LEVERAGING TECHNOLOGY TO IMPLEMENT CURRICULUM: AN INNOVATIVE APPROACH TO COMMUNITY OUTREACH IN COOPERATIVE EXTENSION PROGRAMMING

Danielle N. Barrett

The Graduate School

Morehead State University

April 12, 2021

LEVERAGING TECHNOLOGY TO IMPLEMENT CURRICULUM: AN
INNOVATIVE APPROACH TO COMMUNITY OUTREACH IN COOPERATIVE
EXTENSION PROGRAMMING

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Abstract of Capstone

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A capstone submitted in partial fulfillment of the
Requirements for the degree of Doctor of Education in the
Ernst and Sara Lane Volgenau College of Education
At Morehead State University

By

Danielle N. Barrett

Pine Knot, Kentucky

Committee Chair: Dr. Jeannie Justice, Associate Professor

Morehead, Kentucky

April 12, 2021

ABSTRACT OF CAPSTONE

LEVERAGING TECHNOLOGY TO IMPLEMENT CURRICULUM: AN INNOVATIVE APPROACH TO COMMUNITY OUTREACH IN COOPERATIVE EXTENSION PROGRAMMING

The capstone included a web portal for a virtual health community to be used for diabetes education in Cooperative Extension programming, which focuses on incorporating good nutrition practices and behavior changes to manage or prevent diabetes. Diabetes is complex and requires a detailed understanding of the disease and the techniques used to keep it under control. Because diabetes management may include lifestyle changes, oral medications, a specialized diet, and insulin therapy, Cooperative Extension has the opportunity to offer more web-based educational options, thus inspiring the creation of this portal. Google Classroom was used to create the virtual health community and upload all the relevant information and educational materials. The web portal includes modules on various diabetes-related topics; each module provides current research-based information relating to the topic. These topics include, but are not limited to, diabetes overview, blood sugar testing and control, medications and treatment, nutrition, physical activity, and mental health. Other non-content modules include instructions on portal usage, diabetes-friendly recipe demonstrations, an open community board for general communication, and an "ask the expert" board. The capstone's intended impact is to increase the availability and ease of access to current research-based diabetes education.

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Candidate Signature

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Date

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By

Danielle N. Barrett

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CAPSTONE

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DEDICATION

To my husband, James: you always push me to be the best possible version of myself and believe in me even when I do not. This would not have been possible without you, your encouragement, your support, your love, and, of course, our furbaby Cookie Monster. Thank you, and I love you!

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To all my former teachers and professors, thank you for guiding my educational path and helping to mold me into the educator I am today. I would be remised if I did not take the opportunity to thank a few special individuals publicly. Dr. Tammy Stephenson, I found my love for nutrition and went down this path because of you. I can honestly say I would have never made it to this point without your years of guidance as a mentor and friend. Dr. Dawn Brewer, you helped me discover my love for designing curricula. You have been one of my biggest cheerleaders, even if you think "she's the worst!" Dr. John Curry, you fostered and helped grow my love of instructional design. You encouraged me when I needed it the most and pushed me to be better.

To my chair and committee members, I cannot thank you all enough for taking the time to work with me to make this capstone a reality. Dr. Justice, you have a lot on your plate, yet you always took the time to provide the guidance I needed and reassured me that I was on the right track. Dr. Heather Norman-Burgdolf and Dr. Michelle McClave, you are both tremendous educators, and I appreciate your insights. Thank you so much for serving on my committee!

To my BIG cohort family, I am forever thankful that we went through this journey together, even if we are all on different timelines. The friendships forged over

the last three years will last a lifetime. I am forever grateful and proud to know each of you. Can we make annual karaoke reunions a thing?

To my friends and family, I will forever be grateful for your understanding and support. Your encouragement has kept me going. Specifically, thank you to my parents and my granny for shaping me into the person I am today. It is because of you that I never stop striving to achieve my wildest dreams. And finally, James, you have been by my side this whole time. I cannot begin to express my appreciation and gratitude, so a simple thank you for doing life with me will have to do.

