

***Third Spaces and Benefits of Designing Food Safety Curriculum for Science Classes:
Using Third Space to Promote Food Safety Learning***

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Abstract

Food safety is one of the most important dimensions of food. With the growing number of food-borne illnesses, it is imperative to design curricula that address this important issue and equip students with the necessary knowledge to combat food-borne illnesses. Scholars have discussed the idea of using third spaces to bridge the gap between students' primary and secondary discourses. This idea that these kinds of informal and formal discourses can be welcomed in the classroom not only builds a fertile ground for dialogue on the safety of food but also gives students agency. When it comes to issues of food, it is important to note that food is very personal and specific in nature. What is food to one person can very well be poison to the next. Food also has cultural and historic dimensions. Encouraging students to bring their cultural selves to the classroom can foster inclusivity, and achieve high retention of knowledge taught, whilst instilling lifelong behaviors that are necessary for the prevention of food-borne illnesses. In this discussion, we will describe third space and how it can be used to promote food safety learning.

Keywords: Food Safety Education, Third Space, Science Classroom, Science Curriculum

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Introduction

Food safety is one of the most important dimensions of food. With the growing number of food-borne illnesses (Nyachuba, 2010), it is imperative to design curricula that address this important issue and equip students with the necessary knowledge to combat them. Scholars such as Bhaba (1994), and Soja (1996) discussed the idea of using third spaces to bridge the gap between students' primary and secondary discourses. This idea that these kinds of informal and formal discourses can be welcomed in the classroom not only builds a fertile ground for dialogue on the safety of food but also gives students agency.

When it comes to issues of food, it is important to note that food is very personal and specific in nature. What is food to one person can very well be poison to the next. Food also has cultural and historic dimensions. Encouraging students to bring their cultural and or food selves to the classroom can foster inclusivity, and achieve high retention of knowledge taught, whilst instilling lifelong behaviors that are necessary for the prevention of food-borne illnesses.

Methods

This paper uses a literature review to examine past and present literature on third spaces and food safety in science curricula.

Literature Review

Third Spaces have been looked at in education (for example, Whitchurch, 2012; Gutiérrez, 2008; Klein, Taylor, Onore, Strom & Abrams, 2013; Potter & McDougall, 2017). Third Spaces are 'spaces which are neither solely academic spaces nor solely creative and cultural production spaces but an open, creative and generative combination of the two' (Comunian & Gilmore, 2015, p. 18). They have also been defined as 'the in-between, or hybrid, spaces where the seemingly oppositional first and second spaces work together to generate new third space knowledges, Discourses, and literacy forms' (Pane, 2013, p.79).

Third Space theory has been used in different disciplines and for various reasons (Clifton & Jordan, 2016). For example, the theory has been used by teacher education researchers as a conceptual method of perceiving the connection between practice and theory (Clifton & Jordan, 2016). There are various advantages of using third spaces. One of them is that 'they provide an opportunity for the academic communities (staff, researchers and students) to engage with creative producers and arts knowledge and for further exchanges to happen' (Comunian & Gilmore, 2015, p. 18). Scott and Palincsar (2013) noted that some researchers;

Advanced the idea that educators work to develop a third space in which students' primary discourses (those used in the home, community, and informal social interactions) and students' secondary discourses (those endorsed in school and other formal institutions) intersect to form this third space, where primary and secondary discourses are Merged'. (p.6)

The same authors point out that 'were educators to be more attentive to the creation of these third spaces in the school, greater attention would be paid to incorporating students' prior knowledge and experience, as well as current literacy practices in the school curriculum' (p.6). In one study, researchers saw that;

Bringing together of discourses and knowledges in third space as a productive scaffold for young people to learn the literacy practices that are framed by the Discourses and knowledges privileged in the content areas. With this scaffold, students would be able to better access and negotiate the privileged texts of upper level, content area classrooms. We also believe that explicit engagements with the texts of competing discourse communities will help youth learn to navigate multiple texts and communities successfully. (Moje, Ciechanowski, Kramer, Ellis, Carrillo & Collazo, 2004, p.44)

Third Spaces require evaluation and adjustments. According to Beck (2020), ‘third-space programs require continuous reflection on evidence and outcomes as well as ongoing adjustment—a process of experimentation, data collection, and reflection in endless iterations’ (p.382).

