidance

Because the SNAP-Ed grant is funded through the USDA, additional policies exist that relate specifically to this program. Unlike the Mediterranean Nutrition Program and Healthy Cooking Program, SNAP-Ed programming falls under the SNAP-Ed grant funding which means that they are created to serve individuals whose incomes are below the federal poverty threshold. Educators mentioned this policy in their decision-making process in relation to program delivery:

So going back to choosing who you're targeting for that, you do have to be a little bit more specific if you're trying to go through the program material. So, if it is that senior center that you're doing, just double checking that they're an eligible site for it now. (Amber)

What happened with [SNAP-Ed] is because it's for limited resource, how you gonna know that you're working with limited resource families? Unless they are opening it to everyone online virtually? I have not looked into it. (Wendy)

In addition to this, programming needs to occur after the new grant cycle is processed for approval, which varies from year to year. This caused some frustration for educators who did not fully understand this process. For instance, when talking about being able to report program impacts, Bethany shared, “now I know the federal grant isn't until September, but like is nobody

processing? I mean I don't know when it gets processed exactly". Amber described how she had to adjust her program schedule for the upcoming year because of this policy, "knowing that I may not be able to use their funds from [SNAP-Ed], we've pushed it back to the spring".

Educators described how additional guidelines related to the grant shaped delivery. For instance, Teresa shared that "our recipes, we cannot adapt those". Bethany felt more freedoms and flexibility were given to educators when the shift to virtual delivery happened:

And, you know, I don't have to do something every week for eight weeks food wise. I can do a little bit less. I can do it every other week or something like that. Where I didn't feel I had that ability before COVID. And again, [university city]'s like, "you want to do food, do food. If you don't want to do food, don't do food," So that's a new freedom because it was always kind of a, "oh, you need to do food. (Bethany)

Because of her familiarity with the policies related to program fidelity and delivery of SNAP-Ed programming, Tonya described how at the start of the pandemic and shift, "especially with [SNAP-Ed]... we couldn't use their programming... we cannot utilize it and so there was that part out, so we just decided to go ahead and create our own information".

When asked specifically about policies and rules that impact virtual education, educator's had difficulty in recalling this information outside of those related directly to COVID-19 safety. However, these topics above related to culture, reporting, and curricula fidelity all came up during other interview questions which shows the impact these have on other categories of the activity system. Although the rules were not centered solely on virtual delivery, but more so related to the traditional activity system, they still influenced what educators valued in the virtual activity system such as high participant numbers and recordable impacts. The rules also influenced how programs were delivered as well as where and if compromises were made.

Community

Within the activity system, community are groups that share the same desire to see the objective reached. In this case study, this shared objective is the delivery of adult nutrition programming through Southeastern State Extension. In looking at the organizational structure of extension in Appendix A, the community within the activity system has the potential to be very broad. However, three main categories of community groups were captured in the interviews and program impact summaries: extension community, local community, and program participants. While other community groups exist, the three listed above will be discussed in the greatest detail due to the depth of information that arose from the interviews. Educators' consistently desired feedback and interaction from all three of these community groups to help them navigate decisions around the delivery of adult nutrition programming. The tools they used and rules they followed or broke were all influenced by these community groups.

The extension community is an internal community to the organization. It is comprised mostly of fellow nutrition educators at Southeastern State Extension. This community is different from the other two because it serves primarily as a learning community for educators and provides support in navigating the delivery of virtual programming. In comparison, the local community is comprised of community members and partners that are external to the organization. Their locally driven needs and input in relation to programming guide educators' choices related to delivery. Finally, program participants are those directly impacted by virtual nutrition programs. This upcoming section will discuss how the reach of program participants and their individual needs changed during the shift to a virtual environment. Through classroom interaction, program participants provide educators with direct and indirect feedback related to program delivery and influence if educators make any adaptations.

Extension Community

The shift to virtual delivery expanded and strengthened community by bringing nutrition educators together as they adapted to new methods of program delivery. Wendy shared “I guess me and my colleagues I work with, we converted everything into virtual before the University was ready for anything else”. Maria stated “it seems like the agents kind of just talked amongst ourselves. Especially the FCS Agents, and we, you know, worked out a bunch of kinks”. Maria also explained how this learning process took time, “that first one, we bumbled through it, and then we partnered up with other agents the next time, and it got a little better. And then the next time I got a little better”. Teresa shared a similar experience, “me and a coworker in [Rural] County, one night we just got our laptops and just the two of us, and we said, you know, let's log in to Zoom, and we tried out different things like sharing the screen, doing the reactions”. Tonya summarized this period of transitioning to virtual delivery as a group by stating “I don't know how I could have done it without the help of my co-workers”.

Some educators did not quickly embrace switching to a virtual environment. For example, Crystal said watching her colleagues, both at the county and state level, inspired her, “when they took the initiative and adjusted, it inspired the rest of us to do the same types of things”. Shelby “watched a lot of my other colleagues first before I did it”. She felt “some of them just like absolutely went. Like just did it and were very comfortable”. Monica stated that her conversation with her district was “hey, this district is doing this, and it's working out for them. I see no reason why our district can't also deliver [Mediterranean Nutrition Program] together”. Extension provided educators with an internal community of support and inspiration.

Educators shared that this experience of learning something new together encouraged them to break down traditional boundaries. A program impact summary form 2020 stated ‘the

ability to offer virtual programming afforded agents the opportunity to work together across county lines”. Many educators shared what they learned about partnering with other educators for virtual delivery:

It's just realizing like you're not an island. I think I'm wording that right. You're not an island, and you don't need to stay in your silo of like I am the [Rural] County FCS agent, which means I only focus on [Rural County] people, because you can encompass those people sometimes better when you work as a district. (Monica)

And for all the virtual programming, it made me realize that we are stronger together, because I think as a new agent, I really kind of wanted to do my thing and chart my path and this and that, but it made me realize that that is not the best for me. I do think some people kind of want to do their own program and this and that. But I'll tell you, the virtual made me realize that I need my fellow agents and we really do create stronger programs together. So that was probably the biggest learning thing for me. (Maria)

It definitely changed as far as um working with more agents. So, I feel like I went from being more singular to more of like a community group, even in the county, I did a few programs with different county partners that were online too. We kind of...it's like we worked more together because it was easier. So, we are more dependent on each other. (Kayla)

This new cross-county educator partnership was also encouraged for the virtual Mediterranean Nutrition Program and the Healthy Cooking Program. In the Guidance for Offering [Mediterranean Nutrition Program] Online Programming, a link to a Google Spreadsheet allowed for educators to share their plans for program delivery with other educators. Within this resource is the ability to “share ideas and requests for [Mediterranean Nutrition Program] online programming collaborations”.

Tonya shared that her and other educators “constantly go back and forth with each other on ideas or questions or anything like that”. Erika enjoyed learning from observing other educators and participant reactions. She noted “that was our first-time getting feedback from each other, like professional feedback”. Erika also found partnering in delivery provided a training opportunity for newer nutrition educators. In describing this experience she had with a

new agent, Erika shared, “she was really really new. And um, so it helped her to learn like even like basic cooking skills”. Carrie, who still considered herself to be a newer employee, enjoyed the ability to work with more experienced educators, “just to walk me through it and call on and then shared drives and all that was really helpful too”.

Local Community

In program impact summaries, nutrition educators start by describing local needs in relation to nutrition programming. These write ups tend to be similar and focus on diet related chronic disease. Some examples from program impact summaries are:

Chronic diseases are crippling older adults in [Southeastern State]. Over half of adults 65 years or older in [Southeastern State] have high cholesterol or high blood pressure. Physical inactivity and unhealthy eating are two primary behaviors that significantly increase the risk for these conditions. Less than 25% of older [Southeastern State] are eating the recommended amount of fruits and vegetables and less than half are meeting physical activity recommendations. (2020)

Cancer, heart disease, stroke and diabetes are among the top ten leading causes of death in [Southeastern State], and in 2017 they accounted for half of all deaths. These four conditions accounted for 194,706 hospital admissions (20% of all admissions) and over \$9.9 billion in hospital charges (27% of total hospital charges) in [Southeastern State] in 2017. (2021)

In [Rural] County, 30 percent of adults are obese, compared to the national benchmark of 25 percent. Contributing to this epidemic are poor nutrition and physical inactivity. 66 percent of residents in Eastern [Southeastern State] consume fast food each week. More consume sugar-sweetened beverages daily (60%) than the recommended fruits and vegetables (18%). Only 45 percent exercise the daily recommended amount. (2021)

This focus on the local public health indicators also came up in interviews with educators. For instance, Kayla “looked at the health assessment from the Health Department too to see what our top three goals or top three health concerns are”. Tonya stated “the main reason for [Mediterranean Nutrition Program] is because there's so much research with that program and so many people are looking at...there's a lot of chronic diseases in our area”.

However, additional local community factors shaped decisions around virtual delivery that were not mentioned in program impact summaries. For instance, many educators mentioned the role of their program advisory committee in connecting them to local needs:

I go and consult the Advisory Board. So, we have about eight to ten folks on the FCS Advisory Board in [rural county], and they are from different organizations, but they usually make recommendations about what they would like to see, what type of program they would like to see, and the community that would be best to receive that. So that's where I start. And then from there, I either choose something. (Kayla)

Send it out to my advisory committee, and then say, please send out to your group. And so, every now and then I get like...it just depends on how well my advisory committees are. Some of them are very, very engaged, and so to me when I see it, I can definitely tell there has been somebody pushing for it. An example I give you is, I work with a Hispanic Head Start Director, and so she pushes it within the Hispanic community. So thankfully, I actually hear a lot from the Hispanic community as well, too. (Leslie)

Sometimes community sites that are not part of the advisory committee reach out directly to educators and ask for programming. For instance, Patricia pointed out, “sites or organizations have reached out to me, and that sort of has created the ball rolling”. In a program impact summary from 2020, an educator shared, “I was contacted by the school psychologist of the [Rural] County School system to provide basic cooking classes for school personnel”. Educators’ program choices are influenced by their relationship with other community organizations.

As these partnerships in the community form, this relationship continues to influence program choices. Tonya has partners help her in recruiting participants by having them “advertise it through the farmers market newsletter, through the Chamber”. While Kayla discussed how “for the [SNAP-Ed], I worked with our library to capture the audience for that”. Erika has “one senior center in [city a], and it works really good and I have been doing it for years”. However, building the same relationship in nearby cities has been an ongoing effort for her. As she described:

They kind of like have their own world going on in [city b and c]. So, when I go to them it's...and I have a lot of relationships with a different Latino leaders, so that helps. But, they tend to just stay in their communities.

These community sites may have specific requests for nutrition educators regarding program delivery. Time commitment from partner agencies can vary and requires flexibility from the educator:

I mean they barely were able to do the [SNAP-Ed]. It was a very challenging [SNAP-Ed] program that was supposed to just last six weeks. You know the six/eight weeks, and it was expanded over like a three-month period because of time issues with them. (Patricia)

I'm like that's what the clients need and the senior center doesn't have eight weeks to give me, because sometimes they don't. (Bethany)

Definitely, especially the amount of time that might be allotted, or you expected for some of the lessons. It might not work for my group in their allotted time or their amount of time, so it could go longer or it needs to be shorter. It just it's.... I would just say that time isn't specific like, you know, um surgery must start now [laughter]. So, it's not that stringent for sure. Because we're working with families and communities, and just being nimble in that regard, and to get the message, you know to them. (Carrie)

For SNAP-Ed programs, the population served is individuals that have incomes below the federal poverty threshold. Teresa brought up then when working with this population “you gotta consider while we may have Zoom, do they have, you know, what it takes to do the programming?” and “are they using their data?”. To address this concern, Teresa partners with the “housing authority, because some counties have received money to purchase those little...they're not our iPads, but little tablets”. Leslie shared that:

I like to think that virtual is giving me an option to meet low-income family, because that is the one thing I've noticed is even low-income family has some form of a smartphone, or like a Chromebook or a laptop, or a tablet that they connect with us. That is cost efficient. The only thing that's probably inhibiting them is maybe even the internet sources. But I think we're partnering with like um libraries or something on that line. Um, [university] had like tablets that they were handing out to families during COVID time, so that way they can use those for programs. And so, I do think that we're able to reach out like our limited resource family a lot easier versus you know what we're originally doing.

Educators also brought up numerous opportunities for partnership they saw in their community:

I think virtual is gonna work more for the better for professionals like childcare providers. It will be so much easier for them to, you know, on a Saturday morning, having, instead of going out of their home like just having it at home. I think, for people that work that will help. (Erika)

It's a lot easier to do lunch and learns I feel like virtually for employees that work all over the county. (Shelby)

A lot of the churches have gone virtual. And I would recommend reaching out to them. And you...a good way to do that would be through their associations and them. By that I mean, like the Baptist Association, Methodists. (Teresa)

Although the different curricula have a set of guidelines that recommend specific program lengths, the needs and availability of the community often dictates how the educator reaches that audience. When virtual delivery increases convenience for the community, for example by saving them the time and resources needed for transportation, the educator values offering programs in this capacity. However, if the community has no desire for a virtual program, the educator is influenced to return to the traditional model of delivery.

Program Participants

Participant Reach. When asked about the benefits of virtual education, Carly explained “you're going to be reaching more people”. Patricia stated, “we notice that yes, when you do virtually we get greater numbers”. When reflecting on the organizational norms previously mentioned, reaching more people was something that many educators valued because of the Extension Reporting System capturing those numbers. Many program impact summaries in ERS also placed an emphasis on this greater reach:

The cooking videos has seen an increase in audience engagement on [Suburban] County Cooperative Extension's Facebook page compared to last year audience views. (2020)

The program was so successful that sessions filled up and additional online slots had to be made available. (2020)

The [Rural] County Family & Consumer Sciences Agent offered a virtual 6-session [Mediterranean Nutrition Program] program through Zoom to all citizens in [Rural] County, as well as the state. (2020)

There was over 200 registration via Eventbrite for the program. The participant attendance throughout the [Mediterranean Nutrition Program] program was consistent and averaged about 100 participants per session. (2021)

Shelby pointed out that “having zoom, you could have a thousand people”. While she didn’t recommend having that number of participants, she was highlighting how in a virtual setting class sizes are no longer limited to the physical space of programming.

This also meant that the audience being reached changed during this time. Maria saw it as a strength that “you reach a broader audience. I mean your ability to reach people where they are is greater. I mean that is, that was a bonus, you know. We were talking to people all over the country essentially.” A program impact summary from 2020 mentioned “we were able to reach 4 international, 4 out of state, and 2 out of county participants”. Tonya was “shocked at the people from other countries, out of state that participated”. One of the reasons for this broader audience is that participants were learning about the program through Eventbrite.

With this changing audience came new choices around virtual delivery for educators to make. Patricia shared the new decisions she was faced with when determining class size, “do I do it for fifteen people two hours? Or, do I do it for forty-five people and just do the demonstration?”. Shelby’s thinking related to this is that “they needed to decide how many people they're going to have, because if you do want it to be interactive, then you don't need to have more than probably, I'd say, have like twelve people”.

Amber feels that “we definitely saw a shift in people knowing who extension was from virtual programming, and it helped us make that shift”. In the future Bethany sees virtual delivery as a way of expanding her program reach, “and I think that we can serve a lot more

people in a lot of different ways, but we can still hit that traditional audience of the in- person and, you know, that kind of stuff”.

