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Annotated bibliography

Framing Question: How can elementary education play a role in changing our food systems?

Food systems

The hybrid term food system encompasses many aspects of food production, consumption and distribution, as well as social factors such as labor, economics and technology. Current scholarly discourse surrounding these topics have exposed many social and physical problems with the way food is produced, especially in the U.S. Based on the references below it is clear that there is not a clear consensus nor even proposed solutions on how to fix problems such as labor rights, cultural values, health and wellness issues surrounding this large system. Some scholars break down food systems into dominant and alternative, but this distinction still leaves much room for question and concern. It is clear from these sources that there is a need for more knowledge and transparency in understanding the way in which our food is produced, necessitating education on the topic.

Pothukuchi, Kameshwari, and Jerome L. Kaufman. 1999. "Placing the Food System on the Urban Agenda: The Role of Municipal Institutions in Food Systems Planning." *Agriculture and Human Values* 16 (2): 213–24. https://doi.org/10.1023/A:1007558805953.

This paper advocates for problems in food systems to be placed on the agenda of urban areas as well as rural ones. Food systems in urban areas have their own problems concerning transportation, employment and labor as well as waste. I found this article useful in helping to situate food systems across rural and urban boundaries. Many schools are in urban areas and therefore it is possible for students to learn about food systems around them as well as in rural areas.

Scrinis, Gyorgy. 2007. "From Techno-Corporate Food to Alternative Agri-Food Movements." *Local-Global* 4: 112–40.

This paper gives a broad overview of the agri-food systems going from production to processing to retailing. The agri-food system is broken up into dominant and alternative initiatives, contrasting ideals such as organic, fair trade, localization and genetically modified products. Scrinis does a good job of being objective and informative although I do think that dominant and alternative are not all encompassing topics. This paper was useful for helping me gain broad knowledge of food systems movements.

Boerboom, Samuel. 2015. *The Political Language of Food*. Lanham: Lexington Books.

This book unpacks the language used in many aspects of the food system dialogue such as marketing, selling and consumption. The book believes the terminology used in these processes to be inherently political, and to have some effect on people's relationship with food. This reference is key in giving me an understanding of the meanings behind the terms that I am using to describe food systems, and will help me to be more conscious about the way in which I use certain terminology.

Carolan, Michael. 2012. *The Sociology of Food and Agriculture*. Florence, UNITED STATES: Taylor & Francis Group. http://ebookcentral.proquest.com/lib/lewisclark/detail.action?docID=957012.

This book addresses food and agriculture together from a sociological point of view, to help the reader better understand the biography of food. The book covers many topics, including the global food economy, food culture and knowledge as well as food security and alternative movements. The section that I plan to use is community, culture and knowledge which concerns issues of labor, cultural preferences and how knowledge is shared within farming communities. Understanding labor and cultural issues influence the social relations aspect of food systems.

Striffler, Steve. 2006. “Chicken: The Dangerous Transformation of America’s Favorite Food.” *Culture & Agriculture* 28 (2): 138–39. https://doi.org/10.1525/cag.2006.28.2.138.

This book examines the chicken industry in the U.S., focusing on production and consumption. The book pays particular attention to the workers’ role in the production line and exposes some questionable labor practices, especially involving the exploitation of migrant workers. I plan to use this book to address some of the labor issues in the current food system and to better understand production methods for meat.

Impact of agriculture

Agriculture since its discovery process has had impacts on the natural world, that have become increasingly intensive throughout time. Since the age of the Anthropocene and continued growth in human population these impacts have worsened, creating serious damage to the earth's natural systems. Increased production has been compounded with climate change to create large problems of degrading land in agricultural areas. Attempts have been made to combat these impacts with efforts such as land restoration, low energy infrastructure and alternative farming methods. Ecological impacts of agriculture are encompassed in the greater food system and encourage change-based action. Understanding these impacts is critical to moving towards less harmful strategies of food production for the world’s growing population.

Chabay, Ilan, Martin Frick, and Jennifer Helgeson. 2015. *Land Restoration: Reclaiming Landscapes for a Sustainable Future*. Academic Press.

In the age of the Anthropocene, humans’ impact on land continues to increase. Land is critical for growing enough food to feed the growing population but is being

altered and repurposed in harmful ways. This book gives lots of case studies and examples of how to plan ahead with land use and location specific restoration processes. The text fits into my framework demonstrating the harmful effects that agriculture can have as well as possibilities of restoration that would create space for more beneficial agricultural practices for our climate. These practices show the changes that could happen in our current food system.