Discussion

Food safety includes practices that ensure the safety of food. This can include washing hands, separating raw foods from cooked foods, and proper storage of food. As seen above, third spaces bridge the gap between home life and the classroom. This makes food safety an ideal facilitator in this type of knowledge, particularly in science classrooms. Third spaces undo the binary that is often restricting in science classrooms. One way that science classrooms can utilize food safety in this third space is to welcome student contributions about their home or community experiences with food and its preparation.

Using third space in educational settings fosters greater retention of information for students. Combining this with food safety encourages students to bring their *food selves* to the classroom whilst encouraging creativity and learning. In the science classroom, students can conduct experiments, collect data and reflect on how the foods they consume can be kept safe. Societies tend to prefer education that helps students in their life outside of the classroom, in their future work, and life in general. When learning is not practical nor is it relevant to the context of cultures, societies suffer. In some instances, science education is blamed for incompetence of society (Yager, 2000). This makes producing a scientifically literate society of utmost importance and using food safety as a necessary vehicle to arrive at that. Understanding scientific concepts is necessary as it is a way of knowing the world (National Academies of Sciences, Engineering, and Medicine, 2016) and when this knowledge is attached to eating habits, it makes it even more relevant.

Food safety has technological, engineering, mathematical, cultural, and social components. For instance, using thermometers to measure the temperature of cooked foods to ascertain how close the food is to the danger zone (40-140 degrees Fahrenheit) is a component of food safety. Culturally, people tend to eat foods that differ in their components, whether they are fresh or dry. This means that consumers and, in this case, students should have a cultural approach to food safety or rather an approach that is relevant to the kinds of foods they consume. Using third spaces allows students to bring these different perspectives and components of food safety together and fosters an inclusive learning environment.

Designing Curricula That Accommodate Third Spaces

Using instructional design technologies (IDT), courses can be designed to accommodate both food safety and third spaces. Instructional design technology refers to the methods that

include physical and digital experiences for those that need them (University of Arizona, 2018). Instructional design, therefore, is essential in learning because when skillfully implemented, can lead to effective and efficient means to meet the learning goals established (Rowland & DiVasto, 2013). In this sense, third spaces can be used as a bridge between home life and the science classroom through the designing of science courses that afford these practices. For example, courses can be designed to use the ADDIE model (Analyze, Design, Develop, Implement, and Evaluate) that reflects STEM-appropriate measures. Using the ADDIE model (see figure 1) can benefit both students and instructors when developed as follows:

Analyze

Here, STEM courses, specifically science classes can be designed using the food and cultural contexts of the students. This includes the utilization of design-based learning that seeks to use projects as a means of teaching and learning where students are assigned a particular design challenge that can include anything of interest to them. Several scholars have argued for the necessity of incorporating life outside the classroom into science learning, as this makes the learning process more practical and meaningful. They have particularly advocated for the use of design-based Learning in the science classroom (Fortus et al., 2004; Bethke Wendell and Rogers, 2013, Chusinkunawut et al., 2021). In this case, students can design food safety devices that are appropriate to their food cultures and or desired foods. For the instructor, this provides them with the opportunity to use inclusive assessment strategies that recognize student differences.

Design

For the design aspect. This includes the selection of appropriate delivery methods. It can mean using design-based learning and or any other appropriate delivery methods that would be most appropriate for specific learners and classroom environments. This would also include the use of appropriate food safety technologies that enhance student learning and knowledge of safety practices.

Develop

The development stage is where the delivery methods are pilot tested and improved upon. Here instructors can use design-based learning where projects are used as a form of assessment and learning. Students can conduct experiments, collect data and reflect on how the foods they consume can be kept safe.

Implement

Here, instructors implement pedagogical practices that are most appropriate to the grade level and to the content being taught. For example, as a method of learning, instructors can incorporate videos, simulations, animations, and any other technologies that are appropriate and beneficial to the learning environment. Instructors can further use design-based learning to bridge the gap between school life and home life for the students by allowing students to explore their food cultures and how to keep their most consumed foods safe.

Evaluate

In the Evaluate stage, instructors can examine how well their implemented strategies work and how well the assessment methods are working.

