To develop a framework for nutrition education curriculum standards at the undergraduate level that includes teacher training, student training, certification requirements, and career development.
OBJECTIVES

1. Demonstrate an understanding of nutrition education in elementary, middle and high schools in North Carolina.

2. Explain and discuss ways to better prepare undergraduates for teaching nutrition education in all settings.

3. Make suggestions based on feedback from stakeholders on teaching trainers.

4. Develop a framework for undergraduate teacher training at the undergraduate level.
Children in Pre-K to 12th grade are suffering from an epidemic of various malnutrition problems which are preventable through promoting and providing nutrition education.

Healthcare costs is on the rise from $258 billion in 1980 to 2.6 trillion in 2010 and exceeds $20,000 per family.

There is a positive correlation between nutrition education and the service and reduction in healthcare costs versus disease processes resulting from malnutrition.

Nutrition education and standardization in early stages are critical if effective reform is to be achieved.
BACKGROUND
Childhood Obesity is one of the biggest public health challenges of the 21st century. Devising effective policy and practices to combat childhood obesity and resultant premature health conditions has become a high priority¹.
Type 2 diabetes, associated with obesity, is one of the most common forms of diabetes\textsuperscript{2,3,4}. It is associated with a number of other cardiovascular risk factors which constitutes the metabolic syndrome.
Statistics reveal that children are faced with variety of health conditions with the basic cause of the problems rooted in nutritional issues which may be preventable.
The growth in health care spending over the past twenty years is linked to modifiable population risk factors such as obesity and stress. Rising disease prevalence and new medical treatments account for nearly two-thirds of the rise in spending\(^7\).
Statistics show that health care costs continue to increase according to the U.S. Bureau of Labor Statistics. CNN Money Fortune magazine reported that family health care costs exceeds $20,000 per family in 2012. Health expenditures in the United States neared $2.6 trillion in 2010; ten times the $256 billion spent in 1980\textsuperscript{8,9,10}. 
To be effective, reforms should focus on health promotion, health education, public health interventions, and the cost-effective use of medical care\textsuperscript{11}. 

\textsuperscript{11}
Steps needed to provide training to educate students and methods to evaluate the training.
Undergraduate Programs At NCCU

- All Undergraduates must take a minimum of 124-128 hours to graduate.

- All undergraduate students at NCCU must take Health Education (HEDU 1531) and Physical Education (PEDU 1551); both 3 credit hour courses.

- Introduction to Human Nutrition Food 2200, a 3 credit hour course is not taken by all students.
All undergraduates who are in health care related programs and/or majors such as Nursing, Nutrition, Public Health, Physical Education and Sports and Exercise Science may obtain additional nutrition knowledge from some of their core courses or electives that incorporate nutrition topics.
NCCU Health Education Program

- Public Health Education additionally take personal health courses:
  - HEDU 2000: Introduction to Health Education
  - HEDU 2200: Health Be. For Effective living
  - HEDU 2400: Methods and Application for Group Leadership for Health Personnel.

These courses may incorporate nutrition.

- The science majors are not required to take the Food 2200 course.
HEDU 1531: Health Education

An introductory study of personal health promotion and disease prevention with an emphasis on changing behavior form those that threaten health to those that will promote lifelong wellness.
© FOOD 2200: Introduction to Human Nutrition

- An introduction to the nutrients essential to human life and well being. A study of dietary nature of nutrients the function in the body and food sources.

© FOOD 4670 (Food 2200 Pre-requisites)

- Designed for Nutrition majors, any student from any discipline may elect to take the course if the pre-requisite is met.
- This course prepare nutrition majors to teach nutrition to the public of diverse culture in diverse settings.
Licensure Programs

- All teachers teaching at elementary, middle, and high school must be licensed according to NC State Board policy TCP-A-00.

- The licensure programs are offered:
  - At undergraduates level
  - As licensure certification programs only for 1st degree holders

- Housed in the School of Education with varied areas of specialization. School of education handles admission and offers a majority of the courses in professional education.

- Elementary, Middle, Secondary education with specialization in science, social studies, English, mathematics, family & consumer sciences, modern foreign language, music, physical education.

- Also produce majors in occupational and special areas of education in collaboration with 14 other departments.
Students with B.S. B.A., M.S or M.A may elect to go back to school to take those courses required to meet the licensure requirements.

All programs follow their accrediting and state standards in designing the licensure courses.
NCCU Education Program Degrees

- Elementary Education, K-6 (B.A., M.Ed.)
- Middle School Education, 6-9 (B.A., M.Ed.)
- Educational Technology, (M.A.)
- School Administration, (M.S.A.)
- Special Education K-12, (M.Ed., M.A.T)
- Communication Disorders (M.Ed.)
- Counselor Education (M.A.)
What Steps Are Needed To Provide Training To Educate Students Pre K - 12th Grades?

