Understanding Food Choices in Africa

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This curriculum unit is recommended for:
Foods I and II, all grade levels

Keywords: Africa, Food Influences, Hunger, Genetically Modified Organisms (GMOs), Stereotypes

Teaching Standards: See Appendix 1 for teaching standards addressed in this unit.

Synopsis: What influences food choices? Availability of food in specific areas has a direct influence on food choices there. The irrigation of land in a certain area can directly relate to the commerce in that area. Countries have been using food as a way of trade and income for their population. Looking at three primary aspects of Africa—culture, availability of land, and history—one can identify the influence of each on food choices. Geography is an important aspect in this unit when deciding upon food influences in the continent, but one should also examine cultural influences, religion, and simple personal preference.

I plan to teach this unit during the coming year to seventy students in Foods 1/Grades 9-12.

Understanding Food Choices in Africa

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Content Objectives

My intended goal for this unit is to encourage students to expand upon their basic knowledge of thinking about food influences in terms of just eating because they are hungry. This unit is intended to assist students with the understanding of food choices as well their influences. For this unit, a food influence is simply what causes a person to eat what they eat. Using the objectives set forth by the career and technical education standards of North Carolina, I will streamline and gear this unit toward the continent of Africa. There are two types of influences, external and internal. The objectives will be used to answer the essential question, "Why do we eat what we eat?" as well as "What are the individual and external influences on individual food choices?" Individuals make food choices because of nutrition, wellness, enjoyment, family and social ties, comfort, entertainment, and many other factors. This curriculum unit is intended for any Foods I class in the field of culinary arts and family and consumer sciences as they include the standards for food choices and influences. Parts of it, however, can be incorporated into any social studies curriculum as it involves the availability of resources.

School Background

I currently teach at the School of Executive Leadership and Entrepreneurial Development (ELED) at Olympic High School in southwest Charlotte, North Carolina, in the Charlotte Mecklenburg School District (CMS). We are one of the 164 schools in the district that has a total population of almost 150,000 students. ELED serves students with a mission that states the following: "The School of Executive Leadership and Entrepreneurial Leadership will graduate on-time and be prepared to excel socially and academically in all post-secondary settings as they make positive contributions to our ever changing world."

The Olympic Community of Schools has a unique situation in CMS as the school is divided into five different smaller schools that have academies. There are only six other schools in the district that have academies, with Olympic being the only school with an Academy of Finance. Academies are meant to develop students' interest so that they may pick a career path as early as their sophomore year and take classes that center on the career academy they have chosen. Our school instills the idea of 21st century skills which are creativity, collaboration, critical thinking, and communication into the students' minds so that they are prepared for the workforce. ELED contains the Academy of Finance as well as the Academy of Hospitality and Tourism to prepare students for the workforce in those industries. As a culinary teacher at Olympic, I am deeply involved in the academies at my school and currently serve on the board of the National Academy

Foundation for our school. According to the World Bank, the food and agriculture sector is responsible for 10 percent of global domestic product.[1]

The School of Executive Leadership and Entrepreneurial Development serves 445 students in grades 9-12. The student body make-up is as follows: 53 percent African American, 28 percent Hispanic, 5 percent Asian, 9 percent White, and 2.5 percent two or more. Specifically to ELED, over 65 percent of the students qualify for assistance though Child Nutrition Services, and 45 percent of our student population is female. ELED has a graduation rate of over 80 percent, and at least 50 percent of our upperclassmen (juniors and seniors) receive paid internships before graduation. My class sizes range from 20-25 students in the Career and Technical Education (CTE) curriculum, and I teach grades 9-12. Foods and Nutrition 1 has a North Carolina state-approved curriculum. This unit will be taught to all my students in varying degrees. The unit is expected to take about two weeks to teach thoroughly.

Rationale

Many people believe that the basic idea behind eating is simple: because we are hungry. However, there is a whole set of theories behind food choices and influences; in this unit, I will narrow them down to individual and external factors and focus on the continent of Africa. My intended goal is to encourage students to think more deeply about their own food choices by examining food choices on a continent that is often overlooked when it comes to such issues. Regardless of the context, food choices are influenced by a wide variety of factors, including geographic and climatic conditions, concerns for nutrition and wellness, economic variables, scientific innovations in agriculture, and other variables such as enjoyment, family and social ties, comfort, and entertainment. The following sections briefly discuss some influences on food choices in Africa that will be explored more thoroughly with students during this unit.