Participant Traits. While social distancing guidelines were in place, like the educators, some members of the community were also being pushed outside of their comfort zone in relation to technology. Bethany highlighted this transition that was happening at the community level:

I mean even the clients who were not very techno savvy, you had to be if you wanted to stay connected to anyone, you had to be and, you know, I think a lot of our clients got pushed out of their comfort zone, and it was like, “oh, okay that smartphone... you're going to have to learn something.” You know, “here download this app or call this you know Zoom number and you can at least listen in” and they were just starving for anything and everything.

Participants had varying access to tools and technology. Monica saw that “not everybody's working with the same technology or the same speed of internet”. Teresa shared that “the phone was the biggest...for my participants using their phone was their major resource for connecting virtually”. Amber also “noticed a lot of people were on their phones” and pointed out how educators “have to be conscious of how small the image is on a phone, too, that they might not even be able to see the full recipe or the demonstration”.

One program impact summary in 2020 highlighted a region of the state where the “counties are rural with unstable internet services”. This made it so the educators were unable to offer virtual programming in a live streaming format. Similarly, Leslie saw that her community was “having the same broadband issues I had”. However, she also feels that has changed with time. She shared, “I think a lot of more people are more accustomed to virtual now, especially with, I think with businesses being more accommodating for that”.

Carly noticed that with her virtual programs “you get completely different people”. Reasons for this included “they don't want to come to an in-person class whether it's their

personality, or their schedule, or.... you know, whatever it is”. She feels “it makes it a lot more accessible to people that would never take the time to add something else to their schedule, you know”. Bethany pointed out “not everybody can come to a class at night, after work, or even a weekend, or just whatever else”. Bethany now has “some people that used to come in person that now only do virtual”. Other educators mentioned similar statements where participants were drawn to the virtual format due to convenience:

So, I think there has been really good feedback, and of course you know the feedback of it helps with schedules and timing, or that's offered on a lunch break. I know that also helps a lot of people as well that they can just pop on on their lunch break. (Amber)

I've got some participants that work during the day, some that don't drive, which that's a big issue. A lot of people just don't have transportation to come to class. (Teresa)

They don't have that whole, “oh, my gosh, it's six o'clock. I have to cook dinner. I can't participate in this program”. Like, yes, you can set your laptop up while you cook dinner, or you can sit at home and do it. (Shelby)

I've been surprised by the number of folks who watch the recordings later, and I guess it's because it doesn't work out with their schedule to come in person. And so, it's more helpful for them to have that recording, so they can watch it whenever they want. That's the thing that I worry about with not doing any virtual is then you kind of...some of these folks who may not be able to get out of the house, or whatever their reason might be, then could be lost again if we don't offer anything. (Kayla)

The informal feedback, the positive stuff has been great, cause like “this was wonderful I could attend”, “I made dinner at the same time while watching you”, or “I didn't have time to like, you know, get out to the Extension Office to learn this”. (Monica)

Often when discussing technology, generational differences came up in the interview.

Some saw the use of technology as the reason their program was struggling to reach older adults:

It does require, in my opinion, more work to work with actually adult on a virtual format, or on the ones that I have, anyways, because there is like challenges with some of our seniors in terms of working with computers. But I think they're slowly figuring out. I'm slowly figuring out. And so, working with those individuals to kind of overcome those challenges have been, to me, rewarding. (Leslie)

I tried to do a virtual [SNAP-Ed] at one time but it didn't go well because people were not signing. It's because I send it more to the senior community. (Wendy)

They're adapted for sure, in that they um...it can be an age gap for sure, though. I think that the older folks still want the in-person as the younger...so a mom and a daughter do it together. They partner it up because the daughter can help the mom and that sort of thing. (Carrie)

So, a lot of people that take my classes are older. I would say retirement age and not the best computer users. Not saying all of them are bad, but they definitely were not familiar with it at all. So, it was a little bit difficult to try and help them when I'm on this side of the computer and they're on that side of the computer. (Shelby)

However, Crystal found the offering the program virtually at the senior center connected her to a new audience that she missed when solely holding face-to-face programming:

The other thing that surprised me was, um, the [SNAP-Ed] program at the senior center, and the diversity of participants that signed up and came to the class virtually were people that I had never reached before going to the senior center in person. So, I learned that the senior center has two distinct populations that they serve. They've got the ones that come there and use the facilities and eat and lunch. And then they have a whole nother group of people that read the, um, the newsletter that they sent out monthly online and sign up for their other programs like trips and things like that, when they go out of town. Two totally different groups. So, we reached a lot in the group that are checking that online email and signing up for programs. So that was a success that we reached people that we don't normally reach, um, at the senior center.

Meanwhile, Carly “tried to do it in part in person at the senior Center and they just weren't ready for it yet”.

Overall, educators found how virtual programming was received by the community varied. Maria found that “some didn't want to be on a computer, so they just flat-out refuse”. Meanwhile Crystal had a group that “last year, when we could go back in person, they requested that we do it online again”.

Programing Engagement and Feedback. Community programming has a social aspect as the program participants and instructors interact with one another. Carly felt this was a primary motivator for participants to sign up for a program, “they're looking for um...you know that connection, more than anything. The... the education and behavior change is just the cherry on top to what they're really looking for”. Bethany felt that “a lot of times my clients that were

willing to do the virtual because they knew me. They had already had developed a relationship with me”. However, Shelby also highlighted how some participants may be drawn to virtual because of the privacy. She shared that “maybe you just worried because you wanted to lose weight, or you just didn't want someone to know. So, there's definitely a privacy factor about it”.

Educators mentioned how the interaction with participants helps them adapt program delivery based on the audience. In a virtual setting, Amber feels that “the biggest challenge is just the building that personal connection with people.” She referenced how “when I hop on a virtual format, and no one's talking or no one's being interactive, it kind of...it doesn't motivate me as much”. Wendy shared a similar experience, “I don't know if that's necessarily a challenge, but it is harder as a presenter to present when you don't get the kind of a firm uh, you know, affirmation that you need”.

Educators shared methods they used to help build their relationship with participants in a virtual setting, which in term they felt helped increase engagement:

The hardest part was not being able to see folks faces. And then trying to still remain as personable in a virtual format. So that was a challenge, and that, I think, just takes practice. Honestly, after the initial time that I, the first time, I delivered a zoom presentation. I pretty well knew it just takes pretending that that you can see them. So that takes practice. (Monica)

I still try to really, when I present to really try and be myself, and like, joke around and laugh like hopefully they're laughing on the other side when they do have their camera. So, I don't think that anything presentation-wise would be very much different. (Shelby)

And I would say, going into the group, just be yourself, you know. Don't go in trying to be above them because they're going to turn...that will turn them off, you know. Show some empathy, you know, and offer the education and you should be a success. (Teresa)

So, I think anything that you can do to engage people and show them your personality and that you're a real person not just like a robot behind the screen kind of deal, I think, has really helped in the [Mediterranean Nutrition Program]. (Amber)

Educators mentioned that certain changes in classroom dynamics also impacted relationship building and classroom engagement. Tonya highlights how classroom etiquette changes in a virtual setting and may influence participant engagement:

I feel like sometimes people may be more open in a classroom or a small setting or whatever, then they are virtually. Number one, are you going to hear me? Number two, am I interrupting somebody else? You know, and so you might not say anything.

Shelby highlights the natural connection that is built with in-person programming. Specifically, she discusses the internal conversations between participants “going on before class, after class, and the middle of class”. Kayla also mentioned the additional interactions that occur outside of scheduled programming time, “they might come twenty minutes early and then I’m talking to them for that whole time, you know, and they get to know me, too”.

Educators felt that classroom engagement is an important piece of program delivery.

When taking on a mentoring role in the interview, Teresa shared:

I would advise that, even though you are virtual, you want to try to engage them as much as you can, and you can do that by asking questions, you know, and each week ask for a recap, ask someone to volunteer to tell you what they remember from the the week before, so make it as engaging as you can the participants, because that's going to determine whether or not they come back the next week. (Teresa)

Some educators found that the chat box was a helpful tool that helped participants adapt to the virtual classroom etiquette and even built confidence certain in participants:

But I definitely did have some virtual methods that we had a lot of conversations. Um, a lot of people putting stuff in the chat box. Not really a lot talking like this, but more chat box stuff. (Shelby)

People can write whatever, right? And share sometimes. Sometimes virtually is good, because they can share things that they would not say in person, especially if the cameras are off, you know. (Wendy)

I don't know if that um being behind the screen gives them like more like they feel brave about saying things that I never heard before. (Erika)

Despite efforts to keep participants engaged, many educators still struggled in certain situations:

Um, that sometimes people get distracted like um again with the Housing Authority, and I also did a childcare providers training and it was at seven o'clock at night. That was not a good experience. Their cameras were off and I talk, and I talk, and I talk, and you know I'm sure they were tired, and it was...it's a great opportunity for them to, because, you know, they will not go after hours and I completely understand because they are tired. (Erika)

It is the interaction virtually and in person, is completely different. You can have a full evaluation in paper there that people are there with you, and they will fill it out because the time has been dedicated for them. When you're virtually they can get distracted. They don't have their cameras on. They may be doing email while you're talking. So, the attention span is shorter. (Wendy)

Those lunch and learns that I do for the county, they get something out of it, and I have now learned that they just log on and mute me, [laughter] which is totally fun, because I tell them to write their name in the chat box and then they get mad at me when they don't get credit, and I'm like well, you didn't simply write your name in the box. (Shelby)

I would notice that I was losing a lot of the um their attention. That was not there. They were really not on, and as soon as I was able to get my foot in the door, I mean it's like the whole demeanor just changed, you know. They were so excited to have me there and looking forward, and they said it. They said it many times. This is better than doing online, you know. (Patricia)

Adaptions to Curricula. Educator's interactions with their community shape the way that they deliver the curricula. Adaptations have been made to terminology, recipes, and the length of programs. While the importance of program fidelity was mentioned in the rules section, educators justify these adaptations to delivery as acceptable because they benefit the community. For example, when delivering programming, Wendy prefers to "teach it the way I speak and the way I talk". While program fidelity can be a concern with adapting the curricula, she is "not really worried about what they would tell me about that, because I am the one teaching and I am the one that knows the community".

Other educators shared a similar need to adapt the curriculum based on participant knowledge. Erika described how she has two different senior communities that she teaches and “even when I was using the same curriculum, I have to adapt or make adaptations.” Carrie explained how she devotes extra time to explaining “terminology that they might not recognize.” While some educators above found the need to simplify the different curricula, others found that there was a need to go in greater detail. Kayla has found that she has had to “go more in-depth with a certain topic that they are really concerned about that may not be address as much in the curriculum”. Leslie found she was having to create a balance between the different learning stages of participants:

Some audience members that are, when we did virtually, some that are like really like the fans already where they're talking about like omega-three, phyto acid chemicals and all that stuff. So, we're like having to switch our conversations, our curriculum around to make sure that we meet those needs while still fitting in the needs of those who are just starting to read nutrition labels.

Recipes were also often adapted in programs. Reasons for adaption varied between educators but were primarily influenced by program participants:

I've gone to and taught [Mediterranean Nutrition Program] at the senior center but if there's a recipe that...you know, they can't chew because of... you know they're, they're elderly, they might have dentures or you know whatever the case may be, you know you have to take certain things into account to where these folks are going to get the most out of it. (Carly)

I feel like there's an attention span on virtual formats that you really have to shorten even the recipe itself or skip ahead a few steps within the recipe to kind of hit that attention span when it's online. (Amber)

Maria brought up that when working with populations with incomes below the federal poverty, some individuals lacked the tools used in the recipe. She stated, “some of those clients didn't have cooking essentials, so we had to modify some of the recipes we provided”. She gave an example of adapting a recipe meant for an oven to one that could be made in a microwave.

Finally, some educator's chose to extend the length of the program. Patricia added an optional potluck at the end of one of her programs with the Hispanic community and described the success that resulted because the culture values "coming together and enjoying food". Meanwhile, Carly has added two extra sessions to help with the program pre and post evaluation when working at the senior centers. She shared, "you know some of your seniors, you know they can't read necessarily and those barriers, you have to accommodate for those".

Educators interact closely with the extension community, local community, and program participants to ensure that program delivery in a virtual setting is successful. The internal extension community, specifically comprised of other nutrition educators, strengthened as a learning community for educators as they relied more on each other due to the sudden shift to virtual delivery. Externally, the local communities and program participants provided direct and timely feedback on needs, preferences, interests, and areas for improvement. This feedback was provided directly in formal evaluations and indirectly through program engagement and interactions. When engagement was not strong with certain audiences in a virtual setting, educators struggled to get the community feedback they desired.

As mentioned in the introduction of the *community* section, the extension community is broad and includes groups outside of those discussed above. Some of these additional community members that played more of an indirect role in educator learning and share the desire for a successful program will be talked about in the next section *Division of Labor*.

Division of Labor

Southeastern State Extension has a hierarchical organizational structure with specific roles existing at both the state and county level (see Appendix A). Figure 4.2 displays an adapted and simplified organizational chart as it relates to nutrition educators, which are referred to as

FCS Agents within this diagram. FCS Agents navigate this complex environment by managing expectations from state leadership, state specialists, state staff, county extension directors, district extension directors, county managers, and county commissioners.

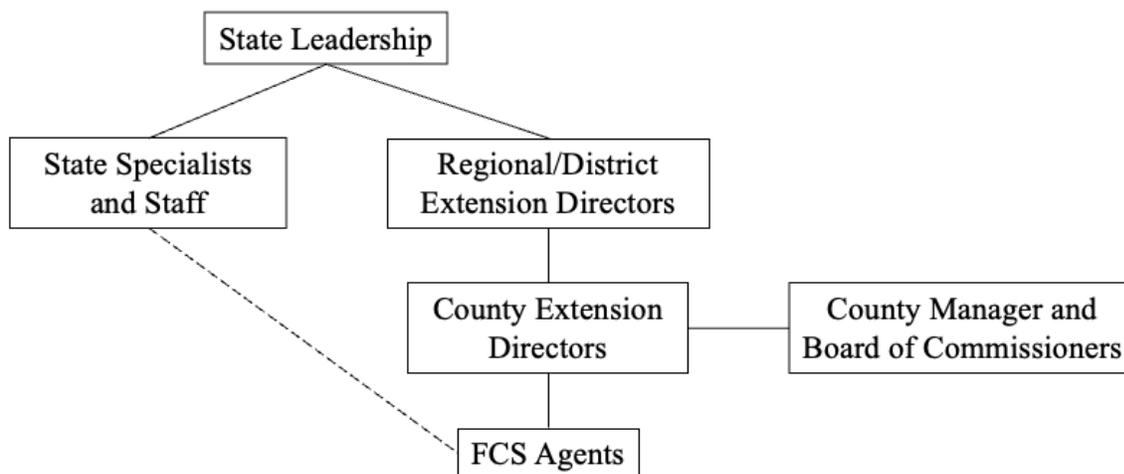


Figure 4.2. Adapted organizational chart.

For state and FCS Agent interactions, this organizational relationship often resulted in perceived differences of power and status due to the structure of the division of tasks. This relationship was often viewed by nutrition educators as a vertical division of labor. State level specialists and staff provide educators with certain tools necessary for delivery, primarily the curriculum. In SNAP-Ed, they also provide additional tools through grant funding such as food and educational extenders. In return for receiving these tools, nutrition educators must return the appropriate evaluation materials and data to state specialists and staff.