Four major stakeholders were surveyed:

1. NCCU program directors,
2. NC state consultants assisting with state policy,
3. NCCU teachers teaching nutrition education,
4. and NCCU undergraduate students.
What steps are needed to provide training to educate students Pre-K - 12th grades?

Four major stakeholders were surveyed:

1. Investigated what is currently being done in nutrition education, from policy to implementation to training of students at public schools (Elementary, Middle, High School).

2. Additionally, assessed how well nutrition education is provided currently from the standpoint of four major stakeholders:
   - The program directors
   - State Consultants & State’s policy on NC Health Essential Course
   - Teachers teaching nutrition education
   - Undergraduate students at NCCU
The North Carolina State Board of Education and the Department of Public Instruction continue to recognize the value in comprehensive sequential Physical Education and Health Education instruction at each grade level.

In fact, one High School semester of Health Education coursework and one High School semester of Physical Education coursework, as per State Board of Education policy GCS-N-004 is required in order to receive a North Carolina high school diploma.
This instruction must be delivered by the appropriately licensed classroom teachers as per State Board of Education policy TCP-A-001.

The intent of the North Carolina Healthful Living Standard Course of Study is to establish competency goals and objectives for the teaching and learning of behaviors that contribute to a healthful lifestyle and improved quality of life for all students. The NC Healthful Living Standard Course of Study is a combination of two content areas: health education and physical education.
Only a minimum of 1 credit of Healthful Living, which reflects both Health Education and Physical Education, is required for graduation from a North Carolina public high school.
The State Department of Public Instructions oversees the health and physical education taught as NC Essential Standards-Health Education in elementary, middle, and high schools. Nutrition is a part of NC Essential Standard-Health Education (Standard).
The State government provided general objectives in the NC Essential Standards - Health Education. Other resources are provided to the teachers to help them teach Standards.

The Essential Standards are divided into grade levels--(K-2; 3-5; 6-8, and High School)\(^1\).  

However, there is no monitoring as to whether these standards are covered and how they are covered except for HS where every student must obtain 1 credit hour of health and nutrition education to graduate.
NC Essential Standards Health Education
(Nutrition Components Standards By Grade (K-2))

- **Standard 1**: Understand My plate as a tool for selecting nutritious foods.

- **Standard 2**: Understand the importance of consuming a variety of nutrient dense foods and beverages in moderation.

- **Standard 3**: This standard deals with alcohol, tobacco and other drugs.
® **Standard 1:** Apply tools (MyPlate, food facts, Labels) to plan health nutrition and fitness.
NC Essential Standards Health Education
(Nutrition Components Standards By Grade (6-8))

® **Standard 1:** Analyze tools such as Dietary Guidelines and Food Facts Labels as they relate to the planning of healthy nutrition and fitness.

® **Standard 2:** Apply strategies to consume a variety of dense foods and beverages in moderation.

® **Standard 3:** Apply lifelong nutrition and health fitness concepts to enhance quality of life.
Standard 1: Analyze strategies using tools (MyPlate, Dietary Guidelines, Food Labels), to plan healthy nutritious meal and fitness.

Standard 2: Create strategies to consume a variety of nutrient dense foods and beverages in moderation.

Standard 3: Analyze the relationship of nutrition, fitness, and healthy weight management to the prevention of diseases such as diabetes, obesity, cardiovascular diseases, and eating disorders.

Standard 4: Apply lifelong nutrition and health related fitness concepts to enhance quality of life.
NC Health Education Resources

- [NC Health Schools](http://www.nchealthyschools.org/components/healtheducation)
- [Nutrition NC](http://www.nutritionnc.com/ResourcesForSchools/index.htm)
- [North Carolina Nutrition Education Resources](#)
SURVEY HIGHLIGHTS
STATE POLICY REVIEW

- Requires all schools to offer Essential Standard (Physical Education and Health Education).
- Requires only those licensed to teach in public school.
- 1 credit hour of Healthful living is required in HS for graduation.
- 56% and 53% of schools have school improvement plan for Physical Education and Health Education respectively.
There was only 38% improvement plan for PE and 34% health education faculty and staff.

No minimum number of classroom hours for teaching nutrition education established.

No monitoring as to whether Standards are being met.
q Students are well prepared (undergraduates and through licensure).

q Only very few majors teach after graduating from Physical Education, Public Health and Human Sciences.

q Did not know if students are effectively teaching nutrition education in public schools.

q Had no idea how many hours of health or nutrition education is being taught in schools.
q Not sure if teachers teaching health education are well qualified to teach.

q Not sure of how many hours are being taught in North Carolina Health Essential courses.

q Not sure if students are learning because there is no End of Grade questions about nutrition on the exam.

q Could not attest to the quality and/or quantity of Health Essential courses being taught.
## TEACHERS TEACHING NUTRITION

- Did not think they are adequately prepared to teach nutrition education.

- Suggested requirements to take more nutrition courses in undergraduate studies.