Geography and Climate

Africa is a huge continent producing a variety of cash crops and non-cash crops. Some of Africa's most important cash crops are cotton, coffee, beans, bananas, peanuts, cocoa beans, and cereals. Africa also grows non-cash crops in order to feed its citizens. Students will focus on a specific region of Africa in order to identify what the main crops are and how much revenue they yield for that region. Students will need to have some sort of background information on the geography of Africa. They will also need to know which high-yielding crops are specific to which regions of Africa as well some possible geographic reasons for why certain regions of Africa struggle with food resources. Two examples of African countries and their crops are as follows:

- Having three climate zones, Mali can attribute most its self-sufficiency in food to the Niger River. Running across the savannah, the river provides irrigation to the country as well as an array of fish. Mali is one of the largest producers of fish in western Africa. The Niger River is the longest river in West Africa, running through Guinea and flowing East through Mali, forming a horseshoe and turning south towards Nigeria. Mali is known for its exports of rice, millet, and maize, but also fruits such as mangos and guavas. Mali also produces shelled peanuts and peanut oil, but the country is most known for cotton.[2]

- South Africa is divided into many different farming regions as the climate, vegetation, and soil type differ. Grains are one of the largest exports for South Africa, producing between 25 and 33 percent of its agricultural revenue. Maize is the largest cash crop in South Africa produced locally. There are over 9,000 commercial maize producers in South Africa with a little over 1,000 small-scale producers. Although South Africa is most known for its maize, the country is also a large producer of sugar, fruits, vegetables, cotton, and tobacco. South Africa is the world's thirteenth largest producer of maize, which is grown in many different areas of the country. Citrus is produced in the high irrigation areas of Limpopo, Mpumalanga, the Eastern and Western Cape, and KwaZulu-Natal. South Africa also produces many other subtropical crops such as avocado mangos, bananas, and guavas. South Africa is the ninth largest wine producer in the world. In the Western Cape, honey bush tea grows in the coastal and mountainous areas. Rooibos tea is also an herb produced in the Western Cape area.[3]

Agriculture is affected by the variation in patterns of rainy and dry seasons. The dry season in many parts of Africa is drastically dry with little or no rainfall in the continent, with some areas such as a portion of the Sahara receiving less than an inch of rain on average per year. These long dry seasons will often cause the ground to harden to a texture similar to concrete. Most regions of Africa have two rainy seasons a year, but if the region fails to receive that rainy season agricultural production will fail, causing revenue to be lost. For example, in Ghana and other parts of West Africa, wind directions blow moist air from the Atlantic Ocean to the continent. The climate of Ghana is tropical and depends on the West African Monsoon. "The seasonal rainfall in this region varies considerably on inter-annual and inter-decadal timescales, due in part to variations in the movements and intensity of the ITCZ [Inter Tropical Convergence Zone], and in part to variations in timing and intensity of the West African Monsoon. The most well-documented other cause of these variations is the ENSO [El Niño Southern Oscillation]. El Niño events are associated with drier than average conditions in West Africa."[4] Variability in the reliability of rains throughout different regions of Africa has a significant influence on the types of crops that can be grown and thus on possible food choices for residents there.

With respect to these weather patterns, the worst-case scenario in many African countries is that the rains do not come at all. This was the case in the Horn of Africa in 2011, causing widespread food shortages throughout the region, especially in Kenya, Ethiopia, and Somalia. More than 250,000 died of famine in Somalia alone, largely because an ongoing civil war there prevented food aid from getting to the victims and blocked people from migrating to areas where they could find relief. Students will research the East African drought crisis and resulting famine. This hurt the region tremendously as the crop yield was not as high which means the revenue was low. Students will read a portion of an article about this crisis and they will also research the emotional and economic consequences the population endured.

Economic Influences

Over the past three decades, Africa's agricultural revenue has increased by over 160 percent. Production has tripled, and is comparable to the agricultural revenue of South America. Agriculture is the largest contributing factor to the economy of Africa today. With over 33 million farms predominantly using family labor, Africa strongly relies on its agriculture to bring in revenue. By 2025, it is estimated that over 330 million young Africans will enter the labor market; with few opportunities in other sectors, many will turn to agriculture as their sole means of revenue.[5]

Because Africa relies on agriculture for most of its income, it is important to know the geography, climate, land availability, and other factors that affect agricultural production. Land in Africa for agriculture is becoming increasingly scarce, especially in areas where the population is steadily increasing. Government policies have also affected production decisions by African farmers. Policymakers have debated how to promote production of crops and create conditions under which smallholders in the region can receive opportunities to become commercial farmers. The continent also struggles with the process of commercialization:

> "Until the mid-1980s, the purchasing, processing, and distribution of agricultural commodities in Africa was carried out mostly by state-owned and quasi-government clearing houses or marketing boards. These institutions were created with the aim of businesses preventing predatory behaviour by private firms and to partially isolate farmers from volatile international commodity markets. However, in practice, they also worked as an instrument of heavy taxation and were often regarded as inefficient and corrupt."[6]

According to Dr. Nkosazana Dlamini Zuma, Chairperson of the African Union Commission, Africa definitely has the potential to feed itself. Africa also produces non-cash crops, crops that do not yield revenue for the continent, in order to feed its population. The continent struggles to find viable ways to feed all these mouths.