This vertical power division also exists locally at the county level when leadership roles within the county extension office and county government interact with nutrition educators. County managers, the board of commissioners, regional/district directors, and county directors

all play a role in approving the funding for the agent's position and additional materials for nutrition programming. These relationships are important for educators to maintain so that they can get the necessary funding for tools such equipment that supports virtual delivery.

While the vertical division of power and labor was strong in the traditional setting, this shifted in the virtual activity system to include the horizontal division of labor as well. With virtual delivery, educators started to partner across county lines to share tasks and responsibilities. The next sections highlight state and county interaction, county level roles, and the changing structure of educators collaborating on program delivery.

State and County Interaction

Amber described how state and county roles within extension work together to reach communities across the state:

I basically do food-based programming. That takes research-based evidence-based programming from [University] and brings it to the communities. And I like to kind of reference ourselves as like extension cords, because, you know, we're the side to where other people plug into us, and then we plug into the main source at [University] to bring that information bridging that gap.

The curricula in this study were developed by Southeastern State Extension state level specialists and staff. Maria feels that “extension is really good about the education portion and the curriculum development”. Wendy shares that the role of nutrition educators is to “offer research-based programs and education in the community”.

Educators mentioned reaching out to specialists and state level staff when making the shift to virtual delivery. However, the power dynamics that resulted from the division of labor influenced this interaction. Erika shared that her comfort with reaching out to state level specialists and staff shifted over time:

If I really have a question, I feel comfortable. I used to be so scared of them, but not anymore. No. But now I feel comfortable if I really need something, or if I'm trying to do

an adaptation or something, I'm not sure if that's appropriate, I will. Especially because my...I don't have a background in nutrition. So, any time there is something related with that I'd rather to ask questions.

All educators did not feel this power dynamic. For instance, Maria felt “there was always someone to reach out to” and a 2020 program impact summary also shared a similar statement of “I’ve consulted with [University’s] specialists”. When Leslie was discussing how she would reach out to nutrition specialists, she felt frustrated because “unfortunately, one of the big answers that we always got was, ‘we’re in the process of trying to figure out how to get this done’”. Meanwhile, Carly shared that she doesn’t “really reach out anybody it at the State level, to be honest”.

Wendy felt that the transition to virtual delivery was more difficult for those working at the state level because, “the University could not do anything because they don’t work in the community. The only thing they can do, I guess, is provide training”. However, other educators mentioned that state level specialists and staff reached out to include them in their efforts to help educators both during the transition to virtual:

Granted the [SNAP-Ed] team was on it as far as, like, [SNAP-Ed] in all of their... well [SNAP-Ed] is the adult education one so... but they've been on that with trying to see us and meet us as agents and go, “well, they're delivering virtually, so let's step up the ways in which they can do that”. So, they've been great about that, and even speaking as somebody who hasn't fully delivered [SNAP-Ed], I know that those resources are there. (Monica)

I did some videos uh, and that they divided between um several people. But then, at the end somebody was not able to do it, so I did a few more. Um, what else I did with specialists... I don't remember. (Erika)

We worked on doing the recordings for [SNAP-Ed]. (Patricia)

Well, yeah, extension in, you know, out of [University city], like with [Mediterranean Nutrition Program], they transitioned most of the training, and we were just able to take what they did, and then put it out to the community just like we would with a non-virtual education part, but they really did a lot of the hard work for us, and then we were able to get it out. But you know there's such a good support and system that if agents said, I

need, you know, this translated on to virtually or translated into another language or Spanish or whatnot ...they always seem to be working to make it happen so we could deliver the programs. (Maria)

It appears this group effort temporarily resulted in a more horizontal and collaborative division of labor between state specialists, staff, and nutrition educators when shifting materials to a virtual environment.

Responsibilities related to the delivery of curricula, such as evaluation, have designated roles written into the curricula. Some of these roles have changed with the increased use of technology. When discussing certain changes with program evaluation, Bethany felt that “in some ways, [university city] has kind of shifted all the work to the county level to make their life easier”. She explained her reasons for these feelings:

Now we have these [SNAP-Ed] surveys that are all virtual. Well, I give out the paper surveys because my older adults, not all of them have a computer, some of them are attending my virtual stuff with their phone. Some of them... I've been doing my [SNAP-Ed] recently in person, so there are no computers. But the surveys are still online. I don't have 100 tablets or 25 tablets or any of that. Or, hey, I'll email you. They don't all have email because they don't have to. So, I'm doing an in person, but [university city] still has the surveys virtual so I hand out a paper survey. And then, it falls to me to enter 25 surveys.

Bethany shared that when she does get the reports back, it is too late to enter into ERS. As a result, she shared, “I don't like doing paperwork that doesn't benefit us either. It needs to be a mutual thing. It needs to help both of us and it's not”. Bethany’s frustration with this process has shifted her view, “I've gotten to well, why don't I just teach my own program, and I can do my own evaluations”.

This contradicts with the feelings of Crystal who, like Bethany, was among interviewees who have worked with Southeastern State Extension the longest. Crystal highlighted how not every program curriculum offered to help educators with analyzing impacts, “I do like the [SNAP-Ed] program because you send all that to them, and they handle the pre and post

evaluations, and then send you the results, which is nice, very nice”. These differences in roles based on the curricula can be seen in the written guides:

Agent sends e-mail to participants with link for Pre-survey. If participants are not comfortable entering information electronically, you can use a printed form and the agent will enter the responses using the link. ([SNAP-Ed] Online Program Logistics)

Data in the Google Spreadsheet can be sorted by Agent name and / or county. Reach out to [nutrition extension associate] [nutrition extension associate email] with any data sorting requests. Alternatively, you can make a copy of the spreadsheet at any time, and sort data as needed (FYI - the copy will only contain data entered in the [Mediterranean Nutrition Program] Online Evaluation Tools prior to the creation of the copy). (Guidance for Offering [Mediterranean Nutrition Program] Online Programming)

If you are conducting the class through [SNAP-Ed] or EFNEP, please work with their data coordinators to use the entry/exit or pre/post evaluation forms that are used with those programs. If you are not working through [SNAP-Ed] or EFNEP, please send the following forms to your participants before your first and your last class. Remind them to fill out the short evaluation forms during the first session and during the last live session. ([SNAP-Ed] Evaluation Details)

As seen with the differences in evaluation, division of labor results in different levels of power and control within programming at the educator level. Statements from Bethany such as “I don't think it helps when [university city] keeps hiring people that have never ever worked at the county level” and “you need me more than I need you” highlight the power struggle she is feeling. This difference in power meant that many educators felt influenced by the state level staff in which programs they offered at the county level. When talking about her program choices, Leslie stated that “I will also say it is as well as like a disclaimer, that sometimes the University drives the curriculum that I have to do”. When I asked Bethany for mentorship in the delivery of [Mediterranean Nutrition Program] in a virtual setting, her initial response was “is the Mediterranean diet, the right program or is it just the one [city of university] is pushing on you?”. Carly mentioned how prior to COVID-19, “[Extension Leadership] was really pushing everybody getting trained in video production”.

Educator feedback on programs offer educators the opportunity to influence the programs being developed by state level specialists. Feelings on how this feedback is used varied based on the educator:

They did ask for me and my co-teachers input um before they push it out to the whole state. So that was my first kind of instance with them asking for input from agents so hopefully, they'll continue to do that with some other curriculum. But typically, no. (Amber)

But you know if I notice that something needs to be updated, I try to reach out to who I can, or who I know is in charge to just provide you know any feedback, I can. Now whether it makes a difference or not is another thing but um but yeah, I definitely try to do that. (Carly)

There have been times that... like I would, um, maybe send an email or request out throughout the state for a certain type of program, and the specialist will respond and say, "hey, yes, we have this" or "we're working on this". So, you know they're responsive to our needs to by our requests. It may be more of a passive, more passive input. (Crystal)

But yes, as an agent, we do have the opportunity to be on work groups that do help and have input into the program development. (Maria)

We do our monthly meetings, and anytime we are free to, you know, express, you know if a recipe wasn't particularly liked by a group. At the end of the class, when we do our follow-up survey you know they asked us what wasn't well received, or what was well received about the um program. (Teresa)

As an agent, no, I don't get any... I don't get that I know of. We are not involved in the development of the curriculum. (Wendy)

Most of the times, no. I think lately, since we start having those like the local foods group and things like that, we have a little bit more of input, but not in the past. I never like really heard from um like asking agent. (Erika)

I don't feel like I've been here long enough to know that because those programs were developed before I came along. But I do feel like with newer programs that are coming out, the specialists have asked our opinion, or what we would like to see with some of them. (Kayla)

The only thing that I can... sort of... not until after they're created. How are they working as we're teaching them, what works better, what doesn't work, any issues we've had that we can give them feedback so they might can change or alter anything. (Tonya)

County Level Roles

Educators cover either one or two counties and work within offices located in those counties. They report to their County Extension Director (CED) who reports to the District Extension Director (DED) and county commissioners. Virtual programming allowed for those in various levels of power to observe programs without having to travel. Carly shared that her and partnering educators would invite these individuals to see the virtual program delivery in action:

Our county directors, we shared it with district directors, we shared it with you know cause [state specialist] was here when we did it and asked them, you know if there's a time they're available feel free to jump on to any of our sessions. And so every once in a while we'd see some of them on there.

When talking about reporting their work, Patricia shared, “I have to report to Commissioner's. Monthly Commissioner report see the numbers that um who we are serving”. Erika was proud when sharing her feedback she received when shifting to virtual, “so we were doing all that, and commissioners were very, very happy”. Monica explained the importance of this reporting, “we need to be able to report the impact that we have so that our stakeholders understand why we're important, and you know stakeholders help us get funded”.

The virtual setting allowed educators to reach a greater number of people, which is externally valued when reporting to stakeholders. While many educators mentioned reaching a wider audience as a benefit, some also mentioned conflicted feelings in how this related to their role as a county based and funded position:

So, it's kind of a hard balance for me, because, you know, I'm hired for a specific county to make a difference in a specific county, yet I might have only one or two from my own county. (Amber)

Also, when it comes to digital stuff and virtual delivery, you can get people from all over the world, which is good. But this information that we capture ahead...if we put it behind a, you know, a wall to capture those statistics, we can also see, “oh, we're getting a bunch of random people from another county. They're not even from [Rural County]. Funny, what's that about?” And like how did that happen? Or why are all these people

from Canada accessing this video? That's interesting. So, it's important to just like, know and see that, too. It's not enough to be like one hundred people watch this video, but we actually don't know how many of them are from [Rural] County. We're just assuming. Just to have a little more transparency on those numbers there. (Monica)

And instead of just serving my two counties that I serve, it was, you know, Eventbrite is nationwide. So, it was making sure I could keep in touch with my normal clients. So, I did a lot more mailings, you know. (Bethany)

Educators shared the feedback they received from their county directors during the shift to virtual delivery. Most feedback reflected the desire to continue with program delivery and reaching the community:

I would just say he would just say "good job." Just accomplishing. He was like, "all right, the right, my district director wants you to... we need to do this. You all make me look good." Um, I think just on being able to perform and be able to um offer what we could was just appreciated and acknowledged. (Carrie)

Yeah, I mean, she pretty much was like, whatever, you know, whatever we need to do to get the information out there. I mean that was it. She pretty much just challenged us and tasked us with deliverings, you know, just getting our education programs out there virtually by whatever means we needed to do. That was really it. (Maria)

My CED is not communicative about things that I do. So, for example, if there is a staff meeting and I say I am doing blah blah blah virtually, "okay." But uh a part of that... he's not involved in... at least in my program. (Wendy)

So, he really pushed it at first, which I think, like everyone kind of did, probably from a director level. Um, but he actually attended probably like my first three virtual programs, um and interacted and like actually participated. Like he was a participant, not just watching me and since, and I have two directors. So, um my other director, who is not technologically savvy at all. The poor man. I swear he would have a typewriter if he could. But he really was very positive about it, and kind of just wanted us to work as comfortable as we could, and um if we thought the program was going to work well virtually he trusted us to do it. He attended some stuff as well, and everything seemed...they both were relatively very supportive, and one pushed a little bit more than the other because I think just like everyone else at the time they didn't really know what was going to happen to our jobs, and like, you know, if they were randomly just going to stop paying us, or whatever. So, I think, with a little bit of anxiety and fear of that um, one of my directors really pushed us to kind of just keep doing and keep going. But then, one of my other directors really just wanted to make sure that we were still able to do what these curriculums are made to do, and you know we would change people's health behaviors. (Shelby)

As restrictions on delivery methods loosened, these conversations with CEDs shifted:

My county director supports me as a professional and I think she supports whatever decision I think's best. She knows, I have a great advisory that provides me with valuable feedback, as far as the needs they're seeing in the audiences they're working with. (Carly)

But I know that my director would, I mean she has no problem with it if I want to do them virtually, that's fine. If I want to do them face-to-face, that's fine. (Teresa)

We discussed if there was interest in it or not, like how much participation that we were getting, and really towards which, of course, at a certain point, that was the only choice we had, and then it kind of got to where we were like questioning if we should move that to in-person programming. And so, I started offering like the hybrid option, and I would do in person if someone wanted to come, and then the rest of it, anyone else could join from online. And for the most part, I was still having people to the online version, and I might have like one person who just didn't want to use the computer would come to the kitchen and for the program. So, we did that for a little while, and kind of just kept evaluating it. (Kayla)

She was just like, you know what, if you just take a step back, or the virtual programming like, what can you do in place of virtual programming? Maybe that's more like videos that you just produce on YouTube kind of deal, or what kind of other community connections can you make outside of virtual programming, because I think my, you have to look inward too, of like how you're feeling with it. And I was kind of feeling a little bit unmotivated. So, they're very supportive. (Amber)

Educators shared that leadership supported their choices they made related to virtual delivery as long as the community needs were being met, reported, and shared with stakeholders. While county directors could take an active role in promoting or discouraging virtual program delivery, they tended to take more neutral roles in guiding educators through these decisions based on the educators' perceptions.

Changing Structure

When discussing their professional community, educators mentioned the new cross county collaborations that formed with other nutrition educators. This led to a new horizontal division of labor that was not common to see with traditional programming. Examples of divisions that emerged are displayed below:

When you, when you partner for virtual programs, you can split up you know who's working on the marketing, again who's teaching the different lessons, so you know you could teach a lesson and then let's say if you're working with you know, a couple other agents y'all could rotate who teaches each lesson. An agent can also be there to look at the chat box and monitor the questions in the chat box. (Carly)

One would do the majority of the PowerPoint part, then I would cook a dish and the other one would cook a dish as well. So that person only had the PowerPoint to do and one dish. It made it so much better. (Tonya)

It works great when you work with other agents to make it lighter on yourself. Always have a backup to help you with the IT part of managing the chat, managing the attendance, if you can't do it all. (Patricia)

Carrie appreciated “having extra hands on deck to help...because I'm not a DJ”. In this analogy she ties in how educators and participants both benefit from this new division of labor:

I think it's just when you're trying to juggle, or you know, you have the plates turning, and you're trying to just keep it going and make it as smooth as possible, I think, for the audience and participants, and to help it be engaging at the same time.

Carly feels that this new division needs to be accounted for in future guidelines for programs that can be delivered in a virtual setting:

I think virtually...it needs to be written to team up with other agents. I think that's very, very helpful. Um... I know that, for example, also, this is kind of... you know something that you might put in there, too, is that if you could even have somebody on your team that is a registered dietitian. Because we would have very specific questions that you know some of us wouldn't know the answer to and and not that we're necessarily expected to know everything, but it was really nice that we had, you know, a team member, that was a registered dietitian and had a lot of background information on things, that she was really able to answer questions and also, I mean...I feel like that's the pro in working with other people anyway. Like I said, you have different strengths and weaknesses so you're able to bring more things to the table.

