

Design thinking workshop: using experiential learning, creativity, and empathy to learn about the complexities of food insecurity and sustainability

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Introduction

In the past couple of decades, the number of sustainable agriculture projects has been steadily increasing in universities across the United States, and they have been linked with an enhanced critical thinking as well as a more significant relationship with the surrounding community (La Charite, 2016). On the other hand, formal education and nonformal education on food sustainability issues have not caught up yet (Massari, Allievi, et al., 2021) and fail to have a long-term impact on how students relate to sustainability on a general

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level. This is also due to institutional and cultural barriers, which hinder more resources to be allocated to sustainability (Kioupi & Voulvoulis, 2019).

While higher education faces these difficulties in educating youth about (food) sustainability, the media and social media have the potential to reach this audience and bring about change. Higher education institutions could use social media as a leverage point in this sense, but often fail to fully exploit this potential (Carpenter et al., 2016). Some studies have identified how social media can help to communicate topics such as sustainable consumption and recycling; however, also negative effects are present and include a lack of critical thinking for the assessment of fake news, as well as the promotion of a homogeneous consumption style, which has severe impacts on both environmental resources and inequalities. In the current setting of a food system dominated by the power of big corporations, the role and effect of social media are twofold: on the one hand, it allows horizontal, self-organized movements to reach larger audiences and offers an alternative to the industrialized food system, on the other hand, it can generate forces to regain the power lost (Stevens et al., 2016).

Despite the increasing information available on the link between the current average dietary patterns in Western countries and a variety of serious environmental and social issues, the definition of “sustainable diet” remains obscure for most. In this sense, media do not support a more comprehensive information on these topics. Some studies have highlighted how young people perceive that they receive too little information on sustainable diets from both media and education, and this hinders their full understanding of these topics. For instance, in 2019, Barilla Foundation commissioned Ipsos Italia to investigate the relationship between the new generations and Sustainable Development Goals¹. The resulting data highlighted the often partial vision that students (age 14–27) have concerning sustainability, frequently clear on environmental factors but underestimating the importance of food behavior². Young Italians seem to be supportive of the fight to reduce the impact of human behavior on climate change, but they are not sufficiently informed on the strategies that can be implemented to achieve lasting results, they are not familiar with the Sustainable Development Goals promoted by the United Nations, and above all, they do not know the extent to which agricultural production and the food they eat have an impact on sustainability.

According to the data collected, 44% of the young people interviewed are uninformed on the issues of politics, current events, and the economy, while only 15% were attentive and constantly informed. In fact, as often occurs among older people as well, youth tend to relate sustainability only to environmental aspects, while the equally important issues of sustainability associated with the economy (13%), society (9%), and food and nutrition (9%) remain in the background. The lack of information is directly correlated with the general attitude and the various everyday behaviors in relation to waste and to the choices of food sustainability: the attentive youth and informed youth tend to prefer products from sustainable agriculture, to always read food labels carefully, and to try to avoid wasting water. Forty-five percent of the sample who are knowledgeable or at least

¹ Available from <https://sdgs.un.org/goals>

² Available from <https://www.barillacfn.com/en/magazine/food-and-sustainability/youth-and-sdgs-few-know-the-role-of-food-and-nutrition/>

superficially knowledgeable about the issue received their information from the school or the university, whereas only in the age 24–27 segment was the media the main source of information, in particular Internet and newspapers. In fact, being familiar with the Sustainable Development Goals is not a sufficient condition for the youth to feel an urgent duty to act immediately. What makes the difference, instead, is the sense of engagement in taking charge of the problem, regardless of the qualified knowledge about the issue.

In the middle of these contradictions and contrasting forces, there seems to be a gap in both formal education and information from the media that hinders these from being effective to promote a comprehensive understanding of food sustainability. For this reason, the case presented here shows a different approach, based on experiential learning. In the workshop described, participants experience firsthand key topics of food sustainability, allowing for the activation of empathy and for a deeper understanding.

In this chapter, an example will be presented to put forward the case of how, by using design thinking and therefore acting on mechanisms of empathy, the understanding of sustainable diets can be transferred more quickly and effectively.

Presidents United to Solve Hunger Leaders Forum and the Universities Fighting World Hunger: multidisciplinary and multigenerational experiment to experience sustainability through food

The case presented here took place during the Presidents United to Solve Hunger (PUSH) Leaders Forum and the Universities Fighting World Hunger (UFWH) Summit organized in March 2018. PUSH is an organization hosted at Auburn University (US) that brings together university leaders across the United States (and a few institutions in Canada and other countries) to discuss and collaborate on initiatives to address world hunger (PUSH website). UFWH is a sister organization for students who are interested in fighting hunger (UFWH website).

Though the PUSH and UFWH events are separate and target very distinct audiences, the conference organizers wanted to propose one event that brought the two groups together. They decided to include a design thinking workshop to transition from the PUSH meeting for university presidents and their designees to the UFWH event for students. Three professors from three universities (University of Illinois Urbana-Champaign, Walsh University, and Roma Tre University in Rome, Italy) who specialized in design agreed to collaborate to develop a design thinking workshop focused on food sustainability (the three-professor team along with an additional university administrator who assisted with the process will be referred to as the workshop leaders throughout the rest of the article). Approximately 125 university leaders and students participated in the workshop. The workshop had two main goals. First, the workshop leaders wanted to introduce the participants to the design thinking process and to provide them with a unique and impactful experience. Second, they aimed to enhance participants' understanding of the food system and sustainability and to encourage them to brainstorm and discuss potential solutions.