Although cereals have been the main non-cash crop produced in Africa, they have not been able to keep up with the increasing population.[7]

Nutrition and Wellness

Nutrition is the process of providing or obtaining food necessary for health and growth. Concerns about nutrition play a significant role in food choices around the world, including in Africa. The common misconception of Africa is that the continent is poverty-stricken, causing huge areas of malnutrition and even famine. While hunger is indeed a problem in some parts of the continent in some years, usually as a result of drought or missed rainy seasons, many countries of Africa have a sufficient and reliable food supply and even export food to other countries.

In this particular portion of the unit, we will discuss the 1st African Nutrition Congress established in 1975. In 1979, this group met again in Gaborone, Botswana. The organization developed in order to unite food and nutrition workers to provide better food choices and availability for the whole continent. The main goal of this organization was to lower hunger and malnutrition in certain areas of the continent, such as areas of Sub-Saharan Africa where some citizens earn less than $1.25 per day. Many organizations came together to develop an advocacy campaign called "Africa without Hunger," which was simply a series of educational videos.

Scientific Innovation

There is an ongoing debate within Africa about whether or not to allow the cultivation of Genetically Modified Organisms (GMOs) and about the potential impact of this innovation on the availability of food. A GMO patent was first issued in 1980, and the United States Food and Drug Administration approved the first GMO in 1982. GMOs emerged in grocery stores in the United States in 1994 with the Flavr Savr tomato. By the late 1990s, genetically engineered seeds had been planted in over 100 million acres of land worldwide.[8] Commercialization of these foods began in 1996, and, since then, sixty countries worldwide have granted regulatory approvals for biotech crops for import of food and feed use and for release into the environment, corresponding to a total of 1045 approvals for 196 GM events in 25 crops.[9]

The United States remains one of the biggest producers of GMOs, producing three of its main cash crops using GMOs: cotton, soybeans, and corn. About 98 percent of the livestock feed cultivated in the United States are GMOs.[10] Even as farmers and consumers in the U.S. have embraced this technology, many people in other regions of the world have been more wary. As a result of lobbying from citizens concerned about potential health implications, the European Union (EU) now requires any food that contains GMOs to be clearly labeled. Most recently, nineteen EU countries decided not to allow the cultivation of GMOs on all or parts of their territories.[11]

GMOs have their benefits as well as risks. Many people believe that, although we have not seen many immediate effects of GMOs, the long-term effects will be detrimental. According to Artemis Dona and Ioannis S. Arvanitoyannis, who conducted an experiment on rats about the long-term effects of ingesting GMOs, one might see that although toxicity can be assessed, "the duration of exposure is too short in order to fully evaluate any potential disruptions in biochemical parameters and to evidence possible signs of pathology within the limited sub chronic exposure of animals."[12]

GMOs can definitely have a positive financial aspect as they are meant to have a longer shelf life than those foods that do not, saving consumers money in the long run. GMOs can also be enhanced nutritionally. Using the example of bio-fortified rice, now commonly known as golden rice, scientists are fighting the Vitamin A deficiency that exists in three million pre-school aged children, as well as iron and folate deficiency.[13] Golden rice is extremely high in β-carotene which gives it its translucent golden color. It was the first genetically modified crop produced to actually fight malnutrition in the world. Other crops such as wheat, maize, cassava and even animal feed have all been genetically modified for nutritional purposes.

The most immediate risks of GMOs are food allergens, increased toxicity, decreased nutritional value, and antibiotic resistance. Food allergens have a major influence on most of the world. Researchers feel that as GMOs become more and more popular, so will food allergens. There is no research that confirms allergic reactions will increase with increased GMO use, but it is still a concern of scientists.

Plants produce many substances that are toxic to humans, but the plant produces so little that it normally has little to no effect when humans consume it. The immediate concern is that when you introduce a plant to a new gene, it will bring about higher toxin levels which could cause more harm to humans. Theoretically, a genetically modified plant could have lower nutritional value than a plant without GMOs. A perfect example of this is the genetically modified soybean, which has been shown to produce lower levels of some phytoestrogen compounds which are associated with lower levels of heart disease and cancer.[14] Many health professionals have noticed an unusually high number of bacteria strains that are resistant to antibiotics, which also could be due to GMOs:

> "Biotechnologists use antibiotic resistance genes as selectable markers when inserting new genes into plants. In the early stages of the process scientists do not know if the target plant will incorporate the new gene into its genome. By attaching the desired gene to an antibiotic resistance gene the new GM plant can be tested by growing it in a solution containing the corresponding antibiotic. If the plant survives scientists know that it has taken up the antibiotic resistance gene along with the desired gene. There is concern that bacteria living in the guts of humans and animals could pick up an antibiotic resistance gene from a GM plant before the DNA becomes completely digested."[15]