Educators mentioned additional changes they would like to see in the future in relation to division of labor. A couple educators voiced the need for additional support at the county level to help:

If extension is saying we need to continue to do this, then they need to form a group of people and ... they have to an extent. I mean they have done that but I feel like.... I feel like everybody thinks we should all be doing it. No, I think that if you want us to do video,

then let this certain group of folks find out what each county probably is looking for and let them do professional videos and let them put it out and then let us do the in-house stuff. (Tonya)

And I always said, you know, one thing is that doing videos outside or doing videos to share nutrition information, or to share information in general. But when we're talking about cooking videos, we really need somebody that help us. (Erika)

In addition to this, Erika mentioned that the structure of trainings should change as well. Instead of training coming from the state level staff, “when we're talking about technology, can be done by younger people by younger agents to teach older agents”. Finally, Teresa mentioned wanting to see more formality in the division of labor amongst community partners by the creation of a new policy:

I think it would be great if at the county level we could have a policy that would some how form a partnership with service agencies like maybe the hospital, health department, cooperative extension, social services.... where we can all collaborate to do virtual programming within our areas. Um, you know, and I don't know if that's something that they could force.... I wouldn't say force, but at least a policy that would include it, you know, because I feel like sometimes the county forgets about extension, you know. Like right now, we're sharing um, you know, kind of working with each other with social media, but it's like we haven't done any real programming together. And you know that can be tied into that research that they did on the health impacts, or whatever what they do each year, you know, maybe pull some these agencies together and see, you know, what kind of virtual programming can you do? (Teresa)

The virtual delivery activity system broke some of those traditional barriers that existed with division of labor between county lines. This happened because educators found that working together made them stronger in the delivery of virtual programming. The division of labor between state and county roles and how they interact remained similar between systems. However, the importance for continuing to communicate and collaborate at all levels emerged from the interviews.

Object

This section highlights educators' current perspective on the delivery of nutrition education in both traditional and virtual settings. Personal skills and views, tools, rules, division of labor, and community have changed many of educators' outlooks on the future of virtual program delivery. When asked about their plans for programming, participants see purpose with both traditional and virtual activity systems. They also see opportunities to pull strengths from both activity systems to form a hybrid system of delivery.

Moving forward, participants have now developed a new predisposition to virtual programming:

You know, for a while we've needed that push to transition into the virtual world just because everything is online and while I do believe that there is a place for hands on, I also believe that there's a place for virtual and quality videos and having the flexibility. (Carly)

So, I think moving forward like it definitely has made me have skills that will carry on for years. (Amber)

I'll tell you I'm so grateful to be able to be back in person that I don't want to do it virtually again unless I absolutely have to. In my opinion, I don't think it's ideal, but at the time it was necessary, and it it's still great information however you get it out there. (Maria)

I am more inclined to host and teach a class virtually. (Program Impact Summary, 2020)

I believe it's going to be a dual thing. We're going to have both in-person and virtual. (Crystal)

An internal influence for those that want to continue with virtual delivery is that it helped in creating a balance in schedules:

And like, you know, you're only one person and being able to go to all of these different places and be everywhere...it's so hard. And I feel like I felt so much more balanced when I can do things virtually. (Carly)

And there was no food prep. So, there were no grocery stores. There was no, you know, any of that. It was like, this is nice, do we have to go back? (Bethany)

So, my most favorite thing, probably about virtual is I don't have to go anywhere. (Shelby)

My schedule is really hectic throughout the spring, so maybe it might have to be a virtual one. (Amber)

It can really help you and save you a lot of time because you don't have to travel. (Erika)

By adapting to virtual programming, we, Area Agents, have been able to serve all counties we cover with one program meeting, saving time and resources. (Program Impact Summary, 2020)

While many people share that virtual settings help in creating balance through saving time on preparation and travel, not all educators share this experience.

It really does take a lot more time to set up, to manage, to navigate. So, making sure that you have that kind of time. That you can commit to that. You know, it's the pre-planning with a virtual program that's important. You can't just wing it. You got to have a lot of things in place before you try to do a virtual program. (Crystal)

A high amount of learning related to technology and tools occurred at the start of the shift to virtual and those trainings continue to influence the outlook of virtual delivery. Leslie mentioned how the video training will help her implement her idea of a video library, “after the training that I've gone through, now that I know what good quality videos are, my intention is to try to carry over that training to do those videos”. While this training remains of value for some educators, other knowledge of platforms and tools gained through training is longer of value. Early in the transition to virtual delivery, Shelby “knew too much information” related to technology and now finds that “half that stuff I don't even use anymore”. One reason for this may be based on educators using technology that is most practical for achieving the desired outcome. For instance, Carrie’s future use of equipment is now based on comfort, “I don't plan to continue to use the iPad maybe versus the MacBook” because “I just like the bigger, I guess, because I'm getting older”. Meanwhile, access to high quality equipment through a modern

teaching kitchen continues to motivate Erika to provide virtual programming because she feels “so blessed with the kitchen that we have, and I plan to continue using it”.

Educators shared their thoughts on additional trainings they would find helpful for future delivery of virtual programs. Some of these were additional trainings that add onto the ones that they already attended. For instance, Shelby would like to learn “how to make like your Zooms more interesting or your classes more interesting”. Patricia would like to see “more hands-on video training for when preparing recipes/food demos”. Crystal shared a similar thought “I wonder if um [Videography Extension Associates] would do something just for FCS agents on cooking demos and how to do that online”.

Ideas on trainings in new areas also were mentioned. In order to create a platform for the “on-demand” learning Monica would like to create, she stressed the point that “we don't know who's watching it. We can't really.... you know that's the education.... the professional development that I want to see, because I think that's what we need”. Maria wanted training on areas such as additional platforms “because we pretty much relied on Zoom and a few kind of basic things. But I know there's other technologies out there that probably would enhance the virtual learning that I don't know about”.

The desire to continue cross county collaboration in delivering virtual education was shared by educators in interviews and program impact summaries. Carly “would love to continue offering it collaboratively”. Kayla thinks “agents in my area will continue collaborating for virtual programming because it's very convenient to work together”. Program impact summaries from 2020 stated “as a result of this program, cross-county collaboration will be considered for future virtual programs to help maximize program delivery” and “this was a great collaboration across counties to engage a broader audience and we will continue to collaborate in the future”.

Educators are also considering how community needs will impact their programming moving forward. Patricia shared “for me it's going to be if the site, whatever the site or partner would like”. Teresa thinks her “county partners preferred face-to-face, and that's mainly because of the food component”. Erika is reassessing her community needs:

So, I'm not sure what the community needs. So, I have been doing... I just finished fifteen weeks with a distribution that was going on at the library, and my purpose with that it was kind of like, what are the needs of the community? Because I had never seen so many people trying to get food in [rural] county. So, I want to be sure that whatever I'm doing, I'm doing the right thing, I'm doing what is going to make an impact to the bigger ah impact.

Carrie feels uncertain of what the future of virtual programming will look like because “it’s still kind of early, I think, too. I think that the generational adaptations are just evolving, and I just I can't, really... I wouldn't know how to measure that”.

Conclusion

The CHAT framework allows for the holistic exploration of nutrition educators’ experience in learning to deliver virtual adult nutrition programs. This chapter presented the findings by discussing the details and themes of each of the CHAT categories in the following order: subject, tools, community, rules, division of labor, and object. However, the learning that occurs within this system is not linear. For instance, changes in one system category have the potential to impact other categories. To address this need for a more holistic view of the system, Chapter 5 will discuss the findings through the lens of the entire activity system.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of the study is to gain insight on how extension nutrition educators in a southern region state navigate the delivery of adult virtual programming. It investigates the following research question: How does the recent shift to a virtual teaching environment influence nutrition educators' experience with the delivery of adult nutrition education? This chapter begins by presenting the findings that emerged when the themes related to the categories of CHAT are arranged together within three distinct activity systems and how they relate to current literature. Following this is a summary of the discussion depicting the three key findings. This chapter concludes with the implications for future research, theory, and practice.

Findings

As educators discussed the transition to virtual delivery, the major influence of the change in activity systems was the implementation of COVID-19 safety regulations and policies that limited face-to-face interactions. This change in rules caused the drastic shift from the traditional format of programming to a solely virtual format. However, as the study progressed, these regulations and policies also started to shift and loosen. By the time the interviews with participants took place, many were navigating a new system where virtual programming was not happening because of rules in place but rather influenced by other aspects of the activity system. A return to face-to-face programming also started to happen during this time. Instead of face-to-face and virtual being separate from each other, they started to be seen as systems that could work together. Figure 5.1 displays the three distinct activity systems experienced by nutrition educators that emerged from interviews. These will be discussed in this chapter and are as follows:

- 1) Traditional Activity System: Continuing face-to-face program delivery due to historical organizational culture.
- 2) Virtual Activity System: Stepping outside of comfort zones and changing the system through learning together.
- 3) Emerging Activity System: Developing new ways to approach and balance program delivery to maximize impacts.

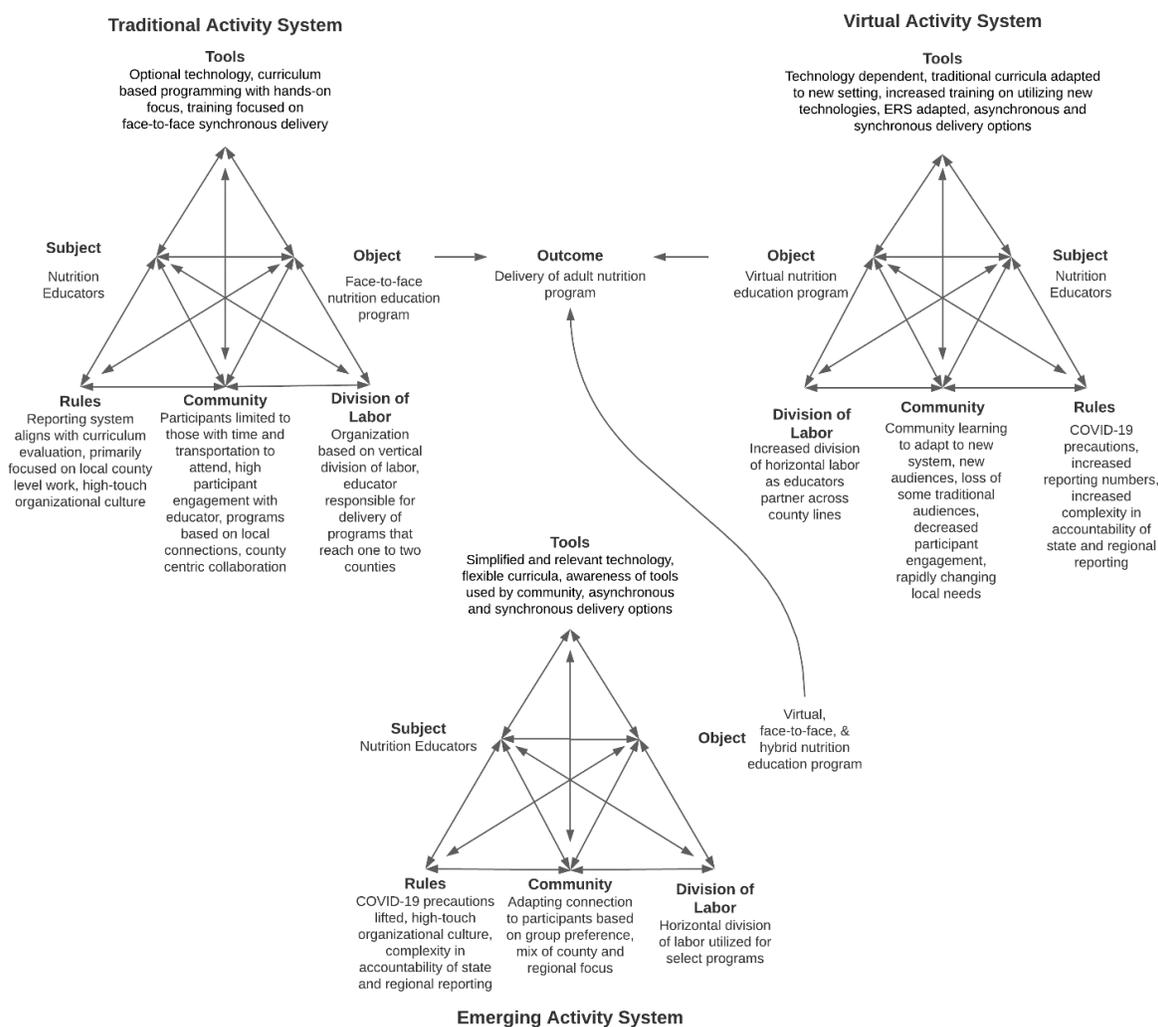


Figure 5.1. Activity system model adapted to study findings.

Traditional Activity System

Extension was established in 1914 by the Smith Lever Act with the purpose of expanding knowledge from land-grant universities to community members unable to access formal education (Knapp, 1916). Extension's rich history, built around face-to-face programs in communities, frequently appeared in the program impact summaries written by nutrition educators at the start of the COVID-19 pandemic. Many used the word "traditional" when describing this system. This traditional system was explored in greater depth in the interviews by asking educators questions that compared the virtual format of delivery to face-to-face delivery.

Engeström's (2018) third generation of CHAT recognizes that internal contradictions and tensions occur within systems when categories do not align. These are areas where change, innovation, and transformation seek to better align these components. Figure 5.2 highlights tensions within the findings that relate to the traditional activity system. These tensions affirm issues that researchers advocated virtual nutrition education could potentially help to address prior to the mandatory shift in 2020. This previous research suggested virtual nutrition education should be looked at to reach audiences that face barriers related to traditional delivery (Atkinson et al., 2010; Haynes-Maslow et al., 2019; Krall et al., 2015; Swindle et al., 2014) as well as to reduce organizational costs related to staff and travel (Stosich et al., 2016).