Participants were randomly assigned to tables of 10 so most did not sit with people with whom they were well acquainted. The workshop leaders led the participants through a series of 10-minute presentations focused on various aspects of food sustainability. At the end of each presentation, a thought-provoking question was posed to participants, and they were asked to think individually about the emotions they were feeling and to collaboratively reflect on the question. After a few minutes of individual time, they discussed the question with the others at their table. During the second half of the workshop, participants received one of four specially designed boxed lunches. Meals ranged from meager, representing malnutrition and an insecure diet, to a healthy meal (based on human health), to a sustainability balanced meal (planet health), to a high calorie and unhealthy meal (more than one person could possibly eat) that represented wealth and overabundance. Each boxed lunch appeared to be identical from the outside and the white boxes were unlabeled, so participants randomly chose the meals from the selection on the table. The boxed lunches were a critical part of the workshop design, and the groups at each table continued to discuss and generate ideas as they ate. [Fig. 8.1](#) provides details about what was included in each boxed lunch category, including pictures of the meals.

The following questions were posed to elicit the impact of the design thinking workshop:

- How does participation in an experiential learning activity impact the participant's understanding of the complex concept of food sustainability?
- How does participation in an experiential learning activity impact the participant's motivation and perceived ability to address a complex societal problem?

Theoretical background and definition of key concepts

Since the 2008 financial crisis in the United States, 14% or more of U.S. households reported being food insecure ([Zepeda, 2018](#)). The U.S. Department of Agriculture defines food insecurity as reduced quality, variety, or desirability of diet. In 2019, before the COVID-19 pandemic, 690 million people worldwide (about 9% of global population) suffered from undernourishment, and projections estimate that the pandemic will add another 83–120 million people to this amount ([FAO, IFAD, UNICEF, WFP and WHO, 2020](#)).

While most people may assume that people who report being food insecure are unemployed, in actuality, many individuals who are employed full time do not generate enough income to be considered food secure and may not have access to healthy, nutritious food consistently ([Zepeda, 2018](#)).

[Zepeda \(2018\)](#) conducted a case study of 20 food insecure individuals who were categorized as middle class but did not use food pantries. She used the Asset Vulnerability Framework (AVF) to classify the causes of nonhealthy and nonsustainable food habits among the participants. The AVF identifies five potential causes for food insecurity: labor (unemployment or underemployment), productive (using available money for expenses such as housing or transportation that provide a means to make money, such as going to work versus spending it on food), human capital (health or education expenses), household relations (who/how many live/lives in the household), and social capital (avoiding









Meal Type	Boxed	Plated	Contents
Healthy ~20%			Apple Mixed Greens Crisps/chips Turkey/Ham Sandwich Mayonnaise/Mustard Salt/Pepper/Cutlery 520 calories
Sustainable ~20%			Antioxidant Salad Salad dressing Mayonnaise/Mustard Salt/Pepper/Cutlery 220 calories
Obesity/ Abundance ~10%			Biscuits/cookies (x2) Crisps/chips Ham Sandwich Pesto Chicken Wrap Mayonnaise/Mustard Salt/Pepper/Cutlery 2,460 calories
Food Insecure ~50%			Crisps/chips Salt/Pepper/Cutlery 360 calories

FIGURE 8.1 Randomly assigned boxed lunches (certified dietitian developed).

shame or blame). Several of the research subjects reported feeling ashamed of using a food pantry or that they did not want to take food if others might “really” need it, more so than they did.

College and university students are not immune to unsustainable food choices and habits. A study at North Carolina University revealed that 14% of students had been food insecure in the past 30 days (Wright et al., 2020). Food insecurity and food sustainability

issues impact people in multiple ways, including their mental health, and can impact students' education and grades. The researchers offered several recommendations to faculty who may have students who are food insecure in their courses. Examples include reducing course costs, such as using open educational materials and including resources available to students in the course syllabus (Wright et al., 2020).

Experiential learning

Kolb et al. (2000) claimed that experience represented a critical piece of the learning process. Kolb (1984) derived his theory of experiential learning based on previous work by Dewey, Lewin, and Piaget. He believed that learners developed concepts by comparing and contrasting what they experience to existing mental concepts. The learning process involves four stages:

- The learner undergoes a *concrete experience*.
- Through *reflective observation*, the learner compares and contrasts the experience with existing mental concepts.
- The learner considers and analyzes the experience through *abstract conceptualization*.
- The learner then participates in *active experimentation* to either assimilate the new data or reconstruct/adapt existing concepts to incorporate any nonconforming data.

Kolb et al. (2000) also identified four learning styles. While one individual can exhibit more than one learning style, most have a preferred style through which they excel.

Learning style	Preference/tendency	Learning patterns/strengths
Diverging	CE/RO	Considers various perspectives; good for idea generation or brainstorming
Assimilating	AC/RO	Focuses on logic and abstract concepts; good for summarizing a significant amount of information
Converging	AC/AE	Tends to prefer a practical approach; good for solving problems and technical issues
Accommodating	CE/AE	Relies on intuition over logic and learns from hands on experience; good for implementing plans

CE, concrete experience; RO, reflective observation; AC, abstract conceptualization; AE, active experimentation.