Even so, the United Nations Food and Agricultural Organization released a report noting that there are no verifiable toxic defects of GMOs. Again, in 2007, the journal *Advanced Biochemical Engineering/Biotechnology* released a ten-year study stating the same.[16]

Many stakeholders argue that GMOs and biotechnology are the solution to the hunger risk faced by some countries in Africa. According to Calestous Juma, "if African countries can't plant genetically modified crops to produce more and healthier food, vulnerable populations will be at risk."[17] Juma attributes most of Africa's success to the Green Revolution, a revolution that imported cheaper grains and grew high-yielding seed varieties which led to more crops. Without this revolution, crop yields in developing countries would be significantly lower (about 23 percent). There are only a few countries in Africa that do all the cultivation of GMOs. South Africa and Burkina Faso produce genetically modified cotton, while Egypt and South Africa produce genetically modified maize. The production of GMOs could lead to disease, insect, and drought-resistant crops which will produce higher yields and healthier African citizens. The Bill and Melinda Gates Foundation is currently funding a project for Africa to produce drought-resistant genes. The percentage of the population that could economically benefit from GMOs is high as 60 percent of African population relies on farming as their means of income.[18]

Many African cash crops already carry disease. For example, the main cash crop in Nigeria, the black eyed pea, is attacked by the insect *Maruca viltrata* which causes the country $300 million dollars in loss to small scale farmers every year. Nigeria can control the disease with a $500 million dollar budget spent on pesticides annually. These decreases in crop yield affects the whole world as the black eyed peas in Nigeria is responsible for 70 percent of the world output, cultivating more than 5 million tons of black eyed peas. Scientists in Nigeria have developed a GMO with insecticide genes that will help control the insect, which will save them about 50 percent of their profit annually.[19]

South Africa is one the leading countries in Africa in relation to production of GMOs, and one the first countries to produce GMOs. South Africa has produced over 2.3 million tons of genetically modified crops in their country alone.[20] In 1978, the South African Committee on Genetic Experimentation came together to advise the government on the regulation of GMOs. The GMO Act was approved in 1997 and created policies and regulations for the production of GMOs in South Africa. This act also created an inspection service for GMOs in South Africa. South Africa is the only country on the continent to have commercialized insect-resistant cotton and maize.

In Ethiopia, agriculture is responsible for over three-fourths of total employment. Ethiopia contains a wide range of altitudes, rainfall patterns, and varieties in soil, which should make the agricultural sector of the country stable. Despite this, the country falls victim to crop shortages as well as a variety of diseases and pest issues which cause their farm industry to suffer. Supporters see GMOs as a solution to this problem.

Some researchers blame a lack of knowledge and information for Africa's fear of allowing the cultivation of GMOs, while others highlight legitimate economic and safety concerns. Earlier research suggests that African farmers can be reluctant to adopt new agricultural technologies because they are risk-averse. In *No Condition is Permanent*, Sara Berry shows how farmers do not want to spend money to buy new seed varieties—despite the potential for much higher yields—for fear that the crops will fail and their incomes will decrease tremendously.[21] Many African leaders also worry that allowing the cultivation of GMOs would make it more difficult to export their agricultural products to Europe, where many consumers have rejected GMOs and where many governments have themselves decided not to allow GMO cultivation. Given the internal and external pressures that African countries face on this issue, students will find plenty of information in their research for a lively debate about the pros and cons of allowing GMO cultivation in Africa.

External vs. Individual Influences on Food Choices

In our examination of food choices in Africa, we will focus largely on the external influences discussed above. External influences are those that come from outside of the individual or family. This includes the media, economy, as well as environmental and technological influences. Economic influences are affected by those consumers who are willing to pay for products and producers provide them at will. The concept of supply and demand includes the direct connection between the amounts or supply available of a product versus how high of a demand is called for the product at the time affecting the price of the specific product. Environmental influences are factors such as air, water, soil, mineral resources, plants, and animals. These factors include ecological, climate issues, land availability, and local agriculture. Technological influences include the food additives, food preparation, and biotechnology advancements.

Moving beyond these broader external factors, however, we will also explore individual influences on food choices. These include physiological influences, psychological influences, cultural influences, and situational factors. Physiological influences would be affected by gender and age as well as wellness and activity levels. Psychological influences are affected by appetite, emotions and thoughts, stress, as well what you enjoy personally versus what you do not like. Cultural influences include what is shared by your racial, religious, or social groups which can also include religious customs as well as traditions specific to a person's country. Situational or social factors would be the stages of life, family schedules, financial resources, as well as the knowledge/skills of peer groups.

Teaching Strategies

Direct Instruction

Students will receive direct instruction throughout the unit in the form of lecture for a minimal amount of time between thirty to fifty minutes of the entire curriculum unit. They will receive direct instruction on the influences on food choices so that they are aware and recall these influences. We will then focus our discussion about influences on food choices on the continent of Africa. They will also receive instruction on external and individual food choices through the use of graphic organizers. It is important to also spend an invested amount of time (about 60-90 minutes spread throughout the curriculum unit) using direct instruction to inform the students on the background of Africa as well as the geography. Many of the classroom activities used to teach the students about food influences in Africa will rely on them being informed on the geography.