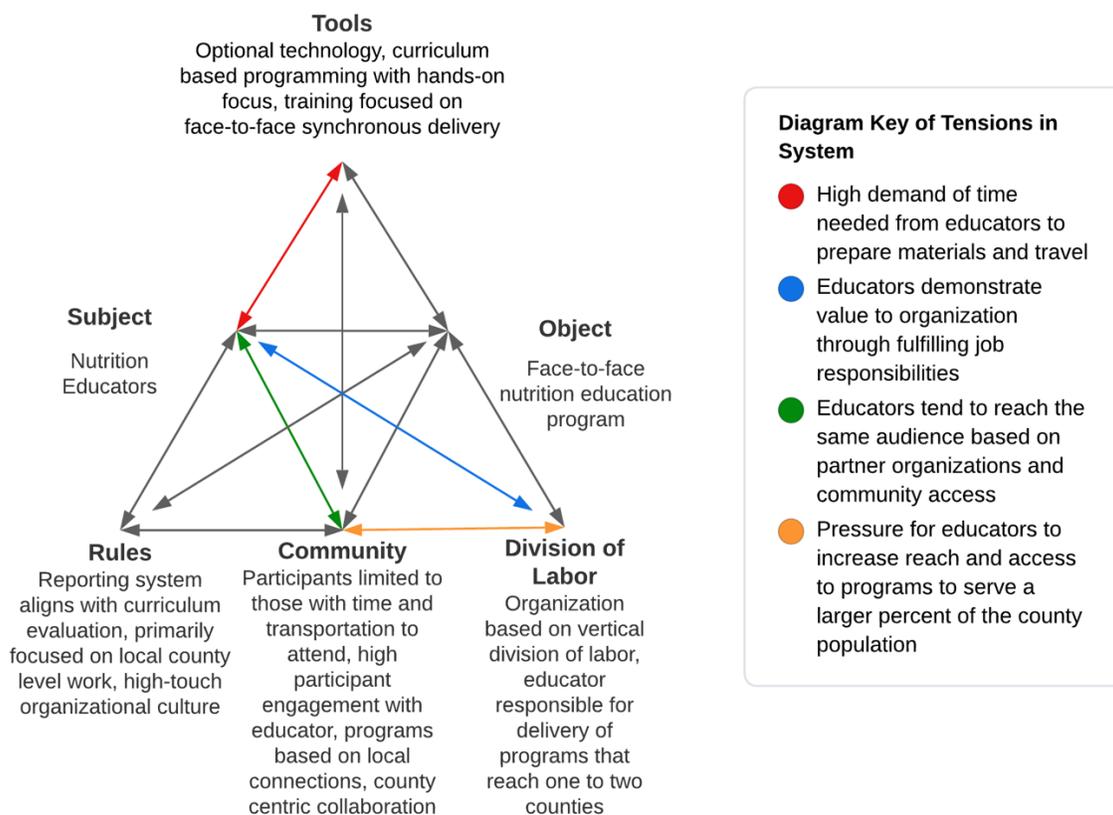


Figure 5.2. Tensions between categories within the traditional activity system.

An organization with a hierarchy centric culture is common in government agencies and typically values “efficiency, timeliness, consistency, and uniformity” (Cameron & Quinn, 2011, p. 53). These cultural values were evident when educators discussed the division of labor within the traditional setting. Power distribution is highly vertical and reflects the organization’s structure. State and county leadership, who have roles tied to the funding of program educators and the different program curricula, influence which nutrition education programs are delivered and how they are delivered. Each educator works independently in their county to deliver those programs. When educators described their roles, they highlighted a large variety of programs

they offer to their county, with many additional programs that reach beyond the focus area of this study of adult nutrition education.

Educators have busy schedules that consist of meeting with advisory councils, training on curricula and technology, buying program materials, preparing food ahead of class, and driving to program sites. Some educators are covering two counties, which increases the need for them to balance these demands. Even experienced educators, such as Bethany, have felt overwhelmed by busy schedules. Educator's calendars are scheduled out months in advance and many mentioned having to say no to certain requests for community programs. Eventually, these busy schedules become a barrier to educators' ability to deliver more programs and reach more audiences within the community.

The reporting system, which recognizes high contact numbers and hours with participants, contribute to educators' feeling pressure to continue to reach more people despite their tight schedules. These numbers are important for educators to capture in the reporting system because they are shared with leadership and stakeholders and are thus tied to the funding of their positions. The rules promote reaching community members by measuring success in part based on contacts and hours spent with contacts. If the organization wants to expand the reach within communities, but educators' schedules are full, they have limited options. Stosich et al.'s (2016) study, which focused on resources needed for creating online SNAP-Ed, argued the importance of virtual education by stating, "the traditional delivery method for this education – one-on-one or group classes – is associated with some of the highest cost items in the program budget: travel and wages" (p. 1). When looking at Figure 5.2, the traditional activity system that emerged from educator narratives supports this argument that if additional staff cannot be hired, categories within the system needs to change in order to reach more people.

Existing literature on virtual nutrition education has illustrated that this form of delivery may help in overcoming participant barriers commonly seen in the traditional system (Krall et al., 2015; Stotz et al., 2017; Swindle et al., 2014). Educators' experiences with traditional delivery support this notion that face-to-face programs tend to reach a traditional audience that has the time available to attend programs when scheduled. Previous scholarship has highlighted that barriers to participating in face-to-face programs include lack of transportation, work schedules, and childcare (Atkinson et al., 2010). Educators referenced working with key county partners, such as libraries, senior centers, and housing authorities, to try to overcome some of these barriers to reaching participants. These partners often help in providing participants for programs in addition to program space. If participants were already at these sites for other services, additional transportation was not necessary. These responses echo Haynes-Maslow et al.'s (2019) finding that nutrition educators often partnered with other organizations to increase recruitment and retention of SNAP-Ed participants. When successful in reaching a larger group, these partnerships were likely to continue each year and secured a spot in educators' yearly programming schedule. In addition, these organizations were likely to serve on advisory councils and shape future program delivery through this role. While these partnerships tend to be strong, there are still groups within the community that may want to attend a program but are missed by the traditional structure.

However, despite emerging research that saw virtual delivery as a promising solution to address these contradictions, change within the system was slow. Even the newer educators alluded to the need to continue to provide programming the way it has always been done in their county when they started their position. When exploring the traditional system through interviews and document analysis, there were areas where CHAT categories aligned and these

areas were deeply engrained in the history of extension and its culture. This alignment helped in facilitating educators' delivery of programs through the continuation of the traditional activity system (see Figure 5.3).

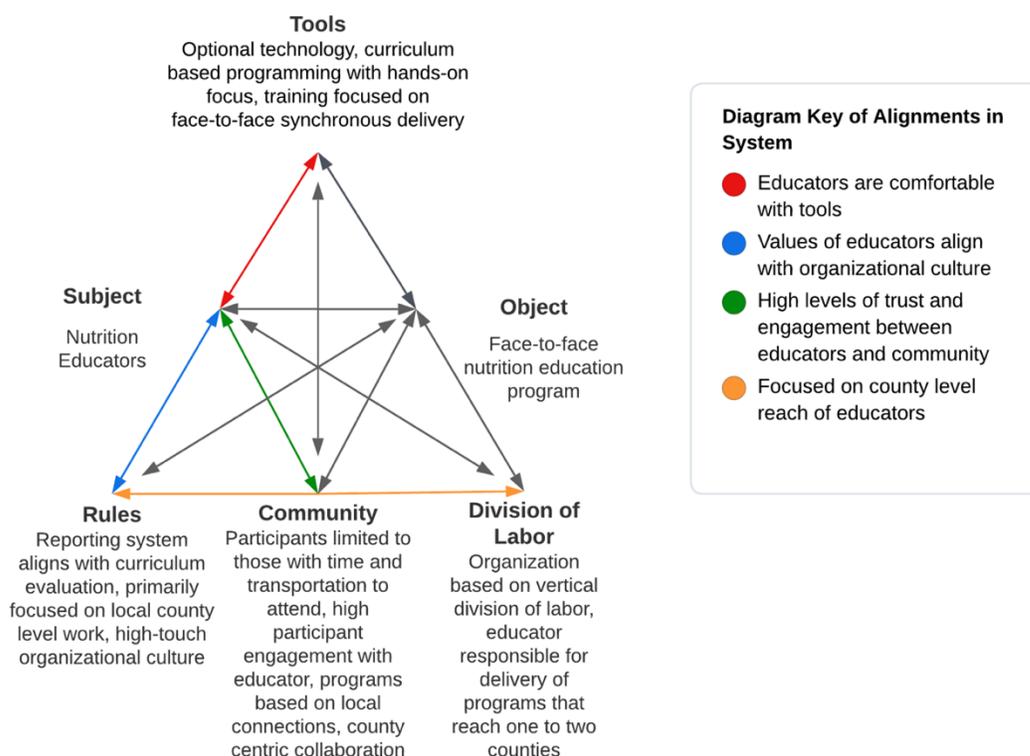


Figure 5.3. Alignment between categories within the traditional activity system.

Southeastern State Extension prides itself in being a “high-touch” organization and centers marketing around this characteristic. Curricula demonstrates this high-touch value through the inclusion of hands-on activities such as cooking demonstrations and taste tests. This cultural value and hands-on structure are also what attracted educators to the organization. When Erika was talking about community needs, she stated “they still need that, you know, handshake”. This “handshake” represents a relationship of trust between the educator and

community. Haynes-Maslow et al. (2019) highlighted that nutrition educators felt that building trust with the community is important for successful SNAP-Ed program delivery. In addition to valuing the development of trust that comes from forming relationships with participants, most educators' narratives in this study described them as being energized by working closely with the community. Many talked about the joy they felt in seeing program participants in settings outside of class and maintaining that connection. Face-to-face programming supported this connection and motivator for educators to deliver nutrition programming.

Many educators acknowledged that technology was available for use prior to the COVID-19 pandemic but that they did not feel obligated to use this technology. At the time, this technology was available but not necessary for successful delivery. Those educators that were comfortable in using it, often did so to promote traditional programs. For instance, videos, Constant Contact and Eventbrite were used to digitally market traditional programs. However, delivery remained face-to-face. Educators that were not comfortable with it were able to pass certain responsibilities along to administrative assistants or continue to implement traditional marketing and registration procedures. A few educators like Monica and Wendy were early adapters in creating asynchronous learning opportunities utilizing technology. However, curricula delivery remained synchronous and face-to-face.

Because this traditional delivery system had been in place for over 100 years, the system was structured accordingly. The ERS system captured face-to-face community contacts with a primary focus on local county level work. Curricula evaluations, completed by participants during programs, were aligned to the reporting system to capture additional impacts such as behavior changes. Although tools, technology, and community need change with time, the deeply engrained rules and norms of the organization made it more resistant to change.

Virtual Activity System

When COVID-19 related regulations and policies went into effect to protect public health safety, everyone inside and outside of the organization was drastically and suddenly impacted. These changes added a dimension of personal and professional stress and uncertainty as educators navigated the new system. Southeastern State Extension wanted to keep reaching the community but needed to find a new way to do so that did not involve face-to-face contact. Similarly, other educational based systems, such as the K-12 and higher education, were facing similar drastic shifts in systems of delivery. This of scholarship highlighted how educators in both K-12 (Catalano et al., 2021; Francom et al., 2021) and higher education (Turnbull et al., 2021) were challenged during the COVID-19 pandemic to decrease barriers for students such as familiarity with technology, access to a computer or device, and access to internet. These findings align with the challenges also faced by nutrition educators during this shift. Throughout 2020 and 2021, society was learning to navigate a highly virtual world. This pushed nutrition educators to explore an activity system where nutrition program delivery was solely done in a virtual setting.

The increased dependence of technology made it go from being an optional tool to a necessary tool for both educators and program participants. Existing literature found that some educators within the K-12 system struggled to shift to virtual due to not having access to high-speed internet (Catalano et al., 2021). Narratives from extension nutrition educators, such as Leslie, highlight that lack of access to high quality internet connection was also an issue faced by extension educators. However, she did state that access was improving for herself and program participants throughout her county due to increased awareness of this need.

Previous scholarship highlighted that extension educators that wish to deliver programs online “should be prepared to use the following key resources: local media production resources, web lesson creation software, and an online data collection system” (Stosich et al., 2016). Prior to COVID-19, Southeastern State Extension offered media production training to educators across the state and this training frequently came up in narratives and program impact summaries as a skill that helped with making the shift. The first two years following the switch to virtual were a trial-and-error period where educators experimented with using the different platforms and technology. Unlike traditional literature that assessed the best platforms and delivery models for virtual delivery through formative research (Krall et al., 2015; Loehmer et al., 2018; Stotz et al., 2017; Swindle et al., 2014; Walker et al., 2021) and experimental design (Au et al., 2016; Bensley et al., 2011), this study took place during a time primarily focused on taking action to address immediate needs. Recently, more publications have been written that look at this period of rapid shift (Bahl et al., 2020; Gorcyxca et al., 2022; Hohlt, 2022; Saqib et al., 2022; Wong et al., 2022). In Southeastern State Extension, state-level staff and county educators worked both independently and together to create materials in a timely manner based on resources that they had available.

The same curricula that were used in the traditional system had to be adapted quickly and efficiently, a challenging activity that was also being done across other state extensions (Bahl et al., 2020; Hohlt, 2022). The curricula guides supported educators by giving options related to technology use to fit to their specific needs for effective delivery. When comparing this experience to similar literature focused on this time period, the K-12 system was also adapting face-to-face for virtual delivery. Francom et al. (2021) found that competence in technology made this shift easier for some educators. Similarly, educators with Southeastern State Extension

that were already utilizing technology dependent platforms and equipment in the traditional activity system became quick to alter the use of certain technology to fit the needs of the current activity system. These early adapter educators typically relied on user guides and self-paced learning to navigate the new system. Those that were more resistant or hesitant to adapt to the new technology tended to depend on the synchronous training opportunities provided by the organization's IT department and their peers to guide them. As the restrictions continued and comfort with technology increased, nutrition educators started to invest in more equipment to support this work and improve the quality of program delivery

Almost every educator interviewed mentioned that the shift in delivery pushed them out of their comfort zone. This discomfort was associated with the need to learn to new technology and equipment. In the traditional activity system, this discomfort with technology was a barrier to expanding into virtual delivery. While the barrier of discomfort still existed, the need for virtual programming made it a necessary obstacle to overcome. Once this was overcome, many categories within the virtual activity system were aligned and promoted positive delivery experiences for educators (see Figure 5.4). For instance, many educators, such as Teresa and Erika, highlighted how much they enjoyed the creativity that came from this experience and how it motivated them to move forward during this time.

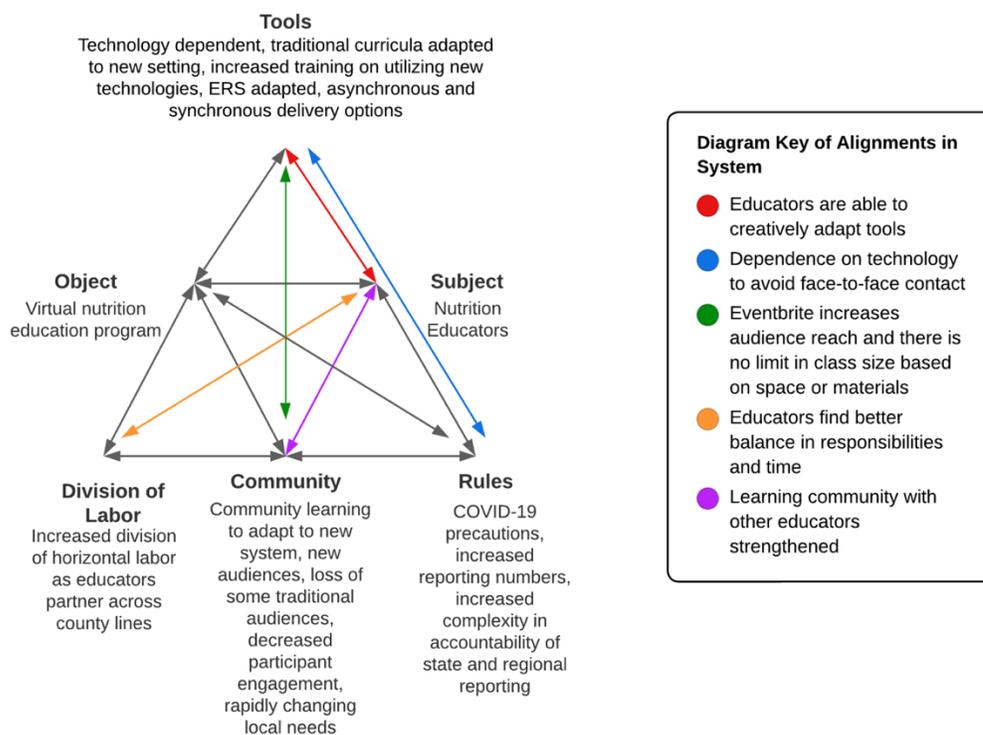


Figure 5.4. Alignment between categories within the virtual activity system.