Mezirow's (1997) transformational learning theory aligns well with Kolb's theory of experiential learning. Mezirow also frames learning as a critical reflection of existing assumptions or concepts. He outlined four processes of learning: elaborating or reinforcing an existing point of view, establishing a new point of view (no current point of view or assumption), transforming a point of view (similar to Kolb's idea of adapting an existing mental concept), and becoming aware of generalized bias. Mezirow described transformational learning as learner-centered, participatory, and interactive.

Experiential learning tends to be "messy" and unstructured, in contrast to typical problems students encounter in a classroom (Kerka, 1997). Ambrose and Poklop (2015)

described a disconnect between the classroom and the real world, proposing that problems students work on in most classes tend to be more defined and straightforward compared with what student encounter once they enter the workplace. Based on the constructivist theories, Piaget et al. (2008) claimed that students were more likely to develop knowledge when it is accessible, plausible, and useful. Vygotsky's zone of proximal development placed an upper limit on what an individual could learn; however, carefully designed activities can facilitate learning by using simulations, familiar concepts, and other techniques to improve the accessibility of certain ideas or concepts.

Design thinking as an experiential learning activity to solve complex problems

Several researchers discussed the use of design thinking in experiential learning. Zupan et al. (2018) discussed the use of design thinking in education as early as the primary grades. Students in the study identified problems in the community, brainstormed solutions, developed prototypes, and some even presented their ideas to the community at the conclusion of the activity. Kremel and Edman (2019) used design thinking to teach entrepreneurship in a study where students were asked to come up with a solution that enabled older individuals to continue to live in their home. Students worked with aging individuals and demonstrated significant engagement throughout the process, though they did report that the reflection logs they were asked to keep were not valuable. In a third example, McGann et al. (2018) explored how involvement of the community in design thinking impacts the process. They found that the public sector tends to favor incremental change over radical transformation and values evidence-based policymaking.

Despite the growing acceptance and use of design thinking in education, no standard pedagogy has emerged. McLuskie and Dewitt (2019) surveyed 39 design thinking educators and could not identify a standard model, though there were some common themes. Most models incorporated some form of identification and definition of a problem, reflection, and prototyping or experimentation, though terminology tended to differ. Clemmensen et al. (2018) explored how culture impacts the design thinking process. Their findings supported the dynamic constructivist theory of culture, or that culture influences cognitive structures. However, they also endorsed Dorst's claim that abduction tends to be the most common method of reasoning in design thinking across cultures.

Beckman and Barry (2007) recommended incorporating cross-disciplinary teams with divergent views and assigning roles based on learning styles defined by Kolb and his colleagues. Interestingly, another study found that teams with members from cross-disciplinary and diverse backgrounds and fewer designers tended to perform better (Luccarelli et al., 2019). Another study by Brooks and Hehn (2020) supported cross-disciplinary teams. In addition, they suggested opening discussions with questions such as "How might we...?" They concluded that design thinking opens discussion and expands the number of potential solutions by incorporating empathy and ideation into the process.

A recent research study explored the role of design thinking—mainly centered on consumer engagement in tackling food waste, while at the same time achieving other sustainability goals in line with the UN Agenda 2030, from healthy eating to well-being and food security. A new framework (CEASE) was proposed for the design of new food experiences

aimed at reducing food waste, while simultaneously promoting the well-being of individuals and society (Massari, Allievi, et al., 2021). A shift in design thinking mindset is underway, from regarding a product simply as a physical object to considering it part of a set of relationships that fulfill various purposes for different people and can create a tangible impact and improve the lives of individuals and the entire community.

The impact of experiential learning on motivation and perceived ability to address a complex problem

Several studies have investigated how experiential learning can influence motivation and perceived ability to make an impact on a complex problem. Kenney and Young (2019) used an experiential learning simulation in a social work class to help students understand food insecurity. Students were required to limit their expenditures on food for 1 week to \$6.10 (approximately £4.93), equivalent to the amount provided by the Supplemental Nutrition Assistance Program (SNAP) in the United States, which provides financial assistance to purchase food for low-income individuals. Students reported that they often felt hungry and that it impacted their mood, performance, and state of mind. They also significantly enhanced their knowledge of SNAP and felt empathy for those who were forced to participate in the program.

In another example, Northrup et al. (2020) evaluated two experiential learning activities to determine which was more effective in helping students to understand food insecurity. The first was a poverty simulation where students role-played a family and experienced four rounds representing weeks where they had to seek jobs, deal with unexpected expenses, and figure out how to make ends meet with very limited funds. The second was a hunger banquet where students received a meal designed to represent poverty, middle class, or wealth. While both simulations improved students' understanding of poverty, the poverty simulation was more effective in increasing students' empathy for those living in poverty. While both simulations were experiential in nature, the poverty simulation required students to role play and make difficult choices using the limited resources available to them.

