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PERCEPTION AND USAGE OF VIDEO STREAMING/ELECTRONIC MEDIA IN
NUTRITION EDUCATION FOR KENTUCKY INDIVIDUALS

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Sciences
College of Agriculture
at the University of Kentucky

By

Beth Ann Oldiges

Lexington, KY

Director: Sandra Bastin, PhD, MPH, RD, LD

Lexington, Kentucky

2012

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ABSTRACT OF THESIS

PERCEPTION AND USAGE OF VIDEO STREAMING/ELECTRONIC MEDIA IN NUTRITION EDUCATION FOR KENTUCKY INDIVIDUALS

Nutrition Education Professionals (NEP) working for Extension Agents of Kentucky were surveyed to evaluate their use of a variety of tools in nutrition education in three areas: nutrition, food safety, and food preparation. The purpose of this research was to determine the perception and usage of video streaming/electronic media among community nutrition professionals as a means to better educate individuals in Kentucky and furthermore, to determine if demographics of NEP affect their utilization of this technology. The results concluded that regardless of demographics, NEP perceive video streaming/electronic media to be effective in nutrition education. However, age, employment length, and video characteristics affect NEP inclination to use this technology.

KEYWORDS: Nutrition Education, Kentucky, Nutrition Education Professional, Video Streaming, Electronic Media

Beth Ann Oldiges

April 25, 2012

PERCEPTION AND USAGE OF VIDEO STREAMING/ELECTRONIC
MEDIA IN NUTRITION EDUCATION FOR KENTUCKY INDIVIDUALS

By

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May 31, 2012
Date

DEDICATIONS

- - - - -

In memory of Grandmom

Buena Howard Chinn

1928 – 2011

a woman whose character and strength remain unparalleled

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CHAPTER ONE

Introduction

Background

Community Nutrition “encompasses a broad set of activities designed to provide access to a safe, adequate, healthful diet to a population living in a particular geographic area. These activities include nutrition education, nutrition or health promotion, food programs, supplementation programs (e.g., fluoride), preventive programs, local policy analysis and development, and the organizational infrastructure that supports it.”

(Achterberg, 1998).

According to the University of Kentucky, 126 Family and Consumer Sciences agents are employed across Kentucky's 120 counties. In many of these counties, low-income and poor education hinders the community's ability to thrive economically. However, nutrition education programs serve in each county as catalysts to improve quality of life. Some programs specializing in nutrition education are referred to as Expanded Food and Nutrition Education Program (EFNEP) and Food and Nutrition Services Education (FNSE) (Moore, 2003). These programs employ assistants known as Nutrition Education Professionals (NEP) to carry out the mission of "educating limited resource people to acquire knowledge, improve skills, and change behavior necessary to achieve health and well-being" (Buckner, 2008). NEP often develop a variety of food and sustenance modules to educate their community on *how* nutrition affects health and *how to eat* a nutritious diet through education on nutrition, food safety, and food preparation. (Tietzen, 1998).

In the state of Kentucky, there are 64 EFNEP Assistants and 15 FSNE assistants, totaling 79 Nutrition Education Professionals in these nutrition education programs (Buckner, 2008). Each NEP uniquely adapts programming to their community by designing specific platforms to meet area needs. This may include counseling sessions, educational events, projects, materials, and demonstrations. Considering that Kentucky's communities vary widely, it is crucial to understand the best means of educating diverse populations. In order to do so, understanding the perceptions and uses of assorted educational methods by NEP must be assessed.

Statement of Purpose

The purpose of this research was to determine the perception and usage of video streaming/electronic media among community nutrition professionals as a means educate individuals in Kentucky.

Objectives

Through this research study, the following objectives were addressed:

1. Determine current nutrition education means employed by NEP in the areas of: nutrition, food safety, and food preparation.
2. Determine the usage and perceived efficacy of video streaming/electronic media as a means to nutritionally educate by NEP in areas of: nutrition, food safety, and food preparation while considering the age, length of employment, and median income of county of employment of NEP.
3. Determine what characteristics NEP perceive to comprise effective video streaming/electronic media.

4. Determine what characteristics NEP perceive could hinder the efficacy of video streaming/electronic media.

Justification

The nation is growing at a rapid pace and its need for nutrition education continues to thrive. How can Nutrition Education Professionals reach their communities effectively? One possible solution is media, specifically video streaming and electronic media.

Nutrition education can benefit all communities and citizens. According to Mackert et al “approximately half of U.S. adults have low health literacy” (Mackert, Kahlor, Tyler, & Gustafson, 2009) and it is the extension professionals of Kentucky who provide services of educating the public (Tietyen, 1998). Furthermore, Kentucky’s low-income individuals potentially lack the necessary means to receive adequate nutrition education. According to Behavior Risk Factor Surveillance System Report Statistics:

- 15.8 percent of Kentuckians live in poverty
- 23 percent of children under age 18 live in poverty
- Greatest poverty is in eastern and southern regions of Kentucky
- 10 percent of Kentucky children live in extreme poverty

(BRFSS, 2012)

A variety of tools are used by Nutrition Education Professionals to educate their communities, regardless of their income. A new innovative means to educate is the use of videos and online media because “video[s]—once complex and expensive to create with high distribution costs—[have] become more affordable and highly accessible in addition to being a powerful teaching tool. Self-produced videos are one way educators can

connect with a growing number of on-line learners” (Case, 2010). Considering that populations and clients vary, it is imperative that extension agents utilize an assortment of tools to educate their clients. Studies have researched the efficacy of a variety of these tools but little has been done to evaluate the perception and usage of *specific* tools by Nutrition Education Professionals. This study researched what *current* nutrition education tools are utilized by NEP, specifically addressing their perception and usage of video streaming/electronic media. Furthermore, the study researched the merits and limits of effective video streaming/electronic media education.