Increasing cost of food, a changing job market, and issues with supply chains meant that community needs were also changing (Har, 2021). The available curricula through Southeastern State Extension did not directly address all the changing community needs. Educators talked about the need to focus education at the start of the pandemic on cooking meals from pantries. Embracing the opportunity to be creative, educators like Tonya and Erika stepped away from using traditional curricula to develop their own programs to address these needs directly. They then shared these program outlines with other educators. Meanwhile other educators, like Bethany, looked for curricula offered by extension in other state to meet these needs not being met by current curricula offered through Southeastern State Extension. While she was not breaking any written rules, it was going against implicit norms of the organization and

challenging the vertical power dynamic of leadership having high influence on county level education. Bethany mentioned other nutrition educators approaching her wanting to learn more about how they can also deliver these curricula.

This new approach to programming also meant that educators were coming together to teach programs. This opportunity to now work across county lines while still being able to reach the county they serve provided many benefits to the educators. Educators that were early adapters to technology could teach and assist educators that were less comfortable with using technology. Educators found that by teaming up together for program delivery they developed a strong support system that they could learn through. While the strengthening of this learning community was a major benefit discussed by educators in the interviews, it is an area that has not been discussed in previous literature that looked at virtual delivery of nutrition education programs.

Since educators were working together, they could divide up tasks that typically would fall on one educator. In a virtual setting, the dynamics of the classroom changed, so having someone monitor that chat box and the technical side while someone else taught helped make virtual delivery more manageable. This new horizontal division of labor also occurred throughout the more traditional elements of the program curricula such as marketing, teaching, and hands-on demonstrations. This resulted in a greater balance in busy schedules as less individual time was spent on program planning and delivery. When looking at organizational change theory, what influences the shift from an organization that promotes a hierarchy (control) culture to one that promotes a clan (collaborate) culture affirms this finding (Cameron & Quinn, 2011). While both have an internal focus, a clan (collaborate) culture tends to be associated with greater “flexibility and discretion” in comparison to a hierarchy culture that is associated with

“stability and control” (Cameron & Quinn, 2011, p. 39). The shift to virtual delivery also led to a shift in the rules and internal norms. This sudden and necessary change allowed for greater flexibility and discretion of program delivery within the field, which then lead to greater internal collaboration amongst nutrition educators.

New audiences were attending virtual programs. For cook-along programs or ones done in partnership with other local organizations, educators tended to keep the link private and class size limited so that more engagement could occur. They found that they were reaching new local audiences through partnering with community organizations. For instance, Crystal started interacting with senior center members that didn't visit the site during the day for a meal, but still received the newsletter and signed up for events through that. Employee lunch and learns allowed county employee's wellness opportunities that otherwise wouldn't have been possible in that time frame due to travel. Working individuals could also attend programs while balancing their personal lives by participating at home. This aligns with previous literature that looked at educators' perspectives and found that participants were more motivated to participate in a course when partnering with other organizations that provide extrinsic rewards (Case et al., 2011). In the case with the county lunch and learn series, the county provided health insurance related benefits to employees that attended the session.

Along with reaching residents in the region being served by the host educators, they often reached additional individuals throughout the state, nation, and even outside of the country. Many educators mentioned how they had fun learning and comparing food preferences across the different regions of the world. A big factor related to this was the advertising done through the Eventbrite platform that had the option to reach people across the world or limit only to the with a direct link. Since physical space and transportation no longer limited the number of

participants, for many programs that were being done regionally, educators chose to keep the link visible to the public to encourage a larger number of participants. While this increase in classroom participants viewed as a positive by many educators, it also created some new tensions within the virtual activity system (see Figure 5.5). The Extension Reporting System (ERS) was designed with the county as the primary focus of reporting and the rules still aligned with this system.

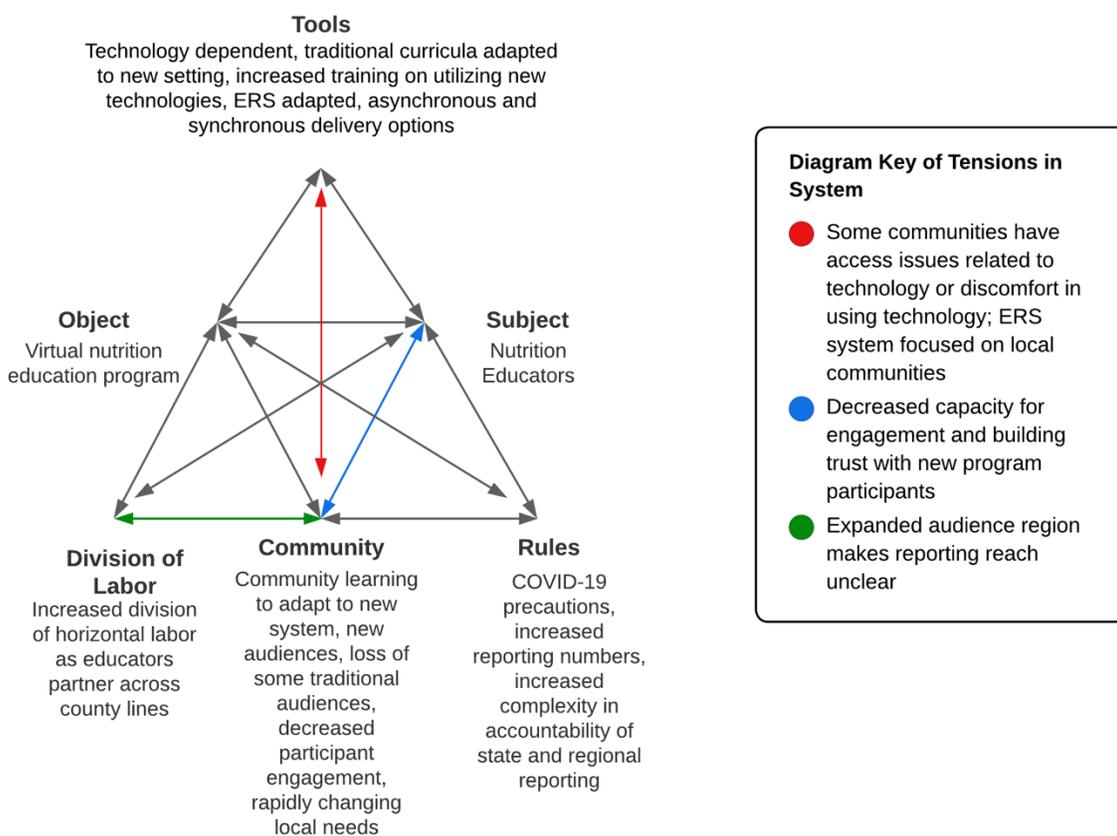


Figure 5.5. Tensions between categories within the virtual activity system.

Frequently, educators also struggled with keeping participants engaged in the virtual setting. Educators, like Amber, that felt energized by building a connection to participants

struggled to adapt to this new way of interacting. Participants keeping their cameras off and not asking or answering questions was often cited as fueling this feeling. This seems to be a common challenge with virtual education that resulted from COVID-19 restrictions. Hohlt (2022) found that educators mentioned engagement as the biggest challenge when transitioning an extension diabetes prevention program to a virtual setting. The literature showed that educators in the K-12 system also struggled with maintain social interactions with students and some experienced difficulty in promoting engagement and participation (Francom et al., 2021). Educators at Southeastern State Extension experimented with ways to help increase engagement. Crystal preferred to do virtual hands-on cooking together with her classes to increase engagement and had them pick up bags of prepared food in advance. As Shelby pointed out, having a smaller class size was one solution to increasing engagement, but this also means that there were less contacts to report. While many training opportunities existed to learn new technologies, very few were available to educators that focused on virtual pedagogy that increases the engagement of participants.

Generational and cultural differences were noted by educators related to participant reach. While some older adults learned and adapted to program delivery in a virtual world, others still struggled or resisted this change. This is consistent with past research that showed that audiences under 32 years of age were the most likely to be interested in virtual SNAP-Education options (Loehmer et al., 2018). However, educators were also quick to note in interviews that with time and as the population ages, technology comfort related to age may no longer continue to serve as a barrier to reaching older audiences. This is appearing in more recent research that has demonstrated success in offering virtual SNAP-Education to adults over the age of 60 years (Wong et al., 2022). Outside of older adults, Patricia found that the Hispanic community she worked

closely with responded much more positively to her in-person versus virtually. As noted by Saqib et al. (2022), environmental and social factors can often predict the utilization of virtual or face-to-face program preferences. While virtual connected educators to new audiences it also missed some traditional audiences served in the past.

In the traditional system, division of labor meant that state level staff and specialists drove the content and availability of programs delivered across the state. In the virtual setting, educators can work across county lines and offer a greater variety of programs to their local community and communities far away. As a result, educators have developed a closer learning community with other educators that empowers them to share new curricula despite going against the implicit norms because it allows for the to adapt quickly to the changing needs of community.

Emerging Activity System

At the time that the interviews with nutrition educators were occurring, COVID-19 rates in communities had decreased and new medical advances allowed for the lifting of regulations and policies that restricted face-to-face contact. With these advances, nutrition educators started to return to face-to-face programming. As a result, a new activity system has started to emerge. This development of a new system aligns with the third generation of CHAT's main principles because it represents a transformation in the activity system due to working to resolve past tensions (Engeström, 2018).

This timeline in returning to teaching in-person varied between nutrition educators and was highly influenced by their environment. In some counties, like Maria's, county leadership was pushing for this return to happen quickly. For many nutrition educators such as Amber, Erika, Leslie, and Tonya, this return to in-person was motivated intrinsically, and they returned

to face-to-face as soon as they were allowed because they missed interacting with people. Others, like Monica, couldn't pinpoint an exact reason for shifting back, just that it naturally happened over time as people became more comfortable.

Almost all educators, even those that resisted the shift to virtual initially, had plans to have at least one future program that utilized a virtual setting. Many of these programs were scheduled to be regional. The ones that were not regional were scheduled to specific groups within the community. In addition to this, every educator viewed the ability to teach virtual if needed as a strength of the organization and something they plan to continue to offer to community members when appropriate. When looking at the future of virtual learning, educators expressed a desire to pull from the strengths of both traditional and virtual settings to create a hybrid form of program delivery. This new system is helping educators find balance in their schedule and manage the contradictions that emerged from the virtual programming model. Figure 5.6 displays some of the major alignments of categories that emerged from this new system.

With the virtual activity system, there was a rush of technology introduced to nutrition educators to help them with the delivery of programs. Along with the technology came opportunities to train and learn about their usage. As educators learned about these tools, they were able to use them in the classroom to promote interaction with participants. For example, Zoom allows for live video, discussion, polling, and a space to put comments or questions in a chat box. Other apps, like Mentimeter, were added to Zoom to provide additional ways to interact and engage participants which many educators felt was a need. The use of these platforms discussed by educators supports similar research that suggests Jamboard, Padlet, Bookwidgets, Kahoot!, and Mentimeter as useful tools that complement Zoom and increase

audience engagement in extension programming (Newman & Torretta, 2022) and offer new opportunities for program evaluation (Tompkins, 2022). In addition to efforts made to increase engagement, as time went on educators felt an increased pressure to have high quality, professional appearing programs. This meant educators started to invest in different lights, microphones, and camera.

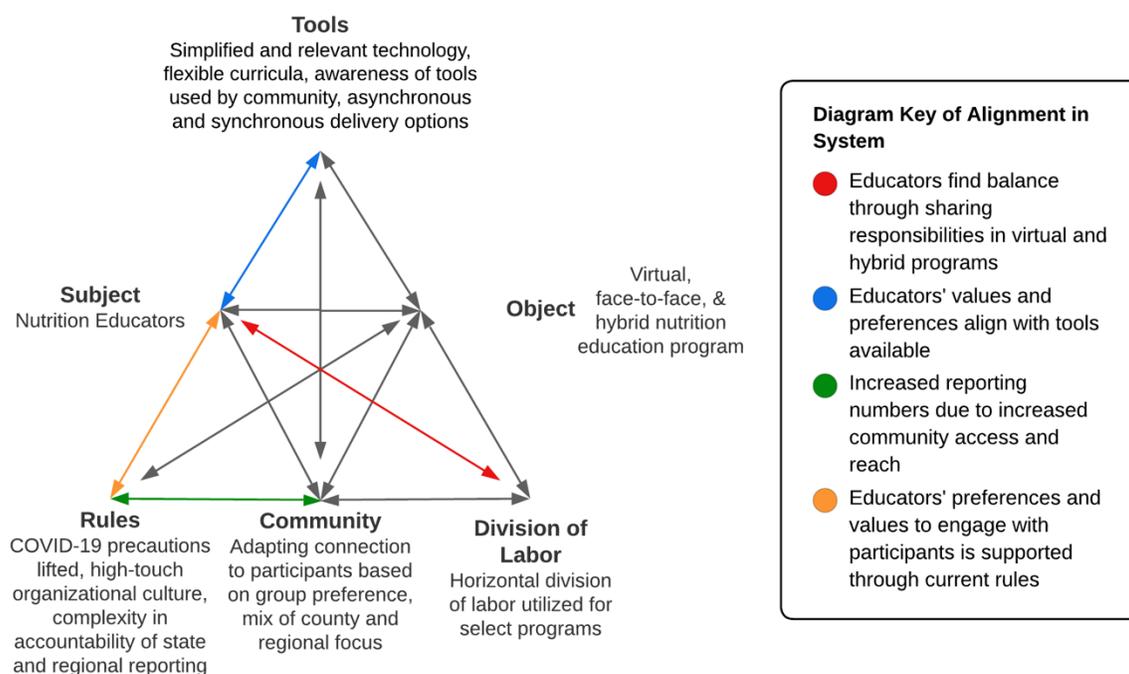


Figure 5.6. Alignment between categories within the emerging activity system.

However, through this trial-and-error period, educators were able to find what tools work best for them and their schedule as well as lead to increasing participant interaction. Many educators have mentioned how they now prefer simple set ups that use only what they feel is necessary with some being as simple as a laptop with built in microphone and camera, like Patricia uses. Others, like Crystal, may use the lights and extra cameras for pre-recorded videos

but find them too time consuming to use for live virtual programs such as county employee lunch and learns. Erika's teaching kitchen is allowing her to use extra technology such as built-in cameras to continue virtual education. These cameras are different from ones, like those that Crystal mentioned, because they are already set up as part of the kitchen design and ready for use.

Past K-12 literature that focused on the switch to virtual noted the importance of access for all populations be considered to prevent disadvantaged communities from facing even greater disparities (Catalano et al., 2021). Prior to making this drastic shift due to COVID-19 safety precautions, research focused on virtual delivery highlighted that some populations that live below the federal poverty level may be difficult to reach due to lack of access to the necessary tools such as internet and computers (Neuenschwander et al., 2012). However, more recent research showed that across income levels, connection to the internet has increased due to cell phone access (Loehmer et al., 2018; Stotz et al., 2017). Teresa and Amber's experiences confirmed that participants were frequently accessing education using their cell phones. Recognizing this, the UNC Center for Health Promotion and Disease Prevention (2021) provides guidelines through the "SNAP-Ed Toolkit" for asynchronous and synchronous delivery taking into consideration participant cell phone usage. Teresa also pointed out, some programs outside of Southeastern State Extension were also addressing this need and worked to get larger devices such as laptops and tablets to housing authority communities. With these tools in place, transportation is no longer needed in reaching audiences that live below the federal poverty level. This presents the opportunity for educators to meet new audiences within the community by adjusting to their needs related to delivery.