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Executive Summary

What was the core of the capstone?

For the capstone project, a web portal was created as a virtual health community to be used for diabetes education in Cooperative Extension programming that focuses on incorporating good nutrition practices and behavior changes to manage or prevent diabetes. Cooperative Extension is the community outreach service within land grant universities that provide evidence-based information and modern technologies to farmers, consumers, and families. Currently, Cooperative Extension offers minimal web-based programming options. By creating a web portal for diabetes education, clientele can utilize the web-based programming option to increase knowledge and skills related to lifestyle modifications for those with diabetes and gain any social support needed.

Diabetes is complex and requires a detailed understanding of the disease and the techniques used to keep it under control. Because diabetes management may include lifestyle changes, oral medications, a specialized diet, and insulin therapy, Cooperative Extension has the opportunity to offer more web-based options, thus inspiring the creation of this portal. The web portal acts as a virtual health community and provides educational content to cover diabetes education in order to serve Cooperative Extension clientele better. The portal offers both community support and education on one convenient platform. By covering the essential topics related to diabetes and lifestyle modifications for those with diabetes, the web portal follows the recommended guidelines for the management of diabetes provided by the American

Diabetes Association (ADA). The ADA is a professional organization made up of healthcare workers that focus on research and clinical practice related to the pathology and management of diabetes, making them the primary source for diabetes-related information. Online health communities are platforms where members can interact and learn about their disease via web-based mediums.

Who was the capstone meant to impact?

This web portal's intended audience is Cooperative Extension clientele with prediabetes, diabetes, or caregivers of those with diabetes interested in participating in Extension programming for diabetes education. Common traits among this learning group's members include diagnoses of prediabetes or diabetes, family member or caretaker of someone with diabetes, geographical proximity, similar age range, and, most importantly, a desire to learn more about diabetes and lifestyle modifications for those with diabetes. The most challenging differences among the learners within the group are education level and socioeconomic status. While some learners will have more education than others, learners will be coming to learn about diabetes, specifically with little to no background knowledge about this disease. The web portal is designed to improve the learner's overall health and well-being by increasing their understanding of diabetes and teaching them skills to manage diabetes. Furthermore, the web-based diabetes education portal provides the learners with a virtual community to connect with others for social support and learn more about diabetes as well as overall healthy lifestyle skills.

How was this capstone project designed and developed?

For the capstone project, a web portal was created as a virtual health community for diabetes education. The goal was to develop a web portal that acts as a virtual health community to cover diabetes education in order to better serve the clientele. This would include covering the essential topics related to diabetes and lifestyle modifications for those with diabetes following the recommended guidelines for diabetes management by ADA. As with any successful Cooperative Extension program, the clientele's needs and wants are of utmost importance in determining programming topics and delivery methods. A successful program will focus on successfully transferring knowledge and skills from the Cooperative Extension professional to the participants; consequently, this is the intended impact of this capstone.

This capstone was created by using the recommendations from a study looking at designing web-based communities for Cooperative Extension. Haviarova and Vlosky (2009) provided a general guide for creating a web-based community for Cooperative Extension. Based on the recommendations, the steps included are developing a vision for the web community, researching existing web communities, creating a list of requirements, web design, information gathering, industry support, survey to collect directory information, project pre-planning, resource management, IT resources and constraints, project planning and tracking, functional specification, system design, project monitoring, beta testing, production, feedback, contact/communication channel, administrator jobs, and documentation. For a virtual

community to thrive, strategic and intentional planning must occur, or the community may fail. Clientele buy-in is crucial for virtual communities, so following the recommendations for the design, development, and implementation of these virtual communities should always have the clientele in mind.

Technology Choices

Google Classroom was used to create the virtual health community and upload all the relevant information and educational materials. While other learning management systems were available, Google Classroom was chosen because of its popularity, user-friendliness, ease of accessibility, and cost-effectiveness. By using this platform, the web portal provides asynchronous Cooperative Extension programming on diabetes education.