CHAPTER TWO

Literature Review

Evolution of Technology in Nutrition Education

The world of technology is continually evolving and its boundaries seem endless. For years, technology, specifically videos, has been generally viewed for entertainment purposes. In today's world, instructors are embracing new technologic advances and educating their communities with its wealth of uses. Even more recently, videos have been making their way into the field of community extension and "as extension educators explore ways the internet can be used as a teaching tool, the choices can be bewildering. From podcasts to webcasts, from wikis to blogs, and from Blackboard to discussion boards—each of these new technologies can alter the traditional delivery of classroom-based education" (Case, 2010).

There is an obvious need for the development of "effective nutrition and health education programs" and "changes in demographic trends necessitate an increased demand to address issues affecting overall long-term health and quality of life" for all individuals but especially those with limited income (Parker, 2011). Generally speaking, educating traditionally white, middle-class audiences differs from instructing low-income individuals who "may not have had the learning and skill development opportunities to have effective personal resource management for long-term planning and crisis prevention" (Grogan, 1991) and (Parrott, 1996). Nutrition Education Professionals do, however, have the skill sets and sensitivities required to educate low-income and minority audiences and with technology, these professionals could have the capacity to reach a wide range of this target audience (Grogan, 1991).

A study conducted in Oklahoma's rural communities provided an opportunity to analyze education deliveries in terms of being beneficial, appropriate, and preferable. These methods included: "a PowerPoint presentation, a video, and a handout" (Parker, 2011). Not surprisingly, the study found that "the video medium was the most preferred educational strategy" (Parker, 2011). Many agents are employing the new technique of video education. However, agents struggle with making the videos' "messages visual and engaging for learners" because "creativity, understanding how people learn, and audience analysis are critical whether you are teaching in a classroom or composing a video" (Case, 2010).

Additionally, according to The Food Stamp Nutrition Education Program (FSNEP), funded through the US Department of Agriculture which provides "nutrition education for food stamp recipients and other low-income individuals," find that one-on-one lessons are highly effective in promoting behavior change but are extremely costly. Through a controlled experiment, the efficacy of video series verses customary face-to-face education was studied. Results showed that "both the traditional *and* video lesson were effective in promoting dietary and other behavior change, with the video lessons positively affecting *more* dietary factors than the traditional lessons." (Cox, 2003). Furthermore, like much of Kentucky, the state of Nevada is very rural and "face-to-face communication and training opportunities can be limited due to travel distance" (Smith, 2008). Addressing this concern, the extension agents of this state employed the use of videos. Based on their use, they found that pending appropriate audibility and clear monitors, of the fifty-one viewers, "ninety-two percent of the respondents indicated that they liked new technology." (Smith, 2008). Studies continue emerging which further

confirm that those participating in nutrition education programs “prefer receiving nutrition education by watching videos” (Steinhaus, 2009).

Over time, videos are positively impacting viewers. A study conducted in Wooster, Ohio through The Ohio State University created “an inexpensively produced videotape of a master dairy farmer showing how he manages his dairy farm” (Polson, 1999). A team of Ohio Extension agents duplicated the video and further shared it with a number of Ohio milk producers. Eventually, eleven of the sixteen producers adopted one or more practices as a result of watching the video (Polson, 1999). This study further confirms “that a video can impact viewers” (Polson, 1999).

Video Streaming/Electronic Media Efficacy

Using videos is an exciting, seemingly utopian concept. However, unless educational videos are effective and high in quality, their use proves fruitless. “Extension educators must be challenged to effectively use new technology in ways that both take advantage of the unique characteristics of new technology and also create new approaches to fulfilling a person's desire to learn. Rather than selecting new technology based on what it can help us accomplish, we must select it based upon what it will help others--the learners-- accomplish. The needs of the learner are the key to the effective use of new technologies that support learning” (Levine, 1995). Effective videos are designed in such a way that viewer attention and engagement are encouraged. Extension agents must tailor programs to meet the needs of their target audience by being “flexible in responding to the situation and adapting programs in a timely fashion for maximum effectiveness” (Parrott, 1996). In the study conducted in Oklahoma the following *general* characteristics described an effective video: “ability to relate, attention grabbing aspects,

and ability to engage multiple senses” (Parker, 2011). More *specific* video characteristics should also be evaluated, including: content, instructional plans, supplemental materials, and technical considerations (Parker, 2011). Regarding content, “the content of the video must be useful. The video should stimulate, motivate and inform the learner to act on the information. Ideally, learners should consider and incorporate the ideas presented.”

Instructional plans “must be established that results in the learners' needs being met through the use of the video” (Beaudin, 1996). Additionally, supplemental materials should “clarify any terms or procedures that may not be clear from the video, and provide the learner and facilitator with a guide to using the video” which may include “hard-copy support materials” (Beaudin, 1996). Lastly, technical considerations should be highly considered because these produce “transcendence, attention manipulation, detail, special effects, economy, independence, and interdependence” (Beaudin, 1996).