Independent/Guided Research

Students will be required to conduct independent research on Africa in order for the curriculum unit to be successful. Students will be guided through a small research project on a certain region/country of Africa and each project will be displayed to the class so that the students will have a general synopsis of the geography, cash crops, and land availability and soil in the region. Please refer to the geographic background section of the unit for information on some countries.

Students will also conduct independent research on the debate about genetically modified foods in a specific country in Africa. Students will need to know general information about genetically modified foods as well as the debates surrounding this issue, emphasizing the region of Africa. Students will need to know why many countries are concerned about introducing GMO cultivation. Students will use their research on their specific country and pretend it is a meeting of the African Union. They are representing the governmental views of their specific country and will be prepared to debate on it.

Group Work

Students will be conducting a lot of group work during this unit. They will need to work in groups when they prepare for the debate. They will also need to work in groups when conducting labs during the unit. Students will conduct most of their research in groups. This group work will help students to enhance the four c's (critical thinking, collaboration, communication, and creativity), which are my school's goals in the school improvement plan. This will also allow students to work on themselves and identify what type of learners they are.

Bulletin Boards

Students will put the curriculum unit together on a bulletin board to display outside of the classroom. The bulletin board will incorporate all of the themes that are discussed in the unit. Beginning with geography, students will identify the cash crops according to the region. They will then incorporate individual and external food choices which will then lead to the remainder of the topics such as the factors that go into the individual and external choices, adventure, family, culture, availability, etc.

Teacher-Led Discussions

Discussions will be led by the instructor on common topic in the unit such as the GMO debate. The purpose of the teacher led discussions is to get students to not only express their opinions on the topic discussed but to also be willing to hear others' opinion. This will also allow students to enhance their communication skills, which is also one of those four c's.

Labs

Students will conduct a lab on recipes they create based on themes discussed in class. Each student will have a composition book which they will be issued at the beginning of the unit and will keep for the remainder of the meeting. Throughout the unit, students will write recipes based off the influences we discuss in class. In groups in the lab, they will create food dishes from the recipes they created in their composition book. They will then test the dishes they created and complete a lab report based off the dish. Students should conduct at least two labs and each lab should include at least two themes discussed in the unit. Labs will give students the hands-on experience needed to tie all of the themes together. This will also reach the kinesthetic learners in the classroom. See appendix 3.

Classroom Activities

Open Discussion/Interview

This assignment will be a beginning discussion on the topic of stereotypes in Africa. Students will have a teacher led open discussion in which we will discuss what they feel are the common stereotypes of Africa as a continent. When we speak of food and hunger in Africa, what comes to mind?

Students will also interview different people around the school asking them when they say Africa, what comes to mind? Do you feel Africa is poor? What are some common stereotypes of this continent? How do we break those? Does Africa have a problem with hunger? Is Africa the only continent with this problem? Students will

collect this data and organize it upon return to the classroom. They will also be responsible for interviewing and polling their peers in the classroom. See Appendix 2.

Geography Reports

What are some of the most populated countries in Africa? What are some of the biggest cash crops in Africa? Students will receive some direct instruction on the geographic background of Africa. They will be instructed on climate, weather changes, irrigation and farming strategies, etc. After, students will pick one country assigned to them on Africa, and do additional research. They will identify which cash crops are important to that country, the climate and how the climate affects farming, the changes in climate, if any, the factors that affect farming, and what other items bring economic revenue to that country. Students want to explore all aspects of the country when it comes to hunger. Has the country ever needed assistance from food aid? Do they export their food? What policies has the country's government adopted to try and protect food security and prevent shortage? Students will report their findings on an artifact of their choice (poster, PowerPoint, brochure, etc.). Students will then imagine they are a reporter for CNN, and their boss has assigned them to write a story on Africa for the anchor to read. Students will write their findings in this report. They will then pick a peer in the class that will be their anchor and read their report. This assignment may be turned into a formal project, but it is strongly suggested to include a rubric. See Appendix 3.

Why Do We Eat What We Eat?

The burning question at the beginning of this unit was why do we eat what we eat? What drives you to eat when you are not hungry? What is the driving force behind hunger? Why does some countries view obesity as a gift, but others starve to be skinny?
The beginning of the curriculum unit begins with why we eat what we eat. Individuals make most their food choices based off seven concepts: nutrition, wellness, enjoyment, family and social ties, comfort, entertainment, and adventure. People eat for three different reasons: social, emotional, and hunger. Socially, people eat to keep in context and maintain a connection with those who are close to them. A date, for example, or pizza with friends would be a social context. People sometimes use food as an emotional void. For example, if someone had moved to a different city, country, or state, they may eat a specific dish that may remind them of their native home. Hunger is pretty much self-explanatory. People physically need food to survive, so when their body lets them know they need food they will eat. See Appendix 4.