Nutrition educators found that some communities have the tools that are needed to connect, have needs that align with the curricula guidelines, and personally favor a virtual environment. County employees attending a lunch and learn series are an example of a group like this. In this example, virtual delivery facilitates successful program implementation. This interest from educators in continuing to offer virtual education in environments conducive to effective delivery demonstrates the value of emerging research that continues to demonstrate promising results related to the future of virtual nutrition education (Stotz et al., 2023).

However, for communities in the activity system that don't have the tools that are needed to connect, have needs outside of the curricula guidelines, or are not comfortable with a virtual environment, the agent is then put into a situation where they adapt to participant needs or return to offering programming in the traditional style. Jewkes et al. (2022) assessed SNAP-Ed participant preferences during the shift back to face-to-face programming as safety precautions were being lifted and found that the majority of those surveyed still preferred face-to-face delivery. If educators returned to solely the traditional system, the activity system is likely to lose those new audiences that were gained in the virtual environment. As a result, educators appeared to be resisting this by adapting. One form of adaptation is continuing to bounce between program delivery that fits the already established traditional activity system or virtual activity system.

Most nutrition educators shared their experiences with exploring an emerging and hybrid activity system that integrates delivery methods of both. These programs are open to both groups that prefer to meet in person and individuals that prefer to join from their home. For educators that have multiple sites that are requesting the same program with an audience that primarily prefers to meet in-person, they are creating hybrid programs. In some of these programs, the audiences meet in person while the instructor teaches to all the sites live through Zoom and is

casted on a larger screen. This is especially helpful for nutrition educators that cover two counties. For example, Bethany chose this method when delivering a SNAP-Ed class to multiple senior centers across to counties. It is important to note that Bethany has always enjoyed how virtual delivery saved her time in her busy schedule and she felt very comfortable in learning to utilize the new equipment.

Not all educators embraced virtual delivery as much as Bethany. Some educators have a strong desire to meet with participants again in a face-to-face setting. However, they also enjoy the new the division of labor that allows them to decrease their workload and better managing the demands of various programs by partnering with other nutrition educators. They have plans for a hybrid program where each county site has instructors that meet with their local participants. However, they all connect to each other via Zoom and different educators take turns leading each session while the local educator is there to provide hands-on assistance for participants where needed and build that relationship. This method also ensures that primarily local communities are attending the programs.

While synchronous virtual education continues, there is also discussion amongst educators around asynchronous delivery. These narratives add to a growing number of studies that are interested in asynchronous virtual nutrition education and the associated benefits. For instance, previous research found that SNAP-Ed participants in a southeastern state appeared to prefer asynchronous learning opportunities over synchronous (Stotz et al., 2019). Formative research on the development of an asynchronous virtual adult nutrition program suggested that participants could be motivated through this format of delivery by “making the eLearning program engaging and interactive, keeping all lessons <10 minutes in length, offering an official certificate of completion, providing positive feedback, and including interactive games” (Stotz et

al., 2017, p. 153). Social media platforms such as Facebook may help with the delivery of asynchronous education (Gorczyca et al., 2022). In addition to this, asynchronous virtual delivery was found to help in time management of staff in WIC clinics (Bensley et al., 2011).

Educators like Shelby, Monica, and Leslie, and Kayla all see benefits to providing asynchronous, “on-demand” programs that contain pre-recorded video lessons, like those mentioned by Stotz et al. (2017). This idea of “on-demand” learning echoes Stotz et al.’s (2017) view that asynchronous nutrition education available via smartphone allows for the instructional design principle of “just in time learning”. These educators that discussed the desire to expand asynchronous virtual delivery were relatively comfortable with learning new technology on their own and are newer to the organization in comparison to other educators. Leslie talked about how her video training empowered her to feel more confident in taking this approach. Monica mentioned how her desire to move towards this model of delivery still faced some of the issues brought up in the virtual activity system related to the tensions between community, rules, division of labor, and tools (see Figure 5.7).

Monica mentioned that creating a new tool, one that allows for her to track information on participants that watch synchronous educational programs, would help her in finding a solution to this contradiction by allowing her to report detailed data that aligns with the ERS system. As a result, she can show those that support her programming through funding that she is reaching the county-based population she was hired to reach. This finding demonstrates that the area of asynchronous education needs to continued to be explored, and with this, additional shifts in the activity system and new contradictions are likely to emerge and should continue to be

technology influenced educators use these tools. Other scholarship has found that comfort with technology influenced educators' ability to adapt to a virtual setting during COVID-19 (Fawcett et al., 2020; Francom et al., 2021), and this study affirms this. Those that were comfortable utilizing technology in the traditional setting were quick to adapt to the new virtual delivery methods and even discussed continuing to investigate new tools to help them moving forward. As this shift forced increased comfort and skills to develop, all educators use of technology grew. However, some educators have since stopped using certain tools they have access to now or were trained on because of their perceived complexity.

Aside from comfort, when facing decisions around delivery methods educators often mentioned additional intrinsic factors that shaped their decisions. Educators desired the ability to engage with community and balance busy schedules. This study along with previous literature has shown that virtual programming can help save educators on time associated with program delivery in comparison to face-to-face programming (Bensley et al., 2011). However, without proper training or tools for virtual delivery educators may struggle to facilitate audience engagement (Francom et al., 2021). This engagement allows educators to build trust and rapport within communities (Haynes-Maslow et al., 2019), which helps educators feel connected and energized while teaching.

The abrupt shift in delivery allowed greater discretion to be made by educators. This change in rules supported an organizational cultural shift that aligns with what Cameron and Quinn (2011) describes as a clan (collaborate) culture. Berrio (2003) found that extension educators within the state they studied preferred to have clan (collaborate) culture and that this likely applies to other state extensions as well. This finding supports this study and demonstrates

a practical way in which organizations can help in purposely supporting a shift in organizational culture to better align with employee preferences.

Another key finding is that educators continue with virtual delivery when the curricula is favorable to partnering regionally with additional educators. This allows for the delivery of certain programs that are no longer constrained by traditional county lines and transportation. By partnering with other educators, the tasks and work associated with program delivery is divided and aids educators in balancing busy schedules, which also aligns with the first key finding. In addition to this, educators' preferences support a common desire of organizations to reduce the time and cost spent on travel associated with traditional programming (Stosich et al., 2016). This team approach to delivery also draws on educators' different strengths and allows for them to learn from each other in action.

Finally, educators prefer to have flexibility in program delivery. This flexibility also aligns with cultural values discussed with the first finding. Areas related to this include virtual, hybrid, and in-person delivery options along with flexibility in the supporting tools such as recipes and equipment used. Each educator delivers programs to their unique community environment and are experts in this area. Their experiences support past research that traditional methods of delivery often miss certain audiences that face barriers to attending such as scheduling conflicts or lack of transportation (Atkinson et al., 2010). In addition to this, educators discussed how delivery preferences varied by age groups, confirming past research that showed those under 32 years of age tended to prefer virtual delivery while those that were older tended to prefer traditional delivery methods (Loehmer et al., 2018). Flexible delivery options allow for educators to better adapt to reach more people based on the program audience's specific needs. Community needs change with time, and as these past years have shown that

emergency situations can make these needs change drastically within days (Har, 2021).

Educators that experienced this shift valued and desired flexible programming curricula.

Implications

The findings of this qualitative exploratory case study on nutrition educators' experience with transitioning to virtual delivery suggest that virtual adult nutrition education will continue as a relevant and useful option within the field. The following section will discuss implications for theory, practice, and future research that resulted from the study findings.

Implications for Theory

Extension programming is impacted by the dynamics of its complex structure that include influences from the federal, state, and local level (see Appendix A). Using CHAT as a theoretical framework was suitable for this study because it helped to ensure that the data collection and analysis captured the complexities within the system it operates. In addition to the tangible tools used for delivery, power, politics, and other social factors influence the approach of program delivery. Analyzing data through diagramming the findings (see Figures 5.1 to 5.7) in relation to this framework allowed for tensions in the system to surface and for the researcher to study how changes in the structure influenced other categories within the system over time (Engeström, 2018). Similar to studies that utilized lightning symbols to visualize contradictions within the framework (Engeström, 2018; Marwan & Sweeney, 2019), this study color coated where contradictions occurred with the addition of a key that briefly explains the specific interaction. CHAT served as a practical framework in discovering where changes may need to occur in future practice to improve virtual delivery.

CHAT has been used in previous literature as a framework to study the integration of new technology in educational settings outside of nutrition education (Lewin et al., 2018;

Marwan & Sweeney, 2019; Ramanair, 2016). It also has been chosen in past literature because of its ability to highlight how context holistically influences decisions educators make in relation to education delivery (Englund et al, 2018). These scholars chose this framework because it considers the history and culture surrounding many educational programs and how the entire system responds to that environment. This study supports previous scholarship by demonstrating that CHAT serves as a valuable tool for research in education.

This research also expands the scope of using of CHAT as a framework to the field of community-based nutrition education. Government funded programs such as SNAP-Ed and the Expanded Food and Nutrition Program (EFNEP) are run in partnership with state extension services; however, some SNAP-Ed implementing agencies and the Special Supplemental Nutrition Program for Woman, Infants, and Children (WIC) operate through organizations outside of extension (U.S. Department of Agriculture [USDA], 2023). Their similarities of operating within complex systems makes CHAT a useful framework to consider for future studies because it captures the real-life context in which programs occur through studying how materials, history, and culture influence the delivery of these programs. There has been discussion around the need to better coordinate these community programs through the USDA (APHSA, 2023) and the use of this framework would be appropriate to help inform strategies for improvement. This would allow researchers to look holistically at how changes in one of these nutrition programs impacts the activity systems of the other programs and the participants receiving the services.

In this study, the research question focused on the experiences and perspectives of nutrition educators as they shifted to virtual delivery. Since nutrition educators experienced sudden and drastic changes in program delivery together, it provided a unique opportunity to

expand literature associated with the delivery of virtual nutrition education. This study focused on both a traditional activity system and a virtual activity system by discussing how the system changed as rules related to COVID-19 safety precautions changed with time. Although not originally anticipated, this structure allowed for an emerging activity system to also be explored. It is important to note, that because of these decisions, this study included the voices and perspectives of multiple people within one group. A strength of the third generation of CHAT is that it can also contain different groups of subjects within each activity system working towards the same outcome (Engeström, 2018). Thus, allowing for multiple voices and perspectives to be represented. Previous studies have used this structure to successfully capture voices at various levels of the organization such as students, educators, administrators, and other key informants (Marwan & Sweeney, 2019; Ramanair, 2016).

When looking at the data from this study, interviewees easily discussed information related to tools and community as parts of the activity system. However, even with interview prompts situated around all categories of CHAT, rules and division of labor were more difficult to capture with questions that directly focused on this area. For instance, when asked about how rules or culture inhibit or help program delivery, interviewees struggled with an answer. In addition to this, the dynamics of power relationships within the organization were hinted at in answers related to division of labor but lacked the desired depth to uncover additional potential contradictions within the system. This aligns with the critique that CHAT needs to “develop a language of description which allows for the parameters of power and control to be considered at structural and interactional levels of analysis” (Daniels, 2006, p. 98).

Throughout the interviews, relevant information that related to rules was mentioned in other prompts rather than the questions aimed to address the topic directly. I feel this happened

because the cultural norms are so deeply engrained into the system that it is difficult to recognize those pieces. One way this category has been addressed in other research is through the addition of another framework to guide policy document analysis (Englund et al., 2018). While this is helpful in gathering data on explicit rules, the implicit rules may still be missed. The findings of this study suggest elements of cultural change that are discussed in the Competing Values Framework (Cameron & Quinn, 2011). Utilizing this framework in addition to CHAT to structure future interview guides may help in gathering more data related to organizational culture and implicit norms.

Implications for Practice

Time Management

Previous scholarship demonstrated that virtual delivery of adult nutrition programs was a potential solution for saving organizations both time and money (Bensley et al., 2011; Stosich et al., 2016). Saving on program costs and time is still relevant to SNAP-Ed which has shown that recently “many states struggle with their staffing capacity” (American Public Human Services Association [APHSA], 2023, p. 3). This study adds to this research by demonstrating that educators felt virtual program delivery in certain situations was effective in saving them time and expanding their reach without incurring additional costs.

When tools and curricula were available that were conducive to virtual delivery, time was saved in a variety of ways, such as decreased time spent traveling, the ability to divide tasks associated with program planning and delivery when working as a group. While collaboration happened in this study due to a change in rules that made technology necessary, previous scholarship on digital pedagogy confirmed that changes in the “rules” category of the activity system that promoted learning design led to greater collaboration and use of technology within

the classroom (Lewin et al., 2018). Therefore, it is worth noting that this is a potential area to be explored in the development of future virtual curricula. In addition to this, the option to offer asynchronous education to those that are unable to attend programs during their scheduled time provided another time saving advantage. As organizations face difficult decisions due to budget constraints, carefully planned virtual education may be a useful tool in helping staff balance busy schedules while continuing to reach the community they serve.

Flexibility of Curricula

This study demonstrated that educators prefer to have flexibility in program delivery because it allows for them to better adapt to meet audience's needs. Because of their high level of hands-on engagement and feedback from their county advisory councils, educators are the experts in knowing their community's need in relation to nutrition programming. The narratives of this study demonstrated how approaches and choices related to virtual to delivery are influenced by region of the state, participant demographics, and educator preferences. Some areas to consider for increased flexibility include:

- virtual, hybrid, and in-person delivery options;
- synchronous and on-demand learning options;
- flexibility in time and frequency of program delivery;
- technology needed for implementation;
- team and individual delivery guidance;
- culturally relevant recipe options;
- and various methods for encouraging participant engagement.

The Mediterranean Diet program came up the most frequently in interviews compared to the other nutrition curricula and appeared have the greatest flexibility in delivery based on the

virtual delivery guidelines. Educators enjoyed using this curriculum because they had a variety of recipes and videos already created that they could utilize in the delivery. Educators stated that adaptations were made when it was beneficial to the community, but that program guidelines sometimes prevented them from being able to adapt the curriculum. As one educator suggested, future curricula may benefit from using of a “red light, yellow light, green light” model to increase flexibility, help educators navigate decisions related to best delivery, and maintain program fidelity.

Flexibility should be addressed at both the program/curricula level and at the organizational level. Based on the Competing Values Framework (Cameron & Quinn, 2011), Berrio (2003) added to literature that demonstrated state extension services tend to have a dominate clan and hierarchy culture. However, extension staff preferred to have a greater clan culture than represented in the current model. Based on this model, increasing the flexibility and individuality of programming may help in promoting the clan (collaborate) culture within extension (Cameron & Quinn, 2011). This research study adds to the scholarship that flexibility with extension programming is desirable for organizational culture.

Professional Development

Virtual delivery is a valuable resource in adult nutrition education delivery and educators should continue to seek out professional development opportunities that encourage their growth in this area. In addition to this, organizations and associations should encourage opportunities for educators to increase their skills related to virtual program delivery. In this study, educators shared that they had many opportunities for training to learn how to utilize certain technology but little training on how to teach more effectively in this environment. Although use of technology increased amongst extension educators due to navigating the COVID-19 pandemic,

research suggests that extension professionals would benefit from additional training in utilizing online tools for synchronous delivery (Eck et al., 2022). This training can help in addressing the need for virtual nutrition education to be engaging and entertaining (Stotz et al., 2015; Stotz et al., 2017).