Content Choices

The web portal includes modules on various diabetes-related topics; each module will provide current research-based information relating to the topic. These topics include, but are not limited to, diabetes overview, blood sugar testing and control, medications and treatment, nutrition, physical activity, and mental health. All educational material is the most up-to-date content on diabetes education from ADA's website (American Diabetes Association, 2021). Other non-content modules will include instructions on portal usage, diabetes-friendly recipe demonstrations, an open community board for general communication, and an "ask the expert" board.

Educational Technology and Instructional Design Choices

Educational technology is a supplemental tool to the learning process that utilizes technology as an instrument to aid in a deeper understanding of the content through applied practice. Technology is a tool that can be used to complete tasks more efficiently than traditional methods alone. The concept of using technology as a tool applies to education in the same way by allowing the learner to gain knowledge via various mediums. Educational technologies provide a benefit that traditional face-to-face instruction lacks by allowing a certain level of autonomy and flexibility for the learner to help shape his/her learning experience. The creation of the portal provides an alternative modality of Cooperative Extension programming.

The educational content provided by ADA is the current research-based information on diabetes. Cooperative Extension is known for only sharing research-based content in its programming, so the portal's content is no different. ADA is a non-profit that promotes diabetes education to the public through funding research to manage, cure, and prevent diabetes. After reviewing the ADA's website, the educational content was chosen and organized to cover the topics in the portal. The topics were outlined before creating the portal to provide the diabetes educational content used to promote scaffolding during the learning process. While the content is available on the ADA's website, it is not organized to guide the readers in learning the content. Scaffolding the presentation of the material allows the portal to guide the participants' learning by building knowledge and skills from a basic level to practical application.

In addition to the educational content, modules for group discussion were included to increase the social support aspect of the portal. The open community boards allow participants to discuss topics related to their diabetes without the constraints of question-based discussion boards, like in the educational modules. Similarly, the ask-the-experts board is for participants to ask questions that may require a health professional's guidance. The diabetes-friendly recipes demonstrations provide participants with nutritious recipes that fit a diabetes meal pattern. Overall, the open community boards, ask-the-experts board, and diabetes-friendly recipe demonstrations were added to the portal to provide additional resources to reinforce the educational content and provide a space for the practical application of the knowledge and skills gained from the educational content modules.

The modules will guide the participants from a basic understanding of diabetes to in-depth knowledge and provide participants with the skillset to implement their diabetes management plan. The following shows how each of Gagné's nine instructional events was applied in the modules:

1) Gain the attention of the learner – In the "Start Here" section of each module, a video is used to introduce the topic.

2) Inform students of the objectives – In the "Start Here" section of each module, the objectives are listed.

3) Stimulate recall of prior learning – The use of polling questions and group discussions facilitates sharing the participants' prior learning related to the module topic.

4) Present the content – The educational content is presented.

5) Provide learning guidance – The educational content is broken down into subsections related to the module topic to support scaffolding learning.

6) Elicit performance – The use of polling questions and group discussions reinforces new skills and knowledge the participants acquired related to the module topic.

7) Provide feedback – The moderator provides feedback to the participants' discussion board posts and answers any questions.

8) Assess performance – The use of pre-and post-tests measures the skills and knowledge gained related to the module topic.

9) Retention and transfer – The use of SMART goals helps participants retain and apply the skills and knowledge related to the module topic in their own lives.

Why were this capstone and related strategies selected?

Cooperative Extension and Information Technology

Astroth (1990) called for Cooperative Extension to establish practices that utilize more current Cooperative Extension technologies' information communication. With more and more scientific articles written daily, Cooperative Extension needs to adopt technologies to help deliver this information on a broader scale. He discussed Cooperative Extension's need to support the use of technology to stay relevant with the changing times and meet the demands of 21st-century society. Astroth established a strong argument for Cooperative Extension and the need to utilize technology in

programming efforts and audience expansion. This innovative approach provides

Cooperative Extension with the most significant impact to date by implementing

newer technology.