Women in Mauritania

It is important that students are made aware of stereotypes they may have about Africa. When speaking of hunger, many people believe that the whole population of Africa is starving and the continent is poverty-stricken. Introducing students to the women of

Mauritania will definitely change their ideals. Many of these women are overweight and the article by Sharon LaFraniere is about the government coming to the conclusion that obesity leads to diabetes, heart disease, blood pressure, and many other ailments. Mauritania has a very different ideal of what they feel defines female beauty. In this country, family wealth is determined by how plump the woman is. The women of Mauritania change the diets of these girls, sometimes at the young age of five, to over five gallons of camel's milk or cow's milk daily in order to achieve the end goal of stretch marks. If these girls refused or if they became sick, vomited, or refused, punishment was enforced much similar to drinking their own vomit. Mauritania is the fourth most obese country in the world.[22] Could this be a reason?

It is important for students to grasp this concept, so that the stereotype of Africa could be broken. Students will have a journal entry to write on the women of Mauritania. The debate question: Was the government correct in trying to address the situation of obesity in Mauritania? Why or why not?

"What's Your Comfort Zone?" Cookbook

What comes to mind when I say comfort food? What does comfort food to you? In groups, students will research some of the most common staple foods in Africa. Students will then devise why these comfort foods are just that in Africa. Students will then make a recipe book out of these recipes in order to share with the entire school. Using this recipe book, students will create some of the dishes in the book. They will try to compare these dishes to an American dish. How are they alike? How are they different? What makes this dish only unique to Africa? Students will then add these American dish recipes to the cookbook they created along with how they compare. It is important that students place in the cookbook why these dishes are considered comforting to the continent of Africa. Students can refer to their composition books for this classroom activity

GMO Debate

The topic genetically modified foods has been around for quite some time. This topic is an integral part of Africa as some countries refuse to have anything to do with cultivating GMOs. Students will be divided into groups and independently research the GMO debate surrounding Africa. The debate question: Should African countries allow the cultivation of genetically modified foods? Some students will argue they should while others will argue against it. This debate will take up most of the unit as the students will need to conduct their own background research first on the topic. The debate will cover all of the individual and external food choices we have discussed in Africa.

Bulletin Board

The bulletin board is also a combination of concepts discussed during this curriculum unit. This will be a continuing project where students will add on concepts discussed to a bulletin board posted outside of the classroom for the school to view. This will give students a review of what we discuss in the lessons in the unit.

Conclusion

The stereotype of Africa as a continent full of poverty and hunger has been a topic of discussion for quite some time. It is important for students as well as the general public to be aware that most of them are quite wrong. Using this unit as well as many other pieces of information, one can help to break this. This unit can be used with the NC essential standard on food influences in the curriculum. The entire unit was based off the standard. Africa was used to bring a real world context to the curriculum. The unit encompasses many literary devices for schools that may be struggling with low literacy rates.

Appendix 1: Implementing Teaching Standards

The teaching strategies for this lesson will use the North Carolina Department of Public Instruction (NCDPI) approved Career and Technical Education Curriculum for Foods and Nutrition 1. The standard and objectives are as follows:

Standard 5.0: Understand Food Choices
Objective 5.01: Understand influences on food choices

The following Common Core Standards are also used in the unit:

English/Language Arts

- *Key Ideas and Details:*

CCSS.ELA-Literacy.RI.11-12.1
Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
CCSS.ELA-Literacy.RI.11-12.2
Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
CCSS.ELA-Literacy.RI.11-12.3
Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

- *Text Types and Purposes:*

CCSS.ELA-Literacy.W.11-12.1
Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
CCSS.ELA-Literacy.W.11-12.1.a
Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.

- *Comprehension and Collaboration:*

CCSS.ELA-Literacy.SL.11-12.1
Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-Literacy.SL.11-12.1.a
Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

CCSS.ELA-Literacy.SL.11-12.1.b
Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

Math
Summarize, represent, and interpret data on a single count or measurement variable.
S-ID.1
Represent data with plots on the real number line (dot plots, histograms, and box plots)

Biology
Bio.2.2
Understand the impact of human activities on the environment (one generation affects the next).
Bio.2.2.1
Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

Civics and Economics
FP.C&G.2.7
Analyze contemporary issues and governmental responses at the local, state, and national levels in terms of how they promote the public interest and/or general welfare (e.g., taxes, immigration, naturalization, civil rights, economic development, annexation, redistricting, zoning, national security, health care, etc.)

Appendix 2: Open Discussion/Interview Sheet

Name: _____Date:_____Block:_____

Directions: Africa is faced with many stereotypes in relation to food and hunger. Answer the following questions below. After, discuss your answers with your peers at your table. For homework, interview at least one person using the questions below. We will all come together as a class and discuss our answers. We will graph the answers to questions 3-5.

