Exploring the Implementation of Food Science Curriculum in Southern Region States

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Introduction

The impacts of foodborne diseases present countless educational opportunities to teach Science, Technology, Engineering and Mathematics (STEM). "The universality, cultural importance, and scientific diversity of food make it a perfect fit to incorporate content from all STEM disciplines" (Edwards, 2018, p. iii). Food science and safety are directly tied to agricultural education and commodities and with greater emphasis on food safety and agricultural practices, the importance of food science curricula in school-based agricultural education (SBAE) is evident. Beyond agriculture, the restaurant industry is a highly impactful aspect of South Carolina's economy, which generated $9.4 billion and employed 11% of the state's workforce in 2017 (National Restaurant Association State Statistics, 2019). The Center for Disease Control and Prevention (CDC) estimates that foodborne diseases affect 48 million Americans each year, totaling in 3,000 deaths (Foodborne Diseases Centers for Outbreak Response Enhancement, 2019). The restaurant industry is highly vulnerable with one case of foodborne outbreak potentially costing more than $1 million in losses from reduced revenue, fines, legal fees and numerous other expenses (Johns Hopkins University, 2018). Awareness of the severity of this problem encouraged lawmakers to take action, supporting legislation that would enact purposeful changes. Preparing students for careers in the restaurant industry in South Carolina has become vitally important to the economy in counties where food science and safety are a major portion of tourism and recreation in those coastal areas. Realizing the health and economic consequences related to food safety, questions regarding curriculum availability in this focus are warranted.

Conceptual Framework

The conceptual framework for this study was guided by Lattuca and Stark's (2009) Academic Plans. The lack of a concrete definition for curriculum does not hinder the ability to formulate and make decisions regarding curricula. Curriculum was defined as an academic plan, stating "The academic plan definition implies a deliberate planning process that focuses attention on important educational consideration, which will vary by field of study, instructors, students, institutional goals, and so on" (Lattuca & Stark, 2009). An academic plan should include the following: purposes, content, sequence, learners, instructional processes, instructional resources, evaluation and adjustment (Lattuca and Stark, 2009).

Purpose and Objectives

The purpose of this study was to identify which southern states implement food science curricula and compare each state's curricular standards to the national Agriculture, Food and Natural Resources (AFNR) Food Products and Processing Systems standards in order to make recommendations for curricular adoption in South Carolina. Objectives were to: 1) Identify which states in the American Association of Agricultural Education (AAAE) Southern Region implement food science curricula into secondary school agricultural education programs, 2) Compare and contrast the food science curriculum in the AAAE Southern Region to the National AFNR Career Cluster Content Standards, and 3) Identify the implementation of possible food science curricula for recommendation to South Carolina's leaders of SBAE programs.

Methodology

The population of this study consisted of the southern region AAAE states as listed in the AAAE Constitution under Article III – Regions on page 2 of the May 2017 revision. The frame of the study was comprised of a list of the state leaders of agricultural education in the 10 states in the study. Food science or similar food products curriculum frameworks were secured from the state's Website of those that did not respond to the initial contact. A content analysis was used by creating a spreadsheet with the revised 2015 AFNR Career Cluster Content Standards as the baseline for comparisons to the other state curricula. Comparable standards from each state in the study were cross listed with the corresponding AFNR FPP standard for further analysis.

Findings

States in the AAAE Southern Region that were identified to have food science curricula included: Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Tennessee, Texas, and Virginia. Objective two sought to compare and contrast the food science curriculum in the southeastern United States to the national AFNR FPP standards. Of the nine states in the southern region with food science curricula, only two (AR and FL) have adopted the AFNR FPP standards. Objective three focused on recommendations of food science curricula for state leaders. In the southern region, Arkansas and Florida adopted the AFNR Food Science Curriculum and made modifications to fit their industry needs. In review of the standards and needs of the restaurant and food processing industries in South Carolina, it was found that the AFNR FPP standards meet the criteria needed for South Carolina.

Conclusions

Generalizations of the state curricula for AR, FL, KY, TN, TX, and VA examined the food science industry by evaluating local and global policies, trends, and customs for production. In contrast, the curricula for GA, KY, LA, MS, TN, TX, and VA discussed federal regulations and policies. Most states are incorporating professional and personal skill development, leadership opportunities, and career exploration.

Implications/Recommendations/Impact on profession

Based on the findings of this study, the central recommendation for South Carolina is to adopt the AFNR Food Products and Processing Systems Pathway to prepare students for viable career options in the food industry. Additional recommendations for South Carolina's Food Science Curriculum are to include ServSafe certification, Food Safety Audit Verification Program and CASE implementation into professional development for agriscience teachers who will teach the curriculum. We also recommend an assessment of factors encouraging and discouraging adoption of food science curricula in secondary school programs be implemented and outlined based on potential internal and external factors related to Lattuca and Stark's (2009) Academic Plans. Further, South Carolina's leaders should carefully consider geographic locations within the state that will benefit from the addition of a food science career pathway in the AFNR curriculum when implementation begins. Based on the findings, food science curricula for South Carolina should focus on coastal counties. These are tourist destinations and this opportunity would provide students with a new perspective and provide career-readiness in the vast restaurant/food service and hospitality industry. This is important because most states are implementing professional and personal skill and leadership advancement and opportunities for career development and exploration.

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