Videos definitely have the potential to reach large audiences and in this exciting era, technology is making large strides in the field of education. The “video—once complex and expensive to create with high distribution costs—has become more affordable and highly accessible, in addition to being a powerful teaching tool. Video is one way for educators to connect with a growing number of on-line learners” (Case, 2010). With that being said, do Kentucky's Nutrition Education Professionals utilize this technology and how do they perceive its efficacy? Before time and money should be spent employing these modern practices, this research will examine what tools NEP are currently utilizing, specifically questioning video streaming/electronic media application.

CHAPTER THREE

Methodology

Research Methods

The research of this study was approved by the Internal Review Board (IRB) of the University of Kentucky in August, 2011. Once the study was approved, a survey of questions organized using Qualtrics Online Survey Software was distributed via email to 79 Nutrition Education Professionals throughout the state of Kentucky in January 2012. The survey can be located in Appendix A. Two weeks were allotted for responses. After the first week, a reminder email was distributed to politely encourage completion of the survey. The response rate was 50%, with 40 Nutrition Education Professionals responding and 38 surveys having valid responses. Responders were identified by ISP address and county of employment.

Population

The sample of this study was 38 Nutrition Education Professionals working for Kentucky Cooperative Extension representing a population of all Nutrition Education Professionals in the state of Kentucky.

Statistical Analysis

Statistical Analysis Software known as SAS 9.3 was used to analyze the data through development of descriptive analyses and chi-square analyses. First calculated were the current nutrition education means employed by Nutrition Education Professionals including and defined as:

- Nutrition Education "is any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being. Nutrition education is delivered through multiple venues and involves activities at the individual, community, and policy levels" (Bartlett, 2007).
- Food Safety Education "is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food-borne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards" (Statin, 2008).
- Food Preparation Education is preparing foodstuffs for eating, which generally requires the selection, measurement and combining of ingredients in an ordered procedure to achieve a desired result. It includes but is not limited to cooking, baking, roasting, frying, chopping, and warming techniques (USDA, 2011).

Next, after determining the current tools used to nutritionally educate, the perception of video streaming/electronic media was stratified based on:

- Age of Nutrition of Nutrition Education Professional
- Length of Employment of Nutrition Education Professional
- Income of Nutrition Education Professional's county of employment

Finally, descriptive analyses calculated:

- Factors of effective video streaming/electronic media education
- Characteristics of effective video streaming/electronic media
- Appropriate time length of video streaming/electronic media
- Factors of ineffective video streaming/electronic media education

Objective 1 Results

From these counties, the Nutrition Education Professionals responded to their nutrition education means in the areas of nutrition, food safety, and food preparation. The following Tables 1, 2, and 3 display the results of these questions:

Table 4.1 Nutrition Education Methods

Method	Mean	Frequency as #1 Response (N=38)
Group Discussions	1.81579	14
Face to Face Lectures	1.94737	23
Food Demonstrations	3.18421	1
Publications	3.86842	0
Health Exhibits	4.31579	0
Webinars	6.34211	0
Video Streaming/Electronic Media	6.65789	0
Other	7.86842	0

Table 4.2: Food Safety Education Methods

Method	Mean	Frequency as #1 Response (N=38)
Face to Face Lectures	1.76316	22
Group Discussions	2.07895	12
Food Demonstrations	3.23684	4
Publications	3.89474	0
Health Exhibits	4.23684	0
Webinars	6.23684	0
Video Streaming/Electronic Media	6.68421	0
Other	7.86842	0

Table 4.3: Food Preparation Education Methods

Method	Mean	Frequency as #1 Response (N=38)
Face to Face Lectures	2.02632	20
Group Discussions	2.31579	6
Food Demonstrations	2.47368	12
Publications	4.02632	0
Health Exhibits	4.28947	0
Webinars	6.23684	0
Video Streaming/Electronic Media	6.84211	0
Other	7.78947	0

Objective 2 Results

This objective was determined through questions 11, 13, and 15 from the survey issued via Qualtrics Online Statistical Survey Software. To determine the usage and perceived efficacy of video/streaming electronic media as a means to educate Kentucky individuals by NEP professionals, the professionals' responses were analyzed in terms of:

- Age
- Length of Employment
- County's Median Income of Employment

The following Tables 4, 5, 6, and 7 display the results of the perception and efficacy of video streaming/electronic media in three subareas of nutrition while considering the previously specified guidelines.

Table 4.4: Perception of Video Streaming/Electronic Media Considering Age of Nutrition Education Professional

		Age	
		<45 years (N=16)	≥45 years (N=18)
Nutrition			
	"Has Used" Frequency	1	6
	"Has NOT Used" Frequency	17	14
	"Has Used" Percentage	5.56%	30.00%
Food Safety			
	"Has Used" Frequency	2	5
	"Has NOT Used" Frequency	16	15
	"Has Used" Percentage	11.11%	25.00%
Food Preparation			
	"Has Used" Frequency	1	3
	"Has NOT Used" Frequency	17	15
	"Has Used" Percentage	5.56%	16.67%

Table 5.5: Perception of Video Streaming/Electronic Media Considering Employment Length of Nutrition Education Professional