Due:_____

1. When we speak of food and hunger in Africa, what comes to mind?

   _____

   _____

   _____

2. When I say Africa in general, name five words that come to mind?

   _____

   _____

   _____

   _____

   _____

3. Do you feel Africa is poor? _____Yes _____No
4. Does Africa have a problem with hunger? _____Yes _____No
5. Is Africa the only continent with this problem? _____Yes _____No

6. _____(peer at your table's name) and I

   discussed:

   _____

_____

_____

_____

_____.

7. I interviewed:_____
8. When we speak of food and hunger in Africa, what comes to mind?
   _____

   _____

   _____
9. When I say Africa in general, name five words that come to mind?
   _____

   _____

   _____

   _____

   _____
10. Do you feel Africa is poor? _____Yes _____No
11. Does Africa have a problem with hunger? _____Yes _____No
12. Is Africa the only continent with this problem? _____Yes _____No

Appendix 3: Geography Report

Name:_____Date:_____Block:_____

Geography Report

What are some of the most populated countries in Africa? What are some of the biggest cash crops in Africa? You have received some information on the geographic background of Africa. Identify a major country in Africa. We have discussed three of them. Research the country. Your research must include the following:

- Which cash crops are important to that country?
- What is the normal climate and how does the climate affect farming? How do the changes in climate, if any, affect farming?
- What other items bring economic revenue to that country.

Next, explore all aspects of the country when it comes to hunger.

- Has the country ever needed assistance from food aid?
- Do they export their food?
- What policies has the country's government adopted to try and protect food security and prevent shortage?

After that, have some fun!

- Give me at least ten fun facts about your country.

Report your findings on an artifact of your choice (poster, PowerPoint, brochure, etc.).

Finally:
You are a reporter for CNN, and your boss has assigned you to write a story on the country in Africa for the anchor (one of your peers) to read. Prepare a 2-3 minutes report of your findings on your country. Then, pick a peer (each person has to be an anchor at least once) in the class to read your report.

Appendix 4: Why Do We Eat What We Eat?

Name _____Date _____
Period_____

Why Do We Eat?

Directions: People eat for three reasons: *hunger*, *emotional need*s, and *social need*s. A list of situations is given below. Next to each situation, place an ***H*** if you are eating for reasons of *hunger,* an ***E*** if you are satisfying an *emotional* need, or an ***S*** if the situation satisfies a *social* need. Some situations may satisfy more than one need. Add examples of your own for each letter. Add five examples of your own for each questions 6-8.

1. _____ A Mauritanian mom force feeds her daughter goat milk.
2. _____ An Ethiopian mother serves her children breakfast every morning
3. _____ A mother eats after an argument with her daughter.
4. _____ An African woman eats "Golden Rice"
5. _____ A group of women celebrate a good harvest by cooking and serving a meal to their village.

6. Hunger

_____
_____

7. Social

_____
_____

8. Emotional

_____

_____

9. List alternatives for emotional eating

_____
_____
_____
_____

_____

10. Looking at questions 1-5, circle or highlight the statements you feel exhibit stereotypes of Africa.

Materials Needed for Classroom Use

colored pencils, markers, crayons, plain white computer paper, colored computer paper, scissors, loose leaf paper, colored printer, poster board, technology for research, pencils, bulletin board paper, glue, hot glue gun, equipment for cooking lab purposes, food items for lab purposes

Reading List for Students

Juma, Calestous. "Preventing hunger: Biotechnology is key." *Nature* 479 (2011): 471-472.
This article gives students good examples of genetically modified foods used in a positive manner.

LaFraniere, Sharon. "In Mauritania, Seeking to End an Overfed Ideal." *The New York Times*, July 4, 2007.
The article on Mauritania briefly speaks of the abuse the women in the country face in order to remain plump and obese. It is an excellent way to begin the unit.

Our Africa. "Mali: Climate & Agriculture." Accessed November 18, 2015. http://www.our-africa.org/mali/climate-agriculture.
Our Africa is a website about different countries in Africa and this specific page is about climate and agriculture in Mali. Students can use this page and the broader website for the project on the geographic background.

Paarlberg, Robert. "GMO foods and crops: Africa's choice." *New Biotechnology* 27 (2010): 609-613.
This article discusses the positive and negative effects of genetically modified foods as they pertain to Africa. Several relevant statistics and examples are included within the article.

Woolsey, GL. "GMO Timeline: A History of Genetically Modified Foods." *Rosebud Magazine*, September 13, 2012. Accessed November 20, 2015. http://www.rosebudmag.com/truth-squad/gmo-timeline-a-history-of-genetically-modified-foods
This website gives students a timeline of genetically modified foods for background knowledge.