A third study by Hendricks and Drysdale (2015) asked students to participate in a survey that asked if they would be willing to support a tax increase of \$5 that would increase U.S. aid to address poverty in Africa and/or donate time to such a cause. Students were randomly assigned to three groups; one received just the questions about the tax increase and volunteering time while a second group received the questions along with some statistics about poverty and hunger in Africa, and a third group received the questions along with a picture of a young African girl who lived in poverty and information about her specific situation. The students who received the picture of the girl and read her story were willing to give 30% more than the other two groups, indicating that the personal story and photo fostered more empathy. They were also more willing to volunteer their time to address the issue.

The literature suggests that experiential learning can positively impact learning outcomes of complex topics and that incorporating empathy into a learning experience may also improve learning. The workshop leaders used Kolb's (1984) and Mezirow's

(1997) theories as a framework to create an experience that would encourage transformative learning of the complex topic of food insecurity and sustainability as well as how media impacts food consumption.

PUSH-UFWH design thinking workshop: everyone should be an agent of change

The food system and its sustainability are complex, being characterized by *interconnectedness* (humans and other organisms are all connected to each other), *emergency* (each action and interaction may affect the system), and *modularity* (humans are both connected and disconnected in multiple subgroups, allowing different view and values on the definition of sustainability) (Dentoni et al., 2017). Furthermore, the link between food choices and environmental (from water pollution to land degradation) and health problems (such as diabetes and undernutrition) has called for a transition to more sustainable diets (Willett et al., 2019).

While such complexity might seem discouraging, it can instead serve as the starting point to reflect on the key role that human actions connected to food production and consumption play on the use of natural resources and on the generation of inequalities. It thus becomes evident how a collective culture geared toward competition does not serve the purpose of sustainability. The discussion on sustainability is often linked with that of Sustainable Development Goals (SDGs); however, these 17 goals present a mostly anthropocentric point of the relationship between nature and humans; by accounting for an eco-centric perspective, the empathic recognition of nature's inherent value would be enabled, easing the paradigm change necessary to tackle sustainability (Koiupi & Voulvoulis, 2019). In this sense, as food can be considered to be intrinsically connected, one way or another, with all the SDGs (SRC, 2016), keeping the common good, as environmental resources and health, at the center of the discussion is key.

With all the above in mind, each person is called to be in his/her personal and professional life, an agent of change for a more sustainable food system.

Workshop theoretical framework

The workshop leaders structured the design thinking workshop based on Kolb's (1984) experiential learning theory and Mezirow's (1997) theory of transformational learning with the intent of enhancing participants' understanding of food sustainability and encouraging them to consider opportunities to address the issue in their communities or in a broader context. They also incorporated the principles of design thinking to encourage empathy and engagement throughout the process by asking them to focus on their reactions and emotions to the questions and prompts.

Kolb's (1984) theory begins with an experience, which the individual then reflects on and analyzes to conceptualize it within existing cognitive structures. Then the individual actively experiments to fully flesh out the concept and to reinforce, add to, or replace existing concepts. Mezirow's (1997) transformational learning theory focuses on a situation where an existing cognitive structure must be replaced or adapted significantly. Successful

transformative learning requires critical reflection of assumptions and willingness to adapt or replace existing concepts with new realizations or discoveries. In addition, the workshop leaders believed that there is a connection between constructive discomfort and transformational learning that “create[s] disorienting contradictions that prompt critical self-assessment of values and beliefs” (Nolan & Molla, 2018, p. 5) that lead to thinking and action. Mezirow (1997) states that “[e]ducation that fosters critically reflective thought, imaginative problem posing, and discourse is learner-centered, participatory, and interactive, and it involves group deliberation and group problem solving” (p. 10).

In the case of the design thinking workshop, participants attended the PUSH and UFWH events because they had a prior interest in food issues. Many of them had studied the concept and had significant prior knowledge of food sustainability issues, including food insecurity. The workshop leaders began the workshop with a series of short presentations focused on common misconceptions about the relationship between sustainability and food. After each presentation, they invited participants to first think about their emotions or feelings and then to consider a question or prompt individually. Once they had time to reflect individually, they shared their thoughts and ideas with others at their table. The focus on feelings and emotions was intended to encourage empathy. About halfway through the workshop, after the workshop leaders set the stage, the students then opened their boxed lunches, which was part of the experience. Their responses were observed as they reacted to what they received in the lunches. There was also an intentional element of discomfort in the process. Those who received a meager meal may have felt “cheated” while those who received a balanced or abundant meal may have experienced guilt—but in both cases, they were uncertain how to appropriately react and felt discomfort. Incorporation of empathy and discomfort led to vulnerability, which facilitates a willingness to consider new ideas or perspectives. Then they were asked to discuss challenges related to food system and sustainability and how it could be addressed, representing conceptualization and experimentation.

Workshop methodology

The purpose of this study was to understand how the design thinking workshop impacted participants’ understanding and views of food choices and food systems as well as their motivation to take sustainable actions and their perceived ability to make an impact. Throughout the activity, the workshop leaders observed the various groups at the tables and how they worked together. Participants were seated at tables with 10 seats, but not all tables were completely filled. The workshop leaders each observed approximately three to four tables. They observed reactions and listened to the discussions that occurred at the various tables throughout the duration of the workshop and answered questions from participants. The workshop included two parts. The first provided a series of mini-presentations about various aspects of food insecurity and sustainability and the impact of media on food consumption and systems. The second half focused on the distribution of boxed lunches, which were designed to loosely mimic the distribution of food in the world. After the workshop, the workshop leaders asked each participant to complete a written survey about his or her experience, and they collected the sticky notes that participants had used to record their emotions and ideas. See [Figs. 8.2–8.6](#) for photos of the workshop setup and aftermath.