		Employment	
		<5 years (N=19)	≥5 years (N=18)
Nutrition			
	"Has Used" Frequency	1	6
	"Has NOT Used" Frequency	18	13
	"Has Used" Percentage	5.26%	31.58%
Food Safety			
	"Has Used" Frequency	1	6
	"Has NOT Used" Frequency	18	13
	"Has Used" Percentage	5.26%	31.58%
Food Preparation			
	"Has Used" Frequency	0	4
	"Has NOT Used" Frequency	19	15
	"Has Used" Percentage	0%	21.05%

Table 4.6: Perception of Video Streaming/Electronic Media Considering Median Income of Nutrition Education Professional's County of Employment

		Income	
		<\$41, 576 (N=35)	≥\$41, 576 (N=3)
Nutrition			
	"Has Used" Frequency	7	0
	"Has NOT Used" Frequency	28	3
	"Has Used" Percentage	20%	0%
Food Safety			
	"Has Used" Frequency	7	0
	"Has NOT Used" Frequency	28	3
	"Has Used" Percentage	20%	0%
Food Preparation			
	"Has Used" Frequency	4	0
	"Has NOT Used" Frequency	31	3
	"Has Used" Percentage	11.43%	0%

**Table 4.7: Perception of Video Streaming/Electronic Media Considering Nutrition
Education Professional's Age and Employment Length**

		Age and Employment	
		<i><45 years old and <5 years employed (N=19)</i>	<i>≥ 45 years old and ≥ 5 years employed (N=18)</i>
Nutrition			
	"Has Used" Frequency	0	7
	"Has NOT Used" Frequency	13	18
	"Has Used" Percentage	0.00%	28.00%
Food Safety			
	"Has Used" Frequency	1	6
	"Has NOT Used" Frequency	12	19
	"Has Used" Percentage	7.69%	24.00%
Food Preparation			
	"Has Used" Frequency	0	4
	"Has NOT Used" Frequency	13	21
	"Has Used" Percentage	0%	16.00%

Table 4.8: Video Streaming/Electronic Media Use and Efficacy

	Response to	Frequency			
	Use	of Response	Effective	Neutral	Ineffective
Nutrition					
	Yes	Statistical Information Unavailable.			
	No				
Food Safety					
	Yes	6	100%	0%	0%
	No	28	46.43%	39.29%	14.29%
Food Preparation					
	Yes	4	75%	0%	25%
	No	30	46.67%	40%	13.33%

Objective 3 and 4 Results

The following Tables 9, 10, and 11 display the results to questions pertaining to characteristics meriting or limiting efficacy of video streaming/electronic media in nutrition education:

Table 4.9: Reasons Videos Would be Effective

Reasons	Mean	Frequency as #1 Response
Videos can be watched at viewer's own pace	2.412	13
Videos are more convenient than face to face meetings for the client	2.5	11
Videos are less costly than face to face meetings	3.324	3
Videos convey information clearly	3.618	5
Video education is more interesting than face to face discussions	5.118	1
Video education is easier to understand than face to face discussion	5.588	2
Viewers will be more inclined to listen to a video than a person	6.147	2
Viewers will pay more attention to video demonstrations than in-person demonstrations	7.294	1

Table 4.10: What Video Characteristics Make them Effective

Reason	Mean	Frequency as #1 Response
The video demonstrations are attention grabbing with exciting visuals and sounds	1.382	22
The video demonstrations are easy and practical	1.971	10
The video demonstrations engage senses in terms of taste and smell	3.147	1
The video demonstrations bring about behavioral change	3.5	1

Table 4.11: Appropriate Length of Video

	Rank	Frequency as #1 of Response
< 5 minutes	3	4
5-15 minutes	1	21
15-30 minutes	2	8
30-45 minutes	4	1
45 minutes-1 hour	5	0

Table 4.12: Reasons Videos Would Not be Effective

Reason	Mean	Frequency as #1 Response
Viewers do not have proper video/media equipment	2.088	17
No one is present for discussion with the viewers	2.618	8
Viewers do not know how to use video/media equipment	3.059	3
Equipment may malfunction	3.971	3
No one is present to answer questions	3.265	3

CHAPTER FIVE

Discussion

Current Nutrition Education Means Employed by NEP

Before determining whether or not Nutrition Education Professionals are using video streaming/electronic media as a tool to educate, one must first understand their current teaching tools. According to the results, face-to-face lectures, group discussions, and demonstrations are the most popular teaching methods by an overwhelming majority for all three areas of investigation. In fact, health exhibits, publications, webinars, video streaming/electronic media were never listed a *primary* teaching tool for any subject.

Because nutrition, food safety, and food preparation can all be defined differently, one would assume they each merit different teaching styles. These findings are, therefore, significant because regardless of the subject, NEP utilized the same teaching tools. Perhaps these findings warrant a reflection on effective teaching methods. This, of course, is another study and a further topic of research. With that being said, the next objective of this study was to analyze the attitudes and uses specifically of video streaming/electronic media by NEPs in the areas of nutrition, food safety, and food preparation. Even though this method was never listed as a primary teaching tool, it is still important to determine when and if it is used. Also, does the age, length of employments, of county's median income of employment of the NEP influence their utilization of video streaming/electronic media as an education tool?