Pelletier, Nathan, Eric Audsley, Sonja Brodt, Tara Garnett, Patrik Henriksson, Alissa Kendall, Klaas Jan Kramer, David Murphy, Thomas Nemecek, and Max Troell. 2011. "Energy Intensity of Agriculture and Food Systems." *Annual Review of Environment and Resources* 36 (1): 223–46. https://doi.org/10.1146/annurev-environ-081710-161014.

Energy is what powers agriculture, its use has many different places within the food system. The consumption of energy can be seen as problematic and costly, and is distributed in different amounts throughout the food production lines. Rethinking the use of fossil fuels in food production is critical. Therefore this review helps to provide insight and potential solutions for energy use in agriculture and food systems, helping me better understand the knowledge behind the energy use in these systems.

Shennan, Carol, Timothy J. Krupnik, Graeme Baird, Hamutahl Cohen, Kelsey Forbush, Robin J. Lovell, and Elissa M. Olimpi. 2017. "Organic and Conventional Agriculture: A Useful Framing?" Annual Review of Environment and Resources 42 (1): 317–46. https://doi.org/10.1146/annurev-environ-110615-085750.

Contrasting the agrarian and industrial debate on food production systems, two methods are compared and contrasted, organic farming and conventional farming. This review does a great job of acknowledging the problematic and inconclusive nature of only comparing organic and conventional methods. I plan to use this review to better understand the differences between organic and conventional farming, two ideologies that hold great power in the food system.

Rosenzweig, Cynthia. 1998. *Climate Change and the Global Harvest: Potential Impacts of the Greenhouse Effect on Agriculture*. New York: Oxford University Press.

Understanding the scientifically predicted consequences of climate change, it is clear that changes to the hydraulics in many regions will be large. These changes will likely affect food production and security. Farmers being able to adapt to and understand these conditions is critical. This book makes many key points about understanding the role climate change may have on agriculture, and the international responsibility that is necessary to try and deal with this problem. This source inspired me to think of ways climate change education and food system education and be woven together in helping students understand how our changing climate can affect many aspects of their lives.

Morris, Joe, David Chadwick, Karl Ritz, Mark G Kibblewhite, Ruben Sakrabani, Lynda Deeks, Joanna M Cloy, Bob Rees, Pete Smith, and Keith Smith. 2012.

Environmental Impacts of Modern Agriculture. Cambridge, UNITED KINGDOM: Royal Society of Chemistry. http://ebookcentral.proquest.com/lib/lewisclark/detail.action?docID=1185495.

Modern agriculture is seen as a necessity to feed the world's growing population in a way that will allow humans to sustain their lives on earth into the future. With agricultural technology better than has ever been this, it is important to look back and forward at the same time in developing strategies for the future. This source is useful for understanding the impacts agriculture has had on our world and the changes that need to happen in order to reduce those impacts moving forward, again linking changing climate with agricultural practices.

Elementary Age Cognitive Development

Elementary school is an extremely formative time in children's education. Understanding how children's brains function and absorb knowledge is critical in planning lessons or analyzing curriculum. Cognitive development focuses specifically on how a child's mind works and learns in its process of growth. Looking at educational standards, social and cultural foundations of learning as well as the physical development of children will inform the ability of education to be used as a tool for change. It is critical to understand the theory of how children will develop when encounting educational practices, then applying this to how education can be used to enact change in case in regard to food systems.

Ostroff, Wendy L. 2012. *Understanding How Young Children Learn: Bringing the Science of Child Development to the Classroom*. Alexandria, UNITED STATES: Association for Supervision & Curriculum Development. http://ebookcentral.proquest.com/lib/lewisclark/detail.action?docID=1024329.

Gaining a deeper understanding of the science behind the minds of children is critical knowledge for teachers. Creating a platform for this knowledge takes scientific understandings to be applied for the lense of educators. Learning can be physical, coming from the sensory system or found in the surrounding world through experiences and social interactions. This book covers four broad topics; children's motivation, attention, memory, cognition and action. I plan to use this book to understand how elementary age children learn and understand, hopefully applying this to lessons about food systems. Acknowledging the understanding and mental state of children is critical when thinking about lessons and teaching strategies.

Feldman, Robert S. Robert Stephen. 2014. *Child Development: A Topical Approach*. Boston: Pearson.

This reference divides up many smaller concepts under the large umbrella of childhood development. Some of the topics covered include cognitive, physical, social and personality development. The primary kind of development that I will be focusing on is cognitive development, because it influences education and learning abilities. The book provides a great framework for childhood development and touches on many

other prevalent topics in education. I plan to use this source as an overview of cognitive development and to better understand educational perspectives.

Andermna, Eric, ed. 2009. “Cognitive Development.” In *Psychology of Classroom Learning: An Encyclopedia*. Vol. 1. Macmillan Reference USA. http://link.galegroup.com/apps/doc/CX3027800062/GVRL?sid=lms.