Bibliography for Teachers

Broeders, Sylvia R. M., De Keersmaecker, Sigrid C. J., and Roosens, Nancy H. C. "How to Deal with the Upcoming Challenges in GMO Detection in Food and Feed." *Journal of Biomedicine and Biotechnology* (2012).

This article outlines the negative side effects of GMOs.

Dixon, John, Gulliver, Aidan, and Gibbon, David. "Middle East and North Africa." In *Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World*, edited by Malcolm Hall. Rome and Washington DC: Food and Agriculture Organization and World Bank, 2001. Accessed August 11, 2015. http://www.fao.org/docrep/004/ac349e/ac349e05.htm.
This article explains the geographic background of north and east Africa.

Dona, Artemis, and Arvanitoyannis, Ioannis S. "Health Risks of Genetically Modified Foods." *Critical Reviews in Food Science and Nutrition* 49 (2009): 164-175.
These authors explain the health risk associated with GMOs, including allergies and toxins.

Hefferon, Kathleen L. "Nutritionally Enhanced Food Crops: Progress and Perspectives." *International Journal of Molecular Sciences* 16 (2015): 3895-3914.
This article gave me all the information on how genetically modified foods have increased the nutritional value of crops.

LaFraniere, Sharon. "In Mauritania, Seeking to End an Overfed Ideal." *The New York Times*, July 4, 2007.
The article on Mauritania briefly speaks of the abuse the women in the country face in order to remain plump and obese. It is an excellent way to begin the unit.

Murray, Sarah. "The World's Biggest Industry," *Forbes*, November 15, 2007. Accessed November 20, 2015. http://www.forbes.com/2007/11/11/growth-agriculture-business-forbeslife-food07-cx_sm_1113bigfood.html.
Forbes gave the amount of money involved in the culinary and hospitality industry.

NEPAD. *African Agriculture, Transformation and Outlook.* (Johannesburg: NEPAD Agency for the African Union, 2013). http://www.un.org/en/africa/osaa/pdf/pubs/2013africanagricultures.pdf.
This report discusses the GMO debate in Africa. It is a great source to pull information from for background knowledge and as well as the struggle with hunger in Africa.

Paarlberg, Robert. "A dubious success: The NGO campaign against GMOs." *GM Crops & Food: Biotechnology in Agriculture and the Food Chain* 5 (2014): 223-228.
This article discusses the campaign against GMOs and why farmers are reluctant to use them in some countries.

Paarlberg, Robert. “GMO foods and crops: Africa's choice.” *New Biotechnology* 27 (2010): 609-613.
This article discusses the positive and negative effects of genetically modified foods as they pertain to Africa. Several relevant statistics and examples are included within the article.

SouthAfrica.info. “South Africa’s Farming Sectors.” Last updated October 2008. Accessed November 24, 2015.
http://www.southafrica.info/business/economy/sectors/542547.htm#.VlI6duJldDr
This gives a lot of background information on South Africa.

Stigter, CJ, and Ofori, Emmanuel. “What climate change means for farmers in Africa: A triptych review middle panel: Introductional matters and consequences of global warming for African farmers.” *African Journal of Food, Agriculture, Nutrition and Development* 14 (2014): 8428-8437.

Weiss, Hilary. “Genetically Modified Crops: Why Cultivation Matters.” *Brooklyn Journal of International Law* 39 (2014): 875-914.
This article gives examples of GMOs in Africa as well the first GMO approved by the FDA, flavr tomatoes.

World Bank. “Agriculture & Rural Development.” Accessed October 25, 2015.
http://data.worldbank.org/topic/agriculture-and-rural-development.
The World Bank provides a lot of background and geographical knowledge on Africa as a continent.

World Hunger Education Service. “Africa Hunger and Poverty Facts.” Accessed November 24, 2015.
http://www.worldhunger.org/articles/Learn/africa_hunger_facts.htm.
This page provides a lot of background information on Africa as a continent.

Zimmermann, Kim Ann. “The Sahara: Facts, Climate and Animals of the Desert.” Live Science, September 12, 2012. Accessed November 24, 2015.
http://www.livescience.com/23140-sahara-desert.html.
Students may use this article for their geography reports.

Notes

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[3] "South Africa's Farming Sectors," last updated October 2008, accessed November 24, 2015, http://www.southafrica.info/business/economy/sectors/542547.htm#.VlI6duJldDr.
[4] CJ Stigter and Emmanuel Ofori, "What climate change means for farmers in Africa: A triptych review middle panel: Introductional matters and consequences of global warming for African farmers," *African Journal of Food, Agriculture, Nutrition and Development* 14 (2014): 8428-8437.
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[11] Lorraine Chow, "It's Official: 19 European Countries Say 'No' to GMOs," *EcoWatch*, October 5, 2015, accessed December 7, 2015, http://ecowatch.com/2015/10/05/european-union-ban-gmos/.
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