An increasingly popular information technology platform used to improve

communication within an organization, virtual communities have been around since

the 1970s when scientists used the web to share their research and communicate

remotely (Wachter et al., 2000). More specifically, virtual learning communities

allow educators and students to actively engage in effective and efficient

communication while providing a learning environment on a web-based platform.

Wachter et al. (2000) highlight and explain guidelines for the creation and

management of virtual communities. They suggest that technology should act as an

enabler of the virtual community, meaning that it must have proper care and

management for a virtual community to succeed.

While progress has been made since Astroth's article in 1990, Cooperative

Extension is still falling behind in keeping up with current trends in technology. Diem

et al. (2011) examined two Oregon State University Cooperative Extension Service

counties because of the increase in demands for technology use within Cooperative

Extension for both work efficiency and expanding audience outreach. The team found

that time, money, and training were the key barriers to adopting the technology.

Recommendations for change included: develop a technology plan, promote and

recognize technology currently being utilized, dedicate resources and support for

technology, and use and promote eXtension. eXtension is a member-based non-profit

established by Extension Directors and Administrators nationwide that serves as an interactive hub for learning, professional development, and collaboration for Cooperative Extension professionals. Cooperative Extension's need to adopt more current technologies is still an appropriate discussion because, often, Cooperative Extension falls behind current technology trends. Cooperative Extension would benefit in expanding its use of information technology to broaden its audience and available programming by implementing the recommendations through an alternative modality of programming.

Online Health Communities

As technology evolves, more people are turning to the Internet for health information and education. As the number of individuals with chronic illnesses increases, people are utilizing peer-to-peer online resources to support their medical treatment and education on their diseases. Online health communities are web-based platforms where members can interact via blogs, chats, forums, and wikis. These digital platforms can actively engage and empower patients while providing a credible place to receive medical information and allowing communication across healthcare team members. Online health communities provide participants an environment to gain up-to-date information about current research and medical treatments, receive social support, and build relationships with other persons with similar conditions.

For an online health community to be sustainable, the platform must encourage user participation. While the information on health websites and

communities is abundant, the viewer needs to participate in some level of interaction to gain a more impactful experience and in-depth knowledge. A user-centered structure of the content is optimal. A content analysis of 196 online health websites and communities recognized the majority of health websites and online health communities provided rich information; however, these platforms lacked structural and functional cues to encourage user participation within the group (Kim & Mrotek, 2016).

Online health communities are often limited by member engagement, and, sometimes, members behave in inappropriate ways such as sharing inaccurate information, resulting in the need for a moderator. As much as user interaction within the online group is essential, online health communities need expert interaction to provide guidance and structure to the virtual community. A moderator is required to help guide and direct member engagement as well as to stop the spread of misinformation, rumors, and inaccurate information. Centola and van de Rijt (2015) found that participants chose to select contacts based on similar characteristics of their offline relationships, which limited their exposure to a broader view of information. The style of moderation should be indirect and provide positive reinforcement for the most significant impact. Matzat and Rooks (2014) examined and suggested practical moderation methods for online health communities, which concluded that rewarding forms of control were more effective than punitive control. It was noted that participants tend not to accept direct but will accept indirect forms of control.

Health professional moderators help users improve their health literacy, develop skills, expand their social support, and gain other valuable resources to deal with health-related issues like a sense of empowerment (Atanasova et al., 2017). Online health communities allow moderators and users to overcome the weaknesses of traditional face-to-face encounters. Moderators and users found the primary benefits of online health communities in delivering information and emotional support for user-specific health-related needs. In contrast, the fundamental challenges were related to the limitations of computer-mediated communication. The need for robust personal relationships within the online health community between the participants and the moderators is vital for online health communities to be most beneficial.