FIGURE 8.2 Workshop room set up prior to participants arriving.



FIGURE 8.3 Table 5 set up.



FIGURE 8.4 Participants during workshop (note that faces have been obscured to protect identity of participants).

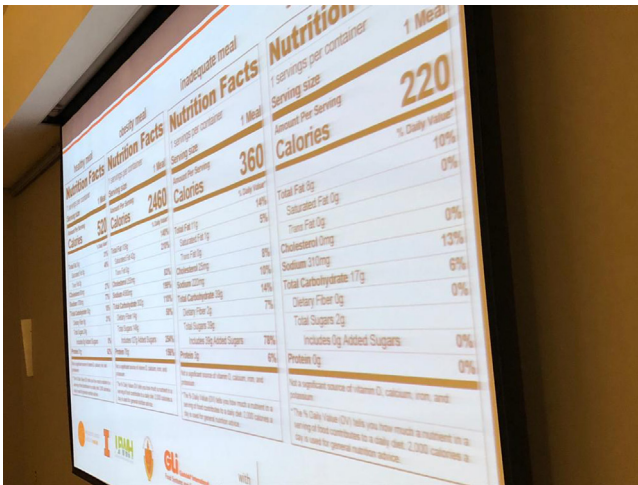


FIGURE 8.5 Slide with nutrition facts for the four meals.

Participants

Participants in the study included PUSH Leaders Forum and UFWH Summit attendees. Approximately 125 university students ($n = 95$) and leaders (university presidents or their designees; $n = 30$) participated in the workshop (refer to [Table 8.1](#) for further details). Due to the nature of the two events, the participants were very likely knowledgeable about and had a specific interest in food sustainability since they had elected to attend one of the conferences. The workshop leaders did not recruit participants; instead, they used the convenience sample of students and university leaders who participated in the workshop. Participants were randomly assigned to tables so the likelihood that they were seated with several people they were not acquainted with was high.



FIGURE 8.6 After the presentation.

Data collection

All attendees were asked to read and sign a consent form at the beginning of the workshop (approved by the University of Illinois Urbana-Champaign Ethics/Institutional Research Board). The workshop incorporated a quasi-pre/post design by incorporating survey questions that asked participants to compare their knowledge level prior to and after the completion of the workshop. The workshop leaders observed the groups at their tables throughout the activity. Each workshop leader observed a group of three to four tables and took notes on the reactions of participants. The initial half of the workshop consisted of a series of mini-presentations on topics related to the complexity of food insecurity and sustainability and the impact of media on food choices and systems. During each round, one of the faculty members shared a brief presentation and then asked the groups at each table to write down their current emotions before starting a discussion or sharing ideas with the others at their table. Then participants were asked to write down some ideas related to a question about the topic on a sticky note to foster individual reflection among participants. Next, participants discussed their responses with others at their

TABLE 8.1 Summary of responses to closed response questions.

Question	Responses
Age	17–24 years: 69% 25–30 years: 11% 30–55 years: 13% 55+ years: 7%
Gender	Female: 71% Male: 29% Other: 0%
Role	Student: 78% Higher education professional: 14% Other professional: 7% Other: 2%
How well did you understand food insecurity prior to the workshop?	Very well: 55% Somewhat: 38% Not much: 6% Not at all: 1%
Meal received	Obesity/wealthy meal: 11% Healthy/balanced meal: 20% Sustainable meal: 21% Food insecure meal: 48%
Did the workshop help you to better understand issues related to food insecurity?	A great deal: 43% Somewhat: 40% Not much: 12% Not at all: 5%
Did the workshop help you to identify new opportunities to address food insecurity?	A great deal: 53% Somewhat: 33% Not much: 11% Not at all: 3%

tables. The workshop leaders wandered around the room while groups were engaging in discussion to answer questions, but also to listen in to some of participants' ideas and thoughts as well as to observe how they interacted with one another. Other than responding to questions, they did not interact or engage in the discussions at the tables. After each mini-presentation and discussion, they asked two to three groups to share an insight from their discussion.

During their observations, the workshop leaders agreed to consider the following questions:

- How did the groups engage in discussion? Did one individual tend to dominate or did several individuals interact with each other?
- Did each participant at the table share their ideas and then the group started discussing? Or did the group tend to engage in discussion after everyone shared a thought or idea?
- Did most individuals use the sticky notes to record their emotions and ideas?
- Did the group come to consensus? Were they able to share a couple of ideas during the debrief period?

Once the boxed lunches were opened, the workshop leaders considered additional questions in their observations:

- What were the initial reactions of individuals at each table once participants opened their lunches? What emotions did you observe?
- How did the individuals at each table engage with each other after opening their lunches?
- Did participants at the tables you observed end up sharing food with each other? Or did they each keep their own lunches?
- How did the sentiment at each table shift over time, if at all?