- Majority (92%) believed they were effective in changing dietary behavior of students.

- No assessment of quality and quantity education taught.

- All agreed that nutrition education is very important for students.
Could not remember how many hours of nutrition was taught to them in middle or high school.

Education was not effective in changing dietary behaviors.

Wished they have learned enough to enable them to make informed dietary decisions in college away from home.

Approximately 25% were likely to teach nutrition education as a career.
Students majoring in Physical Education, Public Health Education and other non-family and consumer science majors are not adequately prepared to teach nutrition education.

There is no standardization in qualifying requirements to teach nutrition education.

There is no standardization as to the number of hours for teaching nutrition education.

There is no assessment of implement of nutrition education (quality and quantity) by teachers, State, and program directors.
Expert Professional Assessment

- Teachers taught nutrition education their way.
- Students being trained to teach nutrition education may be inadequately trained.
- There was no agreement between state consultants, program directors, teachers on how qualified teachers were in implementing nutrition education in public schools.
- Although policy and standards exist, not all schools and not all children receive nutrition education.
- Differences in implementation, if any, vary by schools and teachers.
RECOMMENDATIONS
SLO’s Course Assessment

1. There should be a continuous evaluation of direct and indirect assessment of quality and quantity of nutrition instruction on the knowledge and application of nutrition education.

   1. **DIRECT**
      
      q student work, papers, projects, test, observation

   2. **INDIRECT**

      q self reported information such as surveys, interviews, course grades

   *Testing should be designed to include questions on healthy living or nutrition education components.*
1. Nutrition education in elementary, middle and high schools should be taught by “well qualified” trained teachers.

2. National, state, and accreditation standards should address the minimum number of credit hours in undergraduate study required to qualify teachers to teach nutrition education in elementary, middle and high schools.

3. Educators and teachers must know what skills, knowledge, and values students should have acquired when they have finished the course.

4. Experiential learning, i.e. garden-based curriculum, cooking skills for healthful meals, and the quality of the dining experience, including time allowed for meals, should be included in teaching.

5. Determine assessment tools for students level of knowledge.
Additionally there is a need to strengthen the existing curriculum (Physical Education, Public Health Education, Family and Consumer Science Licensure programs’) qualifying credit hours.

Suggested Nutrition Core Courses (Minimum Standards)

- Introduction to Nutrition (3 credit hours)
- Intermediate nutrition course (3 credit hours)
- Food sanitation course (2-3 credit hours)
- Food Science and Prep Course (3-4 credit hours)
- Nutrition Education Course (3 credit hours)

**TOTAL: 14-16 credit hours**
ACCOUNTABILITY

1. Directors, professors and teachers should be held accountable by SMART goals.
   q Specific (significant, simple)
   q Measurable (manageable, meaningful)
   q Attainable (appropriate, achievable, action-focused)
   q Relevant (result-based, realistic)
   q Timely (time-framed, time-limited, tangible)
   q Evaluate (engaging, ethical)
   q Reevaluate (reassess, revisit)
   q Satisfactory (satisfies strategic vision)

2. Develop student learning outcomes assessment methods.
1. Food and nutrition practitioners must work to ensure mandatory, consistent funding for integrated and comprehensive education and promotion programs.

2. Coordinated at the national level, administrated at the state level, and implemented at the local level, a well-funded national nutrition education and promotion program, focusing on comprehensive school nutrition services, would provide needed infrastructure and help leverage resources among other nutrition-related federal programs$^{11,12}$. 
1. Increasing the number of trained teachers to teach nutrition education in elementary, middle, and high schools, is imperative if the standards in nutrition education are to be effectively met.

2. Let national, state and accreditation standards continue to drive nutrition education.

3. Keep the focus on learning and improvement.

4. Dieticians, nutritionists, professors, teachers, researchers, educators must lobby for healthcare reform with nutrition education being an area of focus.
CAREER DEVELOPMENT

1. Increase jobs and opportunities associated with nutrition education.

2. Educate undergraduate students about different career options centered around nutrition education.

3. Create opportunities, internships and job placement for graduating seniors interested in nutrition education.

4. Involve health care professionals in the importance of nutrition education.
1. There will be an increase in student knowledge of nutrition.

2. There will be enhanced skills in food purchase and healthy meal preparation.

3. There will be an application of knowledge applied in dietary behavior changes, now and in the future.
4. There will be standards which will lead to a standardized curriculum.

5. There will be a decrease in obesity among children and families.

6. There will be a greater percentage of children who will be educated in nutrition.
7. There will be improvement in nutrition education curriculum both at the university and school age levels.

7. There will be consistency in nutrition education curriculums.

7. There will be a decrease in health disparities among socioeconomic disadvantaged groups.
10. The 2020 national and state nutrition health objectives will be met.

11. There will be a reduction in healthcare costs in the government and within families.

12. There will be improvements in quality of life as it relates to social issues associated with being overweight or obese.
REFERENCES


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