Online health communities are being utilized in health care to provide health education and disease management. Factors that lead to effective web-based interventions include collaboratively developing a timeline, encouraging open dialog while discouraging avoidance, creating a virtual therapeutic space, encouraging structured flexibility, engaging both members of the couple, reinforcing new learning, and managing emotional content (Eysenbach et al., 2015). Online health communities provide participants with social support and empower them to live healthier lives based on the platform's content. Direct benefits related to participation in an online health community include increased information utility, social support, and perceived patient empowerment (Johnston et al., 2013).

There are many benefits of online health communities, as seen in the literature, but most notably, telehealth provides access to underserved populations and achieves significantly improved health outcomes. Online health communities are an effective medium for health education and can reduce some of the inequality found in health care access (Fitzner et al., 2014; Goh et al., 2016; McLendon, 2017). Telehealth, or sometimes referred to as telemedicine, uses online health community concepts to provide medical services in a synchronous manner. Additionally, online health communities promote health care equality. In response to the need to address health care inequality, researchers are expressing the demand for complex health promotion initiatives that combine both offline and online interventions to increase access for the masses. Sunderland et al. (2013) conducted a literature review to determine the key concepts and conditions for successfully integrating an offline health promotion program into an online health community. Results concluded that a multiplex health promotion initiative would be most beneficial to participants. Three key themes should be used to inform the design of a multiplex health promotion initiative: communities' characteristics in offline and online settings, issues in moving offline communities online, and designing online communities to match community needs. For quality online health care communities to function as intended, it is crucial to follow the recommendations and sound instructional design theories and/or models. Like any informal educational platform, the medium must be user-friendly and beneficial for active users of the service. Overall, current research has determined telehealth diabetes education offered effective education and self-management

outcomes via a remote platform, especially in rural and lower socioeconomic status populations.

Cooperative Extension Virtual Communities

Today, Cooperative Extension is still struggling both to stay current with the newest technologies and to integrate technologies into existing Cooperative Extension programming in order to reach a broader, more diverse audience. Sobrero and Craycraft (2008) examine the use of virtual communities of practice in Cooperative Extension programming. They define a community of practice as a network of people that have common interests and work together to learn, as seen in this formula: competence + experience + engagement = community of practice. eXtension is the first example of effective virtual communities of practice in Cooperative Extension. eXtension was created by a national Cooperative Extension partnership across states to address the need for easily accessible, timely, cutting-edge, convenient, and trustworthy research-based information. eXtension is a real-life example of Cooperative Extension professionals' virtual communities and demonstrates how technology via a virtual community can increase knowledge and program sharing. eXtension is a great model to serve as a template for a web-based Cooperative Extension program for clientele. A virtual community of practice would reach traditionally underserved audiences and introduce new audiences to Cooperative Extension through an alternative avenue than traditional in-person, in-office programming. A web-based platform would allow clientele to assess Cooperative

Extension programming on their own time without being restricted by office hours or geographic location.

Furthermore, Sobrero (2008) instructs Cooperative Extension professionals on how to create virtual communities of practice. Essential elements of a virtual community of practice include a defined domain, sense of community, and application. More specifically, the following features are vital for a virtual community of practice to be successful: providing leadership, negotiating a mutually beneficial enterprise, establishing reliable technology and support, building trust and respect through social engagement, and maintaining strong leadership and momentum. Virtual communities of practice should be designed to grow naturally, encourage participation, support diversity, use reliable technology, provide different roles for members, and link collaboration to offline activities.