At the conclusion of the presentations and lunch, participants completed a written survey as their last activity of the workshop (available in the [Appendix](#)). The survey elicited a few demographic questions and what type of meal they received during the luncheon. As part of the quasi-pre/post design, closed-ended questions were included addressing whether the workshop increased their knowledge about food security and whether it helped them to understand food sustainability and food sustainability issues better. Participants also responded to four open-ended questions: their thoughts about the workshop and how they would describe it; emotions they experienced during the workshop; anything about the workshop that surprised them; and the most important thing they took away from experience. The surveys, consent forms, written notes, and all the sticky notes with comments on emotions and individual ideas were collected from each group at the end of the event.

Data analysis

The workshop leaders shared notes on their observations of participant behaviors and discussions during the workshop. The notes were combined and reviewed to extract general themes. Each of the workshop leaders participated in the consolidation process and discussed their conclusions about the workshop outcomes. Discussions took place via a series of conference calls among workshop leaders.

General statistics about the closed-ended questions to the survey were calculated (see [Table 8.1](#)) to understand the demographics of the participants, what meals they received, etc. The survey results also provided insight about participants' knowledge of food insecurity and sustainability before and after the workshop. For the open-ended questions, each response was coded, categories formed, and key themes for each open-ended question identified for each group. Each of the workshop leaders participated in the coding process at some level to support consistency in response coding. The themes and some example quotes are captured in [Tables 8.2–8.5](#).

The information from surveys and the observations during the workshop were combined to address the research questions. The notes and potential solutions that each group offered were recorded and captured. All workshop leaders also read through the solutions offered to gain a sense of the level of ideas that groups generated during their discussions.

Results

Meal distribution during the workshop was intended to roughly mimic sustainable development issues in the world. Based on the survey, 11% received a meal with too much food

TABLE 8.2 Summary of responses to “Please provide your thoughts on your workshop experience. How would you describe it to others?”

Theme	Percentage	Example quote
Educational experience	29	The experience was amazing and educating. I learned a lot about food insecurity from different perspectives.
Collaborative and/or interactive experience	22	An innovative way to bridge students and professionals and share ideas in an equitable way.
Unique experience	17	I thought this experience was very unique, and really helped individuals be creative and form ideas.
Encouraged empathy	12	Great brainstorming, creates empathetic environment, understanding others’ situations.
Activity has limitations	11	I have seen this type of activity before, I feel like it is just “trying on” someone else’s lived experience.
Encouraged discussion	10	What a great activity for students. I was inspired by the thoughtful discussion at my table.

Other examples of responses:

- I learned a lot more about food insecurity and now I am even more motivated to make a difference!
- Thought provoking.
- I would describe the workshop as an interactive way to see food insecurity.

for one person, which was labeled a wealthy or abundant meal. Twenty percent received a meal with balanced nutrition and adequate food, designed to represent the middle class. Twenty-one percent received a sustainable meal, which was made with sustainable ingredients that have a lower impact on earth’s resources. Finally, 48% reported receiving a food insecure meal of a single bag of potato chips. Not only did this meal contain inadequate calories, it also offered very little nutritional value. The meal distribution created an opportunity to more clearly see how many people are impacted by food insecurity.

During the mini-presentations in the first part of the workshop, the workshop leaders observed their assigned tables during the individual reflection and group discussion breaks. Participants were first asked to focus on and write down their emotions and then to write down their thoughts and ideas. This provided each participant with an opportunity to reflect on what they were feeling and then respond to the question individually before discussing as a group. Workshop leaders compared observation notes and found that at most tables, the vast majority of participants engaged once group discussions began.

The workshop leaders observed the participants at their assigned tables as they opened their meals. The workshop leaders noted and recorded reactions of individuals and also observed behavior and interactions of participants at each table. After the workshop, the leaders compared their notes and identified key themes across their observations. Most participants expressed surprise, as they expected standard conference fare, and did not anticipate the meals were part of the workshop. Many conveyed clear disappointment, particularly those who received the food insecure meal, as they worried they were going to leave the workshop hungry. Others were upset or angry because they had food allergies

TABLE 8.3 Summary of responses to “Please explain how you felt during the workshop. What emotions did you experience?”

Theme	Percentage ^a	Notes
Frustrated	25	Includes annoyed
Hope	22	Includes optimistic
Empowered	14	Includes encouraged, energized, helpful, creative, unity
Inspired	14	
Despair	10	
Sad	9	Includes upset
Motivated	8	Includes curious
Anger	8	
Guilty	8	Includes shame
Confused	6	
Nervous	5	
Happy/joy	5	
Excited	5	
Empathic	5	
Disappointed	5	Includes discouraged, helpless, overwhelmed, powerless, raw
Other	19	For example, equal, included, grateful, hungry, mixed, satisfied, understood

^aNote that the percentages add up to more than 100% because survey respondents could report multiple emotions.

Examples of responses:

- I was disappointed when I was handed chips and others received more. I felt that I can empathize with people who have to be food insecure every day.
- At first, thinking was more negative, but as the workshop continued, it turned positive.
- I envied the person who received two sandwiches, chips, and two cookies.
- Empowered by my peers at the table.

or intolerances or other dietary restrictions that did not align with their meal. Interestingly, many of those who received the abundant or wealthy meal appeared to be embarrassed or ashamed to have received so much food when others had so little. Clearly, many of the participants experienced discomfort during this part of the experience.