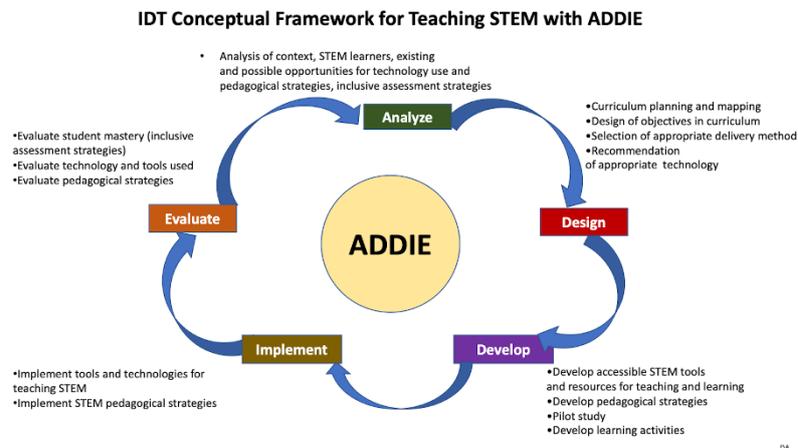


Figure 1: ADDIE, IDT Conceptual Framework

The ADDIE model is a sample IDT framework that can be used to teach food safety in conjunction with third spaces. Food safety lends itself to a discipline/field/topic that encompasses several disciplines such as science, technology, literacy, and engineering. In this manner, food safety can be the vehicle through which important scientific concepts are learned.

Since food and food safety are central to the human experience, they can be utilized as a third space topic to bridge the gap between classroom knowledge and home life. Using third spaces in conjunction with food safety encourages learners to bring their food selves to the classroom whilst encouraging creativity and learning. This can create an inclusive learning environment as students can benefit from feeling included as lessons encourage them.

Benefits of Using Third Spaces

Third spaces can aid and facilitate student learning, as they give learners a sense of ownership of the learning process (Stevenson and Deasy, 2005). Third spaces when combined with food safety, can also encourage a sense of identity along with social and cultural belonging (Fischler, 1988). This is because third spaces in conjunction with food safety allow students to explore who they are both at home and in the classroom and also in a *third space*.

Another benefit of using third spaces to teach food safety is that it makes science more accessible by allowing for connections between formal and informal discourses to be made by students. Overall, this benefits students as it helps them acquire lifelong learning behaviors whilst equipping them with methods of preventing food-borne illnesses.

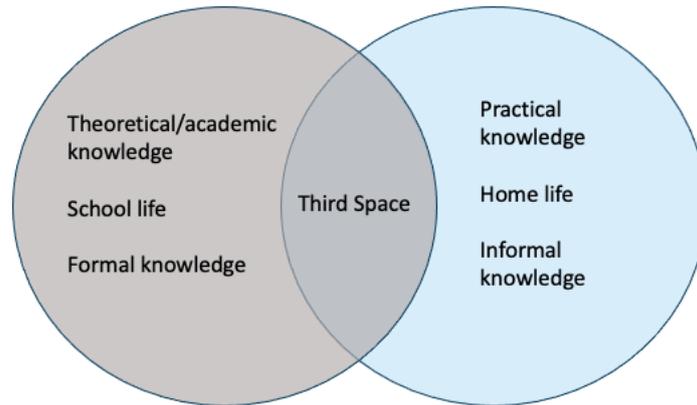


Figure 2: Conceptualizing Third Spaces

Food, Culture and the Classroom

Geographic locations have long played a role in the kinds of food that is available and consumed in different places. This is because food production is directly tied to the physical, environmental, and human ability to convert farm outputs into food products (The Geography of Food Article Selection, n.d.). These factors in turn affect the kinds of foods that are supplied to local communities and consumption patterns. This greatly shapes food preferences as some geographic locales may not have a supply of certain foods especially those that are seasonal. Science classrooms can use food preferences to teach food safety as it encourages students to bring their food selves to the classroom. Using a model like the ADDIE model above can help students experience a sense of belonging whilst encouraging healthy behaviors. This sense of belonging can be fostered by welcoming diverse food cultures in the classroom and using them to teach scientific concepts that would otherwise be abstract.

Conclusion

Creating curricula that address foodborne illnesses whilst creating an inclusive learning environment can be beneficial to students. Providing a third space by which students make connections between their lives outside the classroom and scientific concepts helps make science topics more accessible. It is imperative to have a scientifically literate society as this helps in naming and knowing the world. Food safety provides a fertile ground for using third spaces in the science classroom as it encourages students to make connections between their lives outside the classroom and the scientific concepts they are learning whilst encouraging behaviors that prevent foodborne illnesses.

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