Conditions of Learning

To ensure the portal was built on a solid instructional design foundation, each module was created using Gagné's Conditions of Learning theory. This theory was developed by Robert M. Gagné in 1965 as a learning theory to explain the different levels of learning and how to use instruction to address the learners' needs at each level. According to Gagné, the five major categories of learning are verbal information, intellectual skills, cognitive strategies, motor skills, and attitudes. By using specific learning tasks for each level of learning, the learner can build on their knowledge from simple to complex content. Because the portal uses modules to build upon the learners' diabetes education knowledge and skills, Gagné's nine

instructional events are built into each module's instructional material to provide the framework for learning. Each module includes all nine instructional events: gain attention, identify objective(s), recall prior learning, present stimulus, guide learning, elicit performance, provide feedback, assess performance, and enhance retention/transfer (Gagné, 1985).

Diffusions of Innovations

Diffusions of Innovations was developed by E.M. Rogers in 1962 as a social science theory to explain how an idea or product diffuses through a system. According to Rogers, the five main factors influencing an innovation's adoption are relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2010). The web portal has a relative advantage over traditional face-to-face Extension programming because virtual means provide the opportunity to reach more clientele without the constraint of a physical location. The web portal has high compatibility because the participants seeking this form of programming will most likely prefer to use technology rather than traditional face-to-face meetings. The web portal has relatively low complexity due to the use of an established platform like Google; it is assumed that most participants will have a general understanding of how to use Google due to its popularity. The web portal has a high trialability in that it will go through pilot testing before it is available state-wide. The web portal has high observability of results using participant evaluation to track their health outcomes based on pre- and post-evaluation data. Based on how the web portal scores in relation to the five main factors of the theory, the web portal has a high probability of

being seen as new and innovative, leading to its acceptance and use in Cooperative

Extension programming.

Plan for Implementation

The web portal will be implemented in a pilot testing phase using a focus

group before the final web portal will be available for state-wide programming. A

pilot run will be completed and offered to participants within a Kentucky Extension

Area to serve as the focus group. A County Extension Agent for Family and

Consumer Sciences and registered dietitian nutritionist will act as the community's

moderator, given their unique knowledge and skills related to diabetes education. A

developmental evaluation will address issues that need to be addressed and corrected

before the final edition of the web portal through a pilot of the web portal. Because

every person is unique with individual health needs, a developmental evaluation will

help identify the program's needs and its participants more holistically than traditional

summative and formative evaluations. A significant system change developmental

evaluation will provide feedback about how this significant system change and

innovation needs to evolve to fit the needs of Cooperative Extension programming

and its clientele. Once the final adjustments are made, the web portal will be open to

all Kentucky Cooperative Extension County Offices.

Tentative Timeline:

Completed:

- August 2020 thru March 2021- Designed and developed web portal. During this time, the Google Classroom was created, and content was added to the modules.

To be completed:

- Pilot Testing. A pilot test of the web portal will be completed and offered to participants within McCreary County and the counties surround it.

- Evaluation of the pilot test. An extensive evaluation of the web portal by the focus group that participated in the pilot test will provide feedback and guidance on changes needed before the web portal is open as a state-wide programming option.

- Revision of web portal. Any changes identified in the evaluation will be made during this time.

- Launch of web portal. The web portal will be available for public use by county extension agents within Kentucky Cooperative Extension.

Intended impact of the capstone

The capstone's intended impact was to increase the availability and ease of access to current research-based diabetes education. Because the Internet is full of both good and questionable health advice, the web portal for a virtual health community is meant to teach diabetes education and provided the evidence-based information people have come to know and trust from Cooperative Extension. In turn, the goal is to see a positive impact on the participants' overall health and diabetes management skills.

Diabetes is one of the most prevalent health concerns in Kentucky, and county extension agents receive numerous diabetes-related questions. UK Cooperative Extension Service has been working with stakeholders (e.g., local health departments, county hospitals) across the state to combat this growing diabetes problem by offering diabetes self-management education. It has been previously shown that individuals with prediabetes or diabetes who engage in diabetes self-management education show significant health outcomes improvements.