Perception and Usage of Video Streaming/Electronic Media

Age of Nutrition Education Professional

In the perpetual evolving world of technology, it is the young generation who is generally on the cutting edge of new gadgets. Individuals born between 1977 and 1997 are known as Generation Y. A recent online article on a business website clearly explains the disparities between Generation X and Y and claims that "the distinct most significant divergence between Gen Y and other generations is their familiarity with technology. Generation Y dives into computers and digital media projects like no other. Generation Y seeks technology to improve the value of every aspect of their lives whether it is to make employment simple, or to allow them to have efficient control over time and to bring relationships and contacts closer...Technology is the motor that keeps their lives going" (AE, 2011).

With that being said, one may assume that the younger Nutrition Education Professionals would be more inclined to use video streaming/electronic media as an education tool, regardless of the subject. To determine if age influenced use of technology among Nutrition Education Professionals, this study categorized the participants into two age groups: <45 years of age and ≥ 45 years of age where $n=16$ and $n=18$ respectively. Surprisingly, older NEP utilized video steaming/electronic media more than the younger NEP in each area of nutrition, food safety, and food preparation. Nutrition and Food Safety ranked highest among video streaming/electronic media use. Nutrition's p-value equals < 0.02 demonstrating significant findings. On the other hand, the p-values for Food Safety and Food Preparation are < 0.15 and 0.48 which do not indicate significant findings but their frequency of use are 25% and 16.67% which are

10% greater than that of the younger NEP. Contrary to what one may assume, these findings indicate that older Nutrition Education Professionals are more likely to utilize video streaming/electronic media than younger Nutrition Education Professional. Obviously, these results are a little surprising. After analyzing the next set of data, further literary research indicates why age may play a role in the utilization of video streaming/electronic media in nutrition education.

Length of Employment of Nutrition Education Professional

Similar to the theory of age influencing the use of video streaming/electronic media among Nutrition Education Professionals, length of employment may also play a role. Fresh employment status may also accompany an innovative, inspirational, and modern approach to education implying greater utilization of video streaming/electronic media. This sentiment is also shared by many employers and businesses who feel that "in the present era of booming economy, every company wants to look young not only by adopting new technologies, new tools of productions, new modes of marketing but also by recruiting young and fresh professionals behind each tool, technology, service and production" (Kamble, 2012).

Newly employed Nutrition Education Professionals are not necessarily of a young age, but their newer employment status may support this attitude. This study determined whether newly employed NEP utilize cutting edge technology through video streaming/electronic in contrast to longer employed NEP. To determine this, the survey participants were categorized into two groups: those employed < 5 years, and those employed ≥ 5 years where n=19 and n=18 respectively. The results concluded that those individuals employed for ≥ 5 years were *more likely* to use video streaming/electronic

media than those employed <5 years. Only two participants employed <5 years used video streaming/electronic media *ever* when educating in the areas of nutrition and food safety. Furthermore, no one employed <5 years utilized these tools when educating about food preparation. On the other hand, NEP employed ≥ 5 years *have* used video streaming/electronic media. Approximately 32% of this group of individuals has used video streaming/electronic media in the areas of nutrition and food safety and 21% in the area of food preparation. The p-values also indicate significant findings at values < 0.03, 0.03, and 0.03 respectively. These results indicate that Nutrition Education Professionals employed ≥ 5 years, are more inclined to use video streaming/electronic media than those employed <5 years.

Also important to note, statistical analyses were run to further compare the influence of video streaming/electronic media use according to age and the length of employment. The participants were categorized into two groups: those <45 years old *and* <5 years employed and ≥ 45 years old *and* ≥ 5 years. Those in the first group reported *never* having used video streaming/electronic media in the areas of nutrition and food preparation, while only one individual reported using these tools during food safety education. On the other hand, the second group all reported using these tools as a means to educate, especially in the area of nutrition, where 28% had used video streaming/electronic media. When considering age and employment length, these results indicate that older, more experienced Nutrition Education Professionals are more inclined to use video streaming/electronic media, contradicting the common attitude that only younger, fresher employs adopt new technologies.

These results were surprising due to society's general attitude toward younger individuals being more attuned to modern technology. To understand these results on some level, further literary research was conducted to determine if other studies shared these findings. Surprisingly, this was the case. In a 2009 national study prepared by Grunwald Associates, over 1,000 teachers were surveyed. The results concluded that "contrary to popular opinion, newer teachers aren't any more likely to use technology in their lessons than veteran teachers ("Research Dispels Common Ed-Tech Myths," 2010)." The Grunwald study reported that "younger teachers who are newer to the profession were no more likely to use technology than teachers with 10 or more years of experience ("Research Dispels Common Ed-Tech Myths," 2010). "Assuming that the majority of veteran teachers are older than newer teachers, these results are consistent with the findings in this study as well; older, more experienced Nutrition Education Professionals are more inclined to use video streaming/electronic media than younger, freshly employed NEP. The Grunwald study posed two theories to their findings:

- The younger professionals are coming out of teacher preparation programs unprepared to integrate technology
 - The younger professionals enter a school environment where they're not encouraged to utilize technology
- ("Research Dispels Common Ed-Tech Myths," 2010).

Either of these theories could also pertain to NEP's inclination to utilize technology during their education. In comparison to younger, newly employed professionals, conceivably the older NEP have learned to adapt to changing environments and/or they work in communities who promote technology in

education. Regardless, more research must be conducted to further understand the pros of technology in terms of education and ultimately encourage teaching professionals to utilize technology if deemed appropriate.