This encyclopedia article on cognitive development describes ideas into how the child's mind works and learns. The article goes through different theories of how a child's mind is shaped based on educational procedures and built environments. I plan to use this source to understand what kind of theories shape the way that children learn, and scholars’ ideas surrounding it as well as how the built environment can apply to food systems education in situated locations.

“Next Generation Science Standards.” n.d. Accessed September 21, 2019. https://www.nextgenscience.org/.

The NGSS are a new set of educational standards for science, created and adopted by many states in the U.S. The standards attempt to create a common standard for teaching with the intent of developing greater interest in science from students. Students are encouraged to evaluate scientific evidence, and dive deeper into fewer topics. I plan to understand as current educational curriculum material in the U.S. and apply them to my understanding of education and potential.

Harmon, Deborah A. 2005. *Elementary Education: A Reference Handbook*. Contemporary Education Issues. Santa Barbara, Calif.: ABC-CLIO.

This large reference handbook describes the history and current status of elementary education in the U.S. The book goes through the philosophical, cultural and social foundations of learning. It attempts to unpack how children learn and the role of culture and language developments. Many types of education are discussed, giving the book a broad scope. I plan to use this source to better understand the nature of elementary education, its impacts and influences.

Education as an agent of change

Education is often thought of as one of the best ways to enact change in a group of people, coming from the logical thought that if people understand a topic they will be more likely to make informed decisions creating a wider scope of change. Climate change, a critical issue of our time has begun to pop up in more elementary curriculums. Teaching about these changes has the potential to teach youth to be better climate citizens, learning tools that will help students have a more global perspective in the world in which they live. Many of the examples below focus on education pedagogies in the U.S. helping students to learn and cope with coming changes. The strategies used to educate youth about climate change can be applied and adapted to education about food systems, another system that has the potential to change in the coming years and is critical for the survival of humans. Therefore, education should be seen as an agent of change working to teach the next generation

to understand where we stand globally and locally, helping them to problem solve for the future.

Sumner, Jennifer. 2016. *Learning, Food, and Sustainability: Sites for Resistance and Change*. New York, UNITED STATES: Palgrave Macmillan. http://ebookcentral.proquest.com/lib/lewisclark/detail.action?docID=4716807.

This book pulls together the intersection of education and food within the context of sustainability. The educational approach in the book suggests changes in schools, homes, communities and social movements to our current food system, referring to it as unsustainable. The work gives a great overview of stages of education as well as the age old intersections between food and learning. I plan to use this book to connect the topics of food system and education and understand the author's perspective of necessary changes to the food system.

Brezinka, Wolfgang. 2017. *Education and Pedagogy in Cultural Change*. Milton, UNITED KINGDOM: Routledge. http://ebookcentral.proquest.com/lib/lewisclark/detail.action?docID=5049765.

This book presents a slightly controversial viewpoint on education in our current period of cultural change. Brezinka discusses the traditions of education and how they have changed as well as the values that the so called West places on it. There appear to be many divergent ideologies playing into the future of education. I plan to use this source to understand how current education can be a force for change, and understand what some current views on education are now in the West.

Boss, Suzie. 2018. “21st-Century Learning Starting in Elementary School.” George Lucas Educational Foundation. Edutopia. March 7, 2018. https://www.edutopia.org/article/21st-century-learning-starting-elementary-school.

This article shows an example of STEM courses using project-based learning to understand situated issues involving climate change. Project-based learning is shown in this article to help students prepare for a world outside of school working with teams and using technology. This is an example of education preparing students to create future change. Even though some of the examples in this article appear to be privileged it is clear that the students affected by this kind of education can use it to understand global problems ideally inciting change.

Trott, Carlie D. 2019. “Children’s Constructive Climate Change Engagement: Empowering Awareness, Agency, and Action.” *Environmental Education Research* 0 (0): 1–23. https://doi.org/10.1080/13504622.2019.1675594.

This study shows how ten to twelve year old children worked together in an after school program to learn about climate change. The group developed projects for individual habits as well as community based projects. The study states that children learned many things about climate change, feeling empowered to learn more and create change. I invision that climate change can be replaced by food systems, helping children become motivated about current issues and be able to create change.

McKeown, Rosalyn, and Charles Hopkins. 2010. “Rethinking Climate Change Education. (Undetermined).” *Green Teacher* 89: 17–21.

The article used climate change as an example of a current global issue that is affecting people's livelihoods. It is critical that schools are teaching more than the natural sciences behind these problems. Students should be learning how to cope with and predict change, as well as how to advocate for it. I think that this article does a great job of addressing the complex issue of climate change, and provides a framework to help students become good global citizens. I would like to use a similar framework to this in order to assess or create a curriculum about food systems.