As technology evolves and with healthy-at-home strategies in place due to COVID-19, more people turn to the Internet for health information and education. As the number of individuals with chronic illnesses increases, people tend to utilize peer-to-peer online resources to support their medical treatment and education on their illnesses. Online health communities are web-based platforms where members can interact via blogs, chats, forums, and wikis. Online health communities provide participants an environment to gain up-to-date information about current research and medical treatments, receive social support, and build relationships with other persons with similar conditions.

The capstone's primary focus is to positively impact the overall well-being and health outcomes of diabetes education and lifestyle modifications in those who participate in the web portal. While the health impact was the central focus of this capstone, it is also intended for Kentucky Cooperative Extension to benefit from developing and implementing this innovative approach to Cooperative Extension programming. This innovative approach will increase Cooperative Extension

programs' outreach to no longer be bound by a physical meeting location. The state-level Cooperative Extension will still provide the curricula and educational materials to be incorporated into the web portal developed by the state program area specialists. The county-level extension agents will be responsible for implementing and acting as the virtual health community's moderator within the web portal for each county or area program. The participants will directly interact with the county extension agent and their fellow community participants.

Limitations of the study

The study's primary limitation was the impact COVID-19 had on the original implementation plan. Because Cooperative Extension experienced a shift to virtual programming, this capstone project's novelty and innovativeness became the norm for offering programs during a time of office closures and social distancing. However, the knowledge and skills gained from this capstone project's design and development helped to contribute to other virtual programming across multiple areas and topics.

Another limitation was the functionality of Google Classrooms. While Google Classroom worked to develop a web portal prototype, the recommendation to use a formal university-based learning management system and run on the university level is crucial for the portal's future success. This recommendation would allow for greater customization of the content and material. A university-level learning management system would also provide a greater level of security and protection of the virtual health community than Google Classroom.

Finally, because the target population for this portal is Cooperative Extension participants, the results may not represent the general population as a whole. The sample size is too small to fully represent the population at large and make the results generalizable. A larger sample size is needed. Marketing and promotion of this portal may increase the reach and expand the portal to new audiences. For future iterations, the portal would benefit by including focus groups with more diverse stakeholders and varying geographic regions with different local and regional diabetes supports and organizations that could contribute to the experience.

Reflections

As mentioned in the study section's limitation, the challenges surrounding the COVID-19 global pandemic added an extra layer of difficulty in designing and developing this capstone. All background research aided in designing the portal; however, a new lens of the pandemic had to be used in the project's actual development. Because more people are working remotely and choosing virtual options, I believe that the web portal is more relevant than initially planned and was ahead of the curve in its field of virtual Cooperative Extension programming.

Cooperative Extension was forced to adapt and quickly convert many of their traditional face-to-face program offerings to virtual modalities because of the increase in remote work. While novel and innovative at the beginning of my doctoral journey, this capstone's work and research are now commonplace. After spending a year working on virtual programming, I know the information and skills gained from this

capstone are still applicable for future portal development. They will be beneficial in future Cooperative Extension program planning.

The capstone's next steps are to complete the pilot and evaluate the portal at its current phase. Before moving forward, I would like to have an open discussion with the university-level Cooperative Extension staff on whether the use of the university's learning management system is possible. I do not think that Google Classroom provides participants with the level of security they will desire given the discussion of private health data on the portal. The outcome of this discussion will determine the next steps for the capstone project. I would also recommend converting the existing UK Cooperative Extension publications to be used as the portal's educational content.

A final reflection is a simple statement on how much things can change over three years. When I began this capstone, I assumed I would be working with Cooperative Extension for the foreseeable future. However, I changed career paths and started a new position that better utilized my instructional design knowledge and skills in creating educational material. I design resources using multiple modalities and apply all that I learned from my capstone experience in my new position.

Capstone Project

Utilizing Google Classroom, the web portal includes modules on various diabetes-related topics; each module will provide current research-based information relating to the topic. Other non-content modules will include instructions on portal usage, diabetes-friendly recipe demonstrations, an open community board for general

communication, and an "ask the expert" board. As evidence of the creation of the

portal, the Google Classroom can be found at

https://classroom.google.com/c/MjQ5MjIyNzIzNjU4?cjc=ujnb33a. Furthermore, a

video demonstration of the portal can be found at https://youtu.be/yXY0_tJLl2k

and below is an image-based walkthrough of the portal.