Median Income of NEP's County of Employment

Regardless of income, all people can benefit from nutrition education. However, individuals of low-income may have different needs than those who are more financially stable and according to Behavior Risk Factor Surveillance System Report Statistics, 15.8% of Kentuckians lives in poverty (BRFSS, 2012). This research helped determine if Nutrition Education Professionals employed different education tools for counties of low-income compared to counties earning more than the average median income. Figure 2 depicts the average median income for each Kentucky County:

Figure 5:1 Kentucky Counties Average Median Income

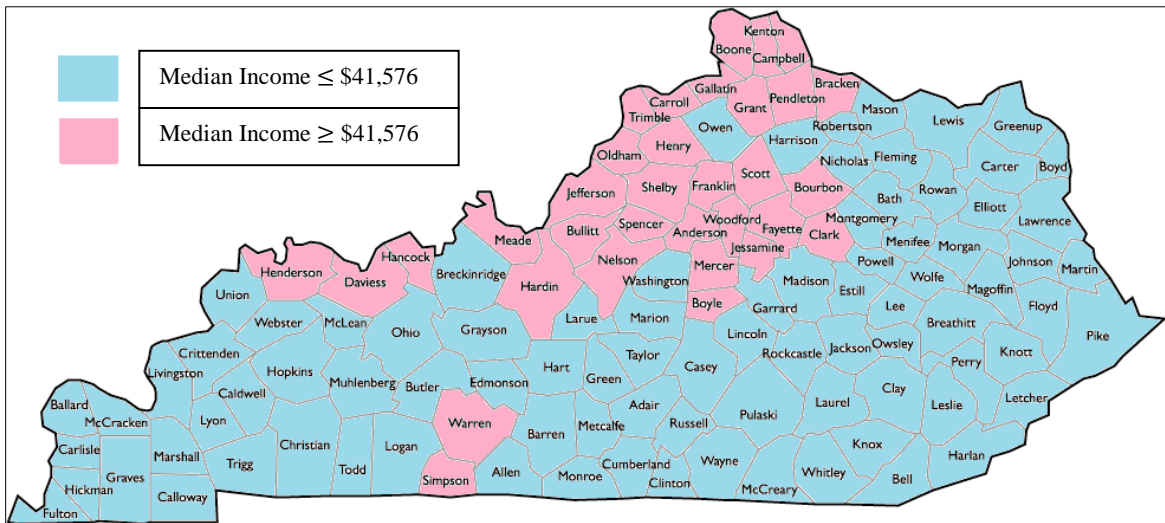
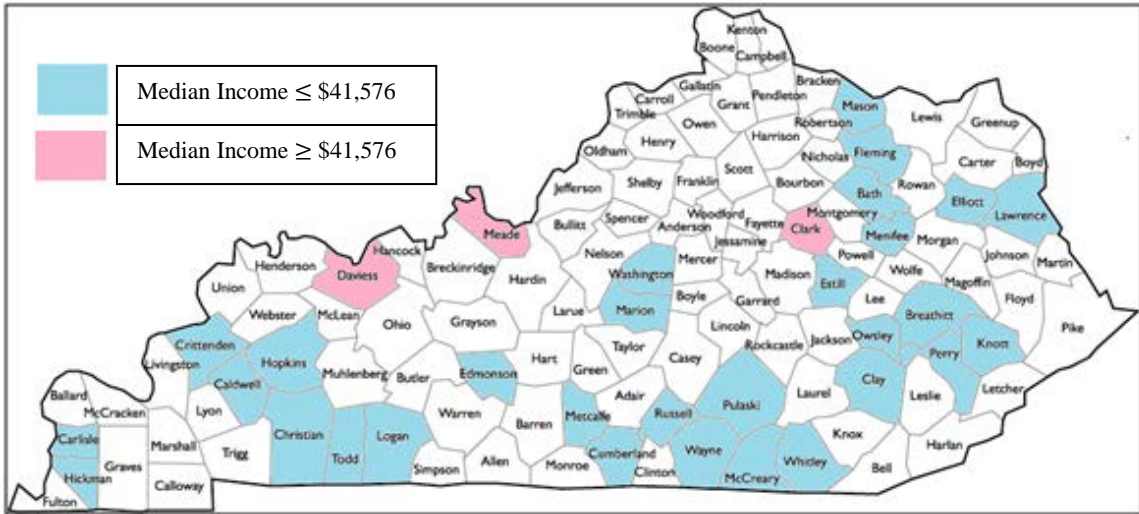


Figure 3 illustrates the average income from the surveyed participants:

Figure 5.2: Average Median Income of Survey Responses



Because counties of low-income may have different needs, perhaps these counties also merit different education tools than those of higher income. To determine if this statement is true, the surveyed participants were categorized into two groups depending on their county of employment's median income. Because the state's median income is \$41, 576, those counties earning less than this median can be considered by definition "low-income." For this group, n=35. Those counties earning more than the median income are not considered "low-income" and are in a separate group. Illustrated in Figure 3, only three counties who responded had a median income greater than the state median of \$41, 576. Counties with a higher income may perhaps have greater access to technology, equipment, and more advanced modern teaching tools than those counties of lower-income. Because of this, NEP working for counties of higher income were expected to utilize video streaming/electronic media. However, the results proved the contrary. While only three participants worked for counties who earned greater than the state median income, none of these NEP utilized video streaming/electronic media as a

nutrition education tool. On the other hand, NEP employed for low-income earning counties did utilize these education tools, although the percentages were rather low in the nutrition, food safety, and especially food preparation categories. The percentages were 20%, 20%, and 11.43% respectively. The p-values were < 0.39 , 0.39 , and 0.54 , also respectively. These p-values indicate non-significant findings. The inclination of NEP to utilize video streaming/electronic media in education based on their counties' income *cannot* be done with significant results.