Emergency Planning

The COVID-19 pandemic demonstrated the strengths and weaknesses that arose when extension had to rapidly adapt to a virtual world with changing and urgent needs related to nutrition security (Bahl et al., 2020) and this study builds on the scholarship within this area. Emergency planning in extension allows for the organization to quickly react to various emergency situations such as natural disasters or public health pandemics. Extension has had ongoing involvement in disaster planning and responses due to their ability to quickly connect the local communities they serve to valuable resources (Eighmy et al., 2012; Koundinya et al., 2020; Smith et al., 2012).

Previous scholarship has demonstrated that educators' comfort with utilizing virtual technology was helpful in adapting quickly during the COVID-19 pandemic (Fawcett et al., 2020; Francom et al., 2021). This study builds on this by expanding the experience of nutrition educators in learning the technology, developing comfort in utilizing it, and then integrating it into their regular practices. For instance, although most educators had been trained in video production and found this skill helpful, many shared that they did not use this skill until they were forced to. This suggests that to prepare for the possibility of future emergency transitions to a solely virtual setting, along with training educators in areas related to digital skills, these skills should continue to be encouraged and practiced prior to an emergency.

Implications for Research

Additional Subject Views

This study focused on the perspectives of nutrition educators in relation shifting to virtual adult program delivery. During the planning phase of this project, there were many unknowns related to COVID-19 and public health safety. Nutrition educators were important resources in connecting state level resources to the community. They were “on the ground” and seeing first-hand the real-life challenges and advantages related to virtual delivery. Throughout data analysis, there was information shared by educators on what they interpreted state level specialists and community views were in relation to this shift to virtual programming. While these views were valuable to analysis, they did not represent the entire system in which state level specialists and community members exist. Previous studies in education that utilized the CHAT framework structured it in a way that highlighted voices at various levels such as students, educators, administrators, and other key informants through having multiple activity systems with a different subject represented in each system (Marwan & Sweeney, 2019; Ramanair, 2016). Therefore, more comprehensive research that expands CHAT and includes state level specialists and community members as additional “subjects” within multiple systems should be explored to offer additional strategies that can improve virtual delivery.

Collaboration with E-learning Centers

Future research should investigate curricula developed in collaboration between extension and the universities e-learning centers as a way in facilitate building trust and engagement in virtual programming. Participants and educators agree that to be impactful, virtual nutrition curricula needs to be engaging and entertaining (Stotz et al., 2015; Stotz et al., 2017). Since the COVID-19 pandemic, more research within the field of extension has also started to

emerge on tools best used to keep audiences engaged in a virtual setting (Newman & Torretta, 2022). Stosich et al. (2016) suggests partnering with university e-learning center to better improve program design. These partners specialize not only in the technology needed for program delivery but also are sources to learn about best practices with innovative tools and methods to increase participant and instruction engagement. In interviews, while training related to using certain technology was prevalent at the time of the transition to virtual, very little discussion mentioned partnering with e-learning specialists and opportunities to learn best practices for virtual education.

Awareness of System Changes

As technology use in programming increases and advances, it is important for future research to look at community-based nutrition education programs holistically. This study found various tensions that resulted from a change in division of labor when delivering programs in a virtual setting. This change in labor led to greater complexity in reporting and a change in tools and community. While this study demonstrated how division of labor changes within a state with virtual delivery, SNAP-Ed agency leaders have noted similar labor changes occurring across state lines due to the convenience of collaborating in a virtual setting (APHSA, 2023). As a result, administrators are currently interested in expanding virtual multi-state partnerships and cite the increase in virtual resources currently available to them as a need for them to have further guidance in how to proceed with these collaborations (APHSA, 2023).

When looking at changing the components of activity system where education occurs, it is important to look holistically; as changes are made in practice that recognize the value of virtual resources, using the CHAT framework can help shape strategies for change. One change in the system is likely to impact additional categories. APSHA (2023) demonstrated an

awareness of these impacts to shifting to more collaborative work within the system by also discussing that these changes mean a need for better evaluation practices that relate the virtual SNAP-Ed programming. Existing literature based on CHAT confirms that adding technology to educational settings often creates tension with traditional evaluation methods (Ramanair, 2016). However, virtual delivery also promotes the use innovative evaluation tools (Tompkins, 2022). Organizations that deliver community nutrition education and have shifted to virtual delivery should continue to study how this impacts the entire system and adapt components, such as evaluation, to better fit the changing system.

Conclusion

The COVID-19 pandemic brought about a unique opportunity to study the delivery of virtual nutrition education from the perspectives of nutrition educators working in the field of extension. The implementation and lifting of public safety precautions resulted in changes in program delivery that will likely continue to impact extension programming moving forward. The utilization of the CHAT Framework helped guide data collection and analysis so that the intricacies related to context of delivery were present in the findings. As practice and research continues in this field, virtual program delivery serves as a valuable tool for educators and the communities that they serve. Programs should be flexible, encourage collaborative work, and be able to adapt to emergency situations. This study's findings also support the need for additional research related to best practices of virtual delivery, the inclusion of additional voices in this research, and the use of CHAT as a useful framework in the future to study nutrition education in-action.

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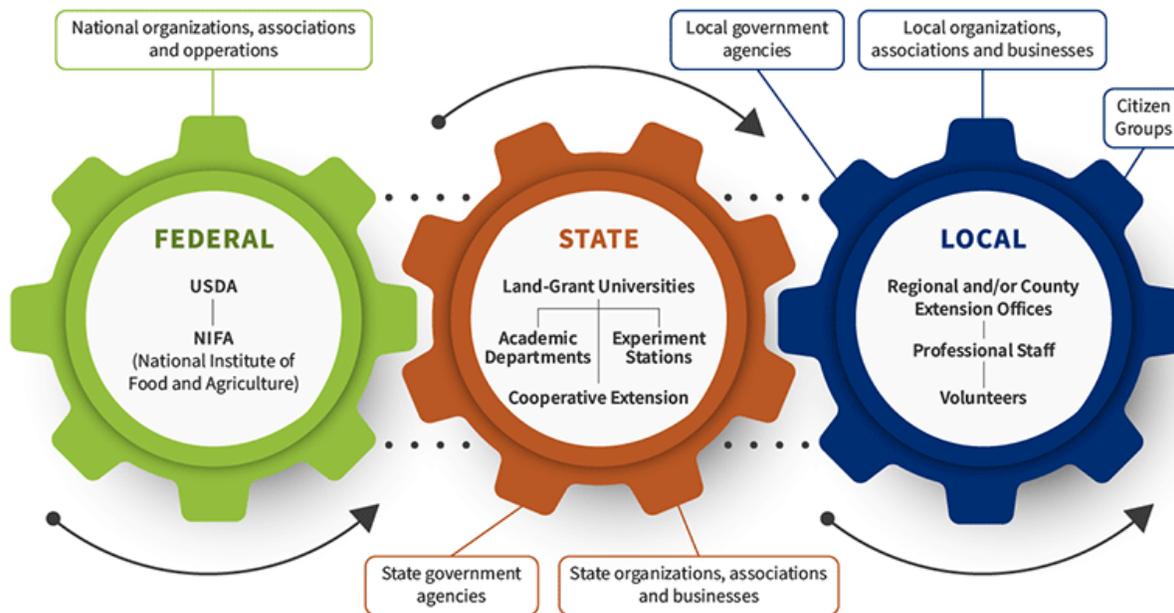
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APPENDICES

Appendix A

Cooperative Extension Organizational Graphic (from USDA NIFA, n.d.-a)



Appendix B

Email Recruitment

Subject: Invitation to Participate in Doctoral Research

Dear FCS Agents,

I hope this email finds you well!

I am pursuing my doctorate in Educational Leadership, Policy, and Human Development at NC State University. I am conducting my research on FCS agent perspectives on the delivery of virtual community nutrition programming.

I am contacting you because I would like to see if you are interested in learning more about this research effort and how you can be involved. Your participation is completely voluntary. If you are interested in learning more about this study or have any questions, please respond to this email. I will follow-up with additional details and coordinate a time to meet through Zoom to have a conversation about your experiences.

Thank you for your time and consideration of this research effort!

Sincerely,
Alyssa Anderson

Dear [participant],

Thanks for responding to my initial inquiry regarding your participation in my research project at North Carolina State University which will be in fulfillment of my doctoral degree. I appreciate your consideration of this project and I am very thankful for your time.

As a reminder, I will conduct your interview (Day, Date, Time) through Zoom. This will require you to take part in a 60 - 90 minute interview. This study will investigate your experience with delivering virtual nutrition education to the community.

If you have any questions beforehand or during this process, please feel free to email or call me.

Sincerely,
Alyssa Anderson
NCSU, Doctoral Student

Appendix C

Interview Protocol

Date

Time

Participant Name

Introduction:

Thank you for taking the time to meet with me today. I am a Ph.D. student at North Carolina State University. My Ph.D. research is inspired by the shifts that were made to virtual programming in 2020 due to COVID-19 precautions. I recently shifted roles from delivering nutrition education and am now serving as the Social Marketing and Evaluation Extension Associate for Steps to Health, so this topic is important to me. Specifically, I am interested in learning about what it is like for nutrition educators to implement nutrition education for adults in a virtual setting.

Our conversation should take 1 to 1.5 hours and there are no wrong answers. I want to understand how your experiences with virtual nutrition education have been throughout the last 2 years.

Our conversation will be confidential, and the responses will only be shared with my dissertation chair and there will be no identifying information included in the report.

I assure you that we do not have to talk about anything you do not want to share and you can end the interview anytime during our conversation. You can also ask questions at any time.

Do you have any questions before we start? Are you willing to continue with the interview?

Background Information:

- What made you decide to be an FCS agent?
- What nutrition programs have you taught as an agent?
 - Were these programs face-to-face or virtual?
- Thinking back to 2020, tell me what it was like to transition your professional work under COVID-19 conditions?

Transition to Interview

- For our conversation today we will be focusing on adult programming, specifically: [Mediterranean Nutrition Program], [SNAP-Ed], and [Healthy Cooking Program]. As we talk, please reflect on your experiences with these programs.

Questions:

- Let's start from the very beginning of program planning in general. Pretend that you are talking to someone that is unfamiliar with Extension. Walk me through the process of how you decide which adult nutrition curricula you use in your community.
 - Who develops the curriculum?
 - Do you have input in the development and delivery?
 - Do you ever need to make alterations or adapt the curriculum based on your circumstances?
- What was your experience with virtual program implementation before COVID-19?
- What helped you to shift to virtual implementation?
 - Curriculum?
 - Technology?
 - Mentors?
 - Partnerships?
 - Policies?
 - Were there any policies that you felt needed to be changed?
 - How did you manage working around these?
- What professional development support did you receive for teaching online?
 - Instructional design?
 - Conference?
 - Guide?
 - Talk to another agent?
 - Anything else?

- Based on what you have learned, imagine that I am a new agent and you were assigned as my mentor. I am wanting to implement my first virtual [Insert name(s) of programs listed above]. Can you coach me through the process?
 - If they list more than one program being implemented virtually: How would this process be any different if I were to be implementing [Insert program]?
 - Probing questions:
 - How did you decide on what technology to use?
 - Curriculum choice?
 - Interactions with
 - State level specialists and associates?
 - Other nutrition educators?
 - Within the office?
 - Community partners?
 - Who were your top resources for help?
 - Did anyone come to you for help?
 - How did Extension's organizational culture or history affect this switch?
 - Describe any challenges you experienced
 - Any challenges related to program or organizational policies?
 - Any resources you wish you had?
 - Any advice based on past lessons learned?
- Please describe your decision-making process surrounding implementing [Insert name(s) of programs listed above] virtually?
 - Probe:
 - What discussions did you have with your county director?
 - What discussions did you have with community partners?
 - What discussions did you have with other agents?
 - What discussions did you have with state level specialists and staff?
- Let's continue to talk about people. What kind of shift in dynamics happened for you or for others during this shift to a virtual environment?
- Describe your most significant learning experience with teaching in a virtual setting.
- What works for you in a face-to-face setting that does not work virtually?
 - What works virtually that does not work in a face-to-face setting?
- What do you think the benefits are to teaching in a virtual setting?
 - What do you think are the drawbacks to teaching in a virtual setting?

- What informal feedback have you received related to the virtual format of programming?
 - Probing questions:
 - From community members/learners?
 - From coworkers?
 - Have you noticed anything about your participants and their response to virtual learning?
 - From your Country Extension Director?
 - From community partners?

- How do you see these experiences shaping your county level program as you move forward?
 - Probing questions:
 - Let's talk about aspects you hope to continue first.
 - Are there any partnerships that you hope to continue?
 - Any technology you plan to continue to use?
 - Do you plan to offer the same programs?
 - Any professional development opportunities?
 - Any policies, rules, or guidelines that make it easier for you?
 - Let's shift now to aspects you'd like to change.
 - Are there any partnerships that you feel are no longer necessary?
 - Any technology you do not plan to continue to use?
 - Do you plan to discontinue offering any programs?
 - Any policies, rules, or guidelines that make it difficult for you to move forward?

Conclusion:

- What else would you like to add or talk about?

- I will forward you the transcription for your review. Thank you for your time and participation in this study.

Appendix D

Data Analysis Codebook

Code	Definition	Excludes	Includes
Tools	Instruments that turn the object into an outcome.	<ul style="list-style-type: none"> - State-developed curricula related to youth or other FCS program areas such as food safety - Educator-developed materials related to youth or other FCS program areas - Trainings related to general knowledge of nutrition or FCS 	<ul style="list-style-type: none"> - Technology: <ul style="list-style-type: none"> • Digital platforms • Equipment (i.e., cell phones, laptops, iPads, lighting, microphones, tripods, etc.) • Technology user guides - Trainings related to utilizing certain technologies or developing teaching skills - State developed adult nutrition program curricula - Supporting videos
Subject	“Individual or group whose position and point of view are chosen as the perspective of analysis.” (Engeström & Sannino, 2010, p. 6)		<ul style="list-style-type: none"> - Nutrition educators’ implicit attitudes, values, and predisposition to virtual program delivery.
Rules	“Explicit and implicit regulations, norms, conventions and standards that constrain actions within the activity system.” (Engeström & Sannino, 2010, p. 6)	<ul style="list-style-type: none"> - Rules related to youth programming - Rules related to other programming areas such as food safety 	<ul style="list-style-type: none"> - Program guidelines nationally from USDA - Guidelines from state staff to nutrition educators - County government policies - Explicit and implicit county government norms - Explicit and implicit organization norms and culture - Explicit and implicit organization policies

Community	“Individuals and subgroups who share the same general objective.” (Engeström & Sannino, 2010, p. 6)		<ul style="list-style-type: none"> - Organizational level: State level extension faculty and staff, other nutrition educators, county agents in other program areas, county extension directors - Community level: partnerships, advisory members, county population - Program level: class participants
Division of Labor	“Horizontal division of tasks and vertical division of power and status.” (Engeström & Sannino, 2010, p. 6)		<ul style="list-style-type: none"> - Extension’s structure – roles of state specialists, county directors, county government, and agents
Object	“Refers to the ‘raw material’ or ‘problem space’ at which the activity is directed.” (Engeström & Sannino, 2010, p. 6)		<ul style="list-style-type: none"> - Face-to-face and virtual nutrition education delivery