The workshop leaders continued to observe behavior at the tables as participants ate their meals. Reactions ranged from nervous laughter to anger at the inequality of the meals to shock or disbelief that some received so little food. One peculiar result was the different outcomes at different tables. At some of the tables, everyone put all the food in the middle and shared it among the members of the group. At other tables, participants did not share, potentially because they felt it was “breaking the rules” or were unsure if it was “okay” or acceptable to share food with others. (Note that the workshop leaders intentionally did not establish or imply any rules about the meals.) The workshop leaders noticed that those at the tables where food was shared became much more relaxed and

TABLE 8.4 Summary of responses to “Did anything about the workshop surprise you? Please explain.

Theme	Percentage	Example quote
The lunches	36	The different lunches, making us feel what some students go through daily.
Team member reactions	17	The people at our table did not eat and wanted to share.
Process	16	I was surprised about what the design thinking process was, I come from an engineering background which explains the design process but was a different application of that.
Ideas generated	14	The diversity of proposed solutions.
Information provided	10	The amount of food insecurity on American campuses!
Other	6	Talking to other students and understanding their level of knowledge was surprising because it was a great spectrum of perspectives.

Other examples of responses:

- The passion and empathy, and clear talent of the people around me.
- The different lunches. Randomness was a good experience on food insecurity.
- How successful the process was in changing feelings from beginning to end. Many of us started with feelings of being overwhelmed or frustrated and were hopeful by the end.
- The amount of new ideas achievable.
- The meal interactive portion because it felt real and a simulation of what people are really feeling.

TABLE 8.5 Summary of responses to “Describe the most important insight you took away from your experience today.

Theme	Percentage	Example quote
Collaboration is key to resolution	36	Community is key. Interdisciplinary work is essential.
Learned from experience	22	I learned more about how prevalent the issue of food insecurity is and how solutions can be implemented on campus.
Resolution is possible	12	There is a universal understanding and desire for food insecurity solutions among young people.
What others are doing	12	How to make impact and new ideas to implement with my university food program.
Empathy is important	10	You have to experience in order to truly feel and understand.
Ideas generated	9	There is much more than I can be doing.

Other examples of responses:

- The most important insight I will take away is that we can make a change. Thank you!
- Food insecurity is unfair and unjust, and we can solve it.
- Food insecurity is not just having any food but also not having enough healthy foods.
- Feelings are so valuable in development! Process we use to come up with ideas is not to be overlooked.

comfortable compared with those where food was not shared. The participants at the tables that did not share continued to exhibit uneasy behaviors, with some appearing nervous or ashamed, and there was much less conversation and laughing at those tables as well. This was consistent across the observations by the four workshop leaders.

A post-workshop survey asked participants about the impact of the experience. (Note that the survey instrument is available in the [Appendix](#) and the survey results are included in [Tables 8.1–8.5](#)). Prior to the workshop, 55% reported that they understood food security very well and 38% understood it somewhat. Despite the significant level of prior knowledge, 43% responded that the workshop helped them to understand food sustainability issues a great deal, and an additional 40% said that it helped somewhat. Therefore, more than 80% of participants reported that the workshop improved their understanding of food insecurity and sustainability. Along similar lines, 53% said that the workshop helped them a great deal in identifying new opportunities to address food security, and another 33% said it helped somewhat, meaning more than 85% left with a new opportunity they could pursue.

The survey also included four open-ended questions. The first asked how participants would describe the experience. The two most common responses were: an educational experience (29%) and an interactive or collaborative experience (22%). One participant responded: “An innovative way to bridge students and professionals and share ideas in an equitable way.” The second question asked about the emotions participants experienced. Twenty-five percent cited frustration and 22% responded hope, but note that participants could provide more than one response. The range of responses are provided in [Table 8.3](#). One participant stated: “I felt that I can empathize with people who have to be food insecure every day.” Next, participants were asked what surprised them the most about the experience and the most common response was the lunches (36%). Three other common responses included: team member reactions (17%), the process (16%), and ideas generated (14%). One respondent was an engineering student who was surprised by the design thinking process as it was different than his or her experience of the design process in engineering. Another participant talked about the change in emotions from at different points: “Many of us started with feelings of being overwhelmed or frustrated and were hopeful by the end.” Finally, the survey asked about insights from the experience. The most common response was that collaboration is critical to addressing food sustainability, reported by 36%. Twenty-two percent reported that they learned from the experience. One participant discussed the importance of empathy by experiencing emotions that helped him or her to better understand food insecurity. Another reported that the most important takeaway was “that we can make a change.”

Discussion and reflections

First, the authors will revisit the research questions posed at the beginning of the chapter. Then they will share additional insights from the workshop observations and survey.

How does participation in an experiential learning activity impact the participant’s understanding of the complex concept of food sustainability?

In the survey after the workshop, more than 90% of the participants reported that they understood food systems very well or somewhat. This was not surprising given participants opted to attend the PUSH or UFWH events and therefore likely had a vested interest in addressing world hunger. Even though so many came with prior knowledge, more than 80% of participants responded that the workshop helped them to understand food sustainability issues a great deal or somewhat.