However, even though these results are not necessarily significant, it is *suggested* that low-income counties are more likely to use this technology. Why this results is unclear. There is one potential theory and that concerns NEP's budgets per county. Acquiring technology and having it available at a county's disposal can be quite costly. It was originally assumed that counties of higher income would have access to these tools. However, perhaps it is the opposite. Conceivably, counties of lower-income may have more disposable income to use on nutrition education because their community leaders realize that education is crucial in their counties, with money budgeted accordingly. Low-income counties are notorious for poor access to education and healthy lifestyles. Therefore, plausibly more money is allotted to Nutrition Education Professionals to improve these lifestyles because by comparison to higher income counties, poor nutrition and education is a problem by a much greater ratio.

Efficacy of Video Streaming/Electronic Media

Interestingly, regardless of age, length of employment, and county's income, most Nutrition Education Professionals perceive video streaming/electronic media to be an effective teaching tool. Based on the results, most of the individuals who used video

streaming/electronic media for nutrition, food safety, and food preparation education believe they *are effective*. In the area of food safety, 100% of the individuals who used this technology believed it was effective. Even more convincing, even those who had *never* used video streaming/electronic media in nutrition education still perceived it to be an effective teaching tool. What characteristics, then, merit or hinder effective video streaming/electronic media? According to the results, 64% of the survey participants believed videos were effective because they provide the following:

- Videos can be watched at viewer's own pace
- Videos are more convenient than face to face meetings for the client

Furthermore, 94% of the survey participants believed effective videos include:

- Demonstrations that effective and attention grabbing
- Demonstrations that are easy and practical

Also, the 62% of the survey participants believe the videos should only last 5-15 minutes in length. On the other hand, 74% of the respondents believed the main limitations of effective video streaming/electronic media are:

- Viewers do not have proper video/media equipment
- Viewers do not have anyone present for the viewers

This is perhaps the most intriguing bit of information concluded. These results essentially explain that *NEP view videos as an effective teaching tool*. Yet, very little use was reported. Therefore, it is unquestionable that other reasons exist for the lack of use. What those other reasons are remain unclear. What is known is that perhaps viewers lack equipment or an NEP present for questions and discussion. However, these are merely characteristics that would *hinder* effective videos, not their utilization all together. More

research should be conducted to fully understand why NEP rarely use this technology, *especially* because they feel it would be effective.

CHAPTER SIX

Conclusion

Overall Conclusions

These results allow the arrival of several overall conclusions based on the aforementioned survey:

- Regardless of nutrition subject, face to face lectures, group discussions, and demonstrations are the most popular teaching methods used by NEP.
- Nutrition Education Professionals ≥ 45 years are more likely to employ video streaming/electronic media as a means to educate than those < 45 years of age.
- Nutrition Education Professionals employed ≥ 5 years are more likely to employ video streaming/electronic media as a means to educate than those < 5 years of age.
- It is not determinable whether county's income influences use of video streaming/electronic media as a means to educate low-income individuals or otherwise.
- Regardless of Nutrition Education Professional's demographics, NEP do perceive video streaming/electronic media as effective teachings tools
- The best characteristics of video streaming/electronic media include demonstrations that are effective, attention grabbing, easy, and practical.
- The biggest hindrances of effective of video streaming/electronic media are viewers lacking proper video/media equipment and discussion with professionals.

Limitations

Due to the low response rate of the Nutrition Education Professionals, lack of sample size is a severe limitation of this study. While some of the p-values did represent significant findings, a larger sample size would provide more accurate results. A second limitation was the lack of responses from counties earning greater than the median income. More responses from counties of higher income would potentially illustrate greater disparity of teaching methods from those of lower income and therefore provide more accurate results. Because the initial assumption was that NEP utilize video streaming/electronic media, a final implication was a lack of survey questions pertaining to the reasons *why* NEPs do not utilize this technology.

Implications

These results have several implications. Generally speaking, older NEP and those employed for a longer period of time are the individuals utilizing video streaming/electronic media. However, the majority of NEP believe this technology is an effective teaching tool. Now that this is understood, why are all Nutrition Education Professionals not utilizing this technology? Based on the results, most NEP believe that their clients will not have the proper media equipment and no one will be present for discussions or questions. Furthermore, face to face lectures, group discussions, and demonstrations are the most popular current teaching methods in all areas of nutrition education. Perhaps determining methods that utilize *all* these forms of education would be the most effective. Viewing videos in a group is one, cost effective idea. It would include demonstrations and opportunities to communicate. More research needs to be done to fully understand the lack of utilization.

Overall, this was a general overview of the perception and usage of video streaming/electronic media by Nutrition Education Professionals. Obviously, more research must be conducted to fully understand the "how's" and "why's" of effective videos because the truth is, NEP perceive them to be an effective teaching tool. It is the opinion of this research that these professionals must remain on the modern edge of teaching in order to effectively reach its communities. Low-income or otherwise, the health of Kentucky citizens will continue to require nutrition intervention. Further research comparing the effectiveness of electronic media to face-to-face instruction in various areas of nutrition education is needed to determine the most efficacious and cost-effective means of educating community members.