Outline of Portal

1) How To Use The Portal

    a) How to use the portal.

    b) Creating SMART Goals

    c) Content References

2) Diabetes Overview

    a) Pre-test

    b) Start Here!

    c) Discussion: What brings you to the community?

    d) Content: Diabetes Overview

    e) Poll: Have you been diagnosed with diabetes?

    f) Content: Understanding Prediabetes

    g) Content: Understanding Type 1

    h) Content: Understanding Type 2

    i) Content: Understanding Gestational Diabetes

    j) Content: Diabetes Symptoms Overview

    k) Discussion: What symptoms have you experienced?

l) Activity: Set one SMART goal related to the module topic.

m) Post-test

3) Blood Sugar Testing & Control

   a) Pre-test

   b) Start Here!

   c) Poll: Do you regularly test your blood sugar?

   d) Content: Blood sugar can make all the difference.

   e) Content: Checking Your Blood Sugar

   f) Content: Who should check?

   g) Content: How to check?

   h) Content: What are the target ranges?

   i) Content: What do the results mean?

   j) Discussion: What are your numbers?

   k) Activity: Set one SMART goal related to the module topic.

   l) Post-test

4) Medications & Treatments

   a) Pre-test

   b) Start Here!

   c) Poll: Do you take oral medications?

   d) Content: Oral Medications

   e) Poll: Do you use insulin or other injectables?

   f) Content: Insulin & Other Injectables

g) Content: Insulin Basics

h) Content: Insulin Routines

i) Content: Insulin Storage and Syringe Safety

j) Content: Insulin Pumps

k) Discussion: What medications and treatments have worked for you?

l) Activity: Set one SMART goal related to the module topic.

m) Post-test

5) Nutrition

a) Pre-test

b) Start Here!

c) Content: What does the science say?

d) Poll: Do you use the diabetes plate method?

e) Content: Diabetes Plate Method

f) Content: What you need to know about nutrients.

g) Content: Find your balance with it comes to carbs.

h) Poll: Do you count carbs?

i) Content: Carb Counting

j) Content: Diabetes meal plans made easy.

k) Content: Diabetes Superfoods

l) Discussion: What do you struggle with most in regards to nutrition and
   diabetes?

m) Activity: Set one SMART goal related to the module topic.

n) Post-test

6) Physical Activity

a) Pre-test

b) Start Here!

c) Poll: How many minutes of physical activity do you get daily?

d) Content: Importance of Regular Exercise

e) Content: Weekly Exercise Targets

f) Content: Blood Sugar and Exercise

g) Content: Overcome Barriers and Get Moving

h) Discussion: What motivates you to exercise?

i) Content: Aerobic versus Anaerobic Exercise

j) Discussion: What is your favorite way to exercise?

k) Activity: Set one SMART goal related to the module topic.

l) Post-test

7) Mental Health

a) Pre-test

b) Start Here!

c) Content: Understanding diabetes and mental health

d) Content: Don't be afraid to ask for help.

e) Content: It's natural to feel angry.

f) Content: Beware of denial.

g) Content: Depression can sneak up on anybody.

    h) Discussion: What do you do for self-care?

    i) Discussion: Share how you cope with the stress related to diabetes.

    j) Activity: Set one SMART goal related to the module topic.

    k) Post-test

8) Diabetes-Friendly Recipe Demonstrations

    a) Videos to be recorded and posted.

9) Open Community Board

    a) What's on your mind?

    b) Prediabetes Support Forum

    c) Type 1 Diabetes Support Forum

    d) Type 2 Diabetes Support Forum

    e) Gestational Diabetes Support Forum

10) Ask The Experts

    a) Questions for the health professionals?

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