APPENDICES

Appendix A: Definition of Terms

1. Extension agents of Kentucky are community members employed through the Cooperative Extension Service.
2. Nutrition Education Professionals (NEP) are professionals whose mission is to educate limited resource people to acquire knowledge, improve skills, and change behavior necessary to achieve health and well-being, according to the University of Kentucky's Nutrition Education Program.
3. Family & Consumer Sciences Extension “improves the quality of individual and family life through education, research, and outreach. This multidisciplinary field focuses on building assets of individuals and families to address the perennial problems faced across the lifespan” (Agriculture, 2011).
4. Video streaming/electronic media are two types of educational tools examined in this study uses to educate low-income individuals of Kentucky. Video streaming usually employs food demonstrations focusing on nutrition, food safety, and food preparation techniques. This type of media transmits their information electronically and comprises television, film and radio, movies, CDs, DVDs and some other devices like cameras and video consoles.
5. Nutrition Education "is any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being. Nutrition education is delivered through multiple venues and involves activities at the individual, community, and policy levels" (Bartlett, 2007).

6. Food Safety Education "is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food-borne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards" (Statin, 2008).
7. Food Preparation Education pertains to preparing foodstuffs for eating, which generally requires the selection, measurement and combining of ingredients in an ordered procedure to achieve a desired result. It includes but is not limited to cooking, baking, roasting, frying, chopping, and warming techniques (USDA, 2011).

Appendix B: Survey Distributed via Qualtrics Online Survey Software

Q1. What County do you work in?

Q2. How long have you been working in extension?

Q3. What is your age?

Q4. What methods do you use to educate low income families about nutrition? Please rank in order from most used to least used by dragging the options to the appropriate ranking.

_____ Face to face lectures

_____ Group discussions

_____ Food demonstrations

_____ Health exhibits

_____ Publications

_____ Webinars

_____ Video streaming/electronic media

_____ Other

Q5. What methods do you use to educate low income families about food safety? Please rank in order from most used to least used by dragging the options to the appropriate ranking.

_____ Face to face lectures

_____ Group discussions

_____ Food demonstrations

_____ Health exhibits

_____ Publications

- _____ Webinar
- _____ Video streaming/electronic media
- _____ Other

Q6. What methods do you use to educate low income families about food preparation?

Please rank in order from most used to least used by dragging the options to the appropriate ranking.

- _____ Face to face lectures
- _____ Group discussions
- _____ Food demonstrations
- _____ Health exhibits
- _____ Publications
- _____ Webinars
- _____ Video streaming/electronic media
- _____ Other

Q7. How often do you do food demonstrations in a personal/family setting?

- Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Q8. How often do you do food demonstrations in a group setting?

- Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Q9. How often do you do food demonstrations at a fair?

- Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Q10. How often do you do food demonstrations at a farmer's market?

- Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week

- Daily

Q11. Have you used video streaming/electronic media in educating low income individuals about nutrition?

- Yes
- No

Q12. How often do you use video streaming/electronic media in education low income individuals about nutrition?

- Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Q13. Have you used video streaming/electronic media in educating low income individuals about food safety?

- Yes
- No

Q14. How often do you use video streaming/electronic media in education low income individuals about food safety?

- Never
- Less than Once a Month
- Once a Month

- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Q15 Have you used video streaming/electronic media in education low income individuals about food preparation?

- Yes
- No

Q16. How often do you use video streaming/electronic media in education low income individuals about food preparation?

- Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Q17. How effective is video streaming in educating low income individuals about nutrition?

- Ineffective
- Neither Effective nor Ineffective
- Effective

Q18. How effective is video streaming in educating low income individuals about food safety?

- Ineffective
- Neither Effective nor Ineffective
- Effective

Q19. How effective is video streaming in educating low income individuals about food preparation?

- Ineffective
- Neither Effective nor Ineffective
- Effective

Q20. Why do you think video streaming/electronic media would be effective in educating low income individuals? Please rank in order from most effective to least effective by dragging the options to the appropriate ranking.

_____ Videos are more convenient than face to face meetings for the client

_____ Videos are less costly than face to face meetings

_____ Videos can be watched at viewer's own pace

_____ Videos convey information clearly

_____ Video education is more interesting than face to face discussions

_____ Videos education is easier to understand than face to face discussion

_____ Viewers will be more inclined to listen to a video than a person

_____ Viewers will pay more attention to video demonstrations than in-person demonstrations

Q21. What are some possible concerns or issues to consider when employing media as a means to educate low income families? Please rank in order from highest concern to lowest concern by dragging the options to the appropriate ranking.

_____ Viewers do not have proper video/media viewing equipment

_____ Viewers do not know how to use video/media viewing equipment

_____ Equipment may malfunction

_____ No one is present for discussion with the viewers

_____ No one is present to answer questions

Q22. What makes educational videos effective? Please rank in order from most effective to least effective by dragging the options to the appropriate ranking.

_____ The video demonstrations are attention grabbing with exciting visuals and sounds

_____ The video demonstrations engage your senses in terms of taste and smell

_____ The video demonstrates are easy and practical

_____ The video demonstrations bring about behavioral change

Q23. What is an appropriate time length for a video?

5-15 minutes

15-30 minutes

30-45 minutes

- 45 minutes-1 hour

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