The experience of receiving a nutritionally unbalanced meal—or observing someone else receive one—made an impact on the participants. It required them to reevaluate what it really meant that approximately 50% of the world population is food insecure. Seeing the number of nutritionally inadequate lunches made the statistic much more real and accessible, thus encouraging participants to challenge their assumptions and revise or replace their current mental schemas about food sustainability. The boxed lunches also demonstrated that nutritionally unbalanced meals are just one aspect of food sustainability, as food may be accessible and affordable but not healthy and nutritious.

Another aspect of the experience that caused participants to critically reassess their assumptions was having limited choice in what they received. While they were able to pick their own boxed lunch, they did not know what was inside, and some expressed disappointment or anger that their food intolerances or dietary restrictions did not allow them to enjoy the meal they selected. The experience mimicked what those who face food insecurity may face every day, especially for those who also deal with diseases such as diabetes or special diets such as vegetarianism. The lack of choice represented an aspect of food choices that may not have occurred even to those who are well acquainted with the concept.

How does participation in an experiential learning activity impact the participant's motivation and perceived ability to address a complex societal problem?

The structure of the workshop created an occurrence where participants experienced unequal food distribution, something they may not have truly experienced in the past. Most of the participants likely came from universities or colleges where they have a dining hall and have access to many choices and adequate nutrition. While a brief encounter, experiencing the unequal distribution resulted in a memorable experience that motivated them to address the problem of food sustainability.

The emphasis on emotions and how participants were feeling positioned them to experience empathy for those who are food insecure. Several complained that it was unfair that they received less food or just a bag of potato chips, but they then recognized that those who suffer from the consequences of malnutrition and food insecurity rarely make that choice directly. Empathy is fundamental to bring about an understanding of food sustainability that is holistic and effective (Massari, Allievi, et al., 2021) and may need to be activated through specific educational activities such as this one.

Once the shock of the lunches had resided, the workshop leaders asked participants to think about potential solutions or actions they could take to address food sustainability issues. The workshop leaders encouraged participants to share successful initiatives or programs from their home universities or communities, thus fostering conversations about smaller-scale solutions. The intent of the focus on smaller-scale actions was to reduce the feeling of inadequacy when a complex problem seems completely overwhelming. By initially discussing

smaller steps that could be taken, participants believed that they had the capacity to make a difference at some level, even if it was local or centered on their home institution. The perception that they could make any impact could lead to larger-scale solutions in the future.

Additional insights

The workshop leaders observed that the discussions about solutions and actions certainly resulted in more animated and hopeful tones and conversations compared with the frustration and negative emotions that were more prevalent in the first part of the workshop and immediately after the lunch distribution. This mirrored the comments in the survey from many participants that their initial emotions were negative (frustration, despair, overwhelmed) but by the end of the workshop they felt much more positive (hope, inspired, empowered).

The workshop was structured to support this transition from negative to positive. The first part of the workshop focused on the stark reality of food sustainability, including statistics and numbers. Then the lunches simulated the distribution of wealth and food systems in the world, making it very clear that food sustainability is a widespread issue. The situation encouraged participants to feel empathy, motivating and priming them to think about what concrete actions they could take to address it. As a result, they left with one or more ideas that they could implement quickly in their own communities or at their institutions back home.

The design thinking process proved to be uncomfortable for some during the workshop. Many people are uncomfortable with the ambiguous and unstructured nature of the experience. Several reported feeling frustrated and uncertain of the purpose of the workshop during the earlier stages, which was likely amplified by the fact that they were working with several others they did not know. However, such discomfort can increase the likelihood that individuals may truly reassess their assumptions and/or existing conceptual frames.

The workshop leaders anticipated that there would be some frustration and discomfort early in the process and were prepared to encourage participants to work through it, including ensuring everyone that they would be fed before they left. Transformational learning experiences require more effort and investment of resources than traditional and informative learning, but often create a lasting impact of a higher magnitude. The survey responses supported past research in demonstrating that participants did learn from the experience and that they would likely leave with action steps they were ready to implement.

Conclusions

As presented above, traditional media and social media have contradictory messages and forces moving them, making them insufficient to provide young people to form an informed opinion about food sustainability issues and to act upon them. The current formal education (food studies related curricula and food education in general) is also facing some issues in this sense, lacking the adequate spaces, funds, and culture to include (food) sustainability in the curricula and practices of the courses and the campuses.

New forms of information and education are needed in order to enable young people to experience food sustainability issues, such as sustainable development goals and food insecurity, firsthand, so to enable empathic mechanisms, which in turn result in proactive approaches to tackle the current challenges of our food system.

The workshop in this research study provides an example of how experiential learning can be used in generating transformational learning outcomes. Design thinking represents one instance of experiential learning that educators can use to engage students and to help them to understand and integrate what they experience into their existing knowledge or meaning. As a result, experiential learning helps people to continue to move forward on the path to autonomous learning.

In this case, the workshop effectively engaged participants and helped even those who were already knowledgeable about food habits and systems to enhance their understanding and to generate new opportunities to address the issue. Not only did participants learn about what others were doing and think about how they could implement new ideas or programs on their own campuses, they also left feeling empowered and at least partly responsible for taking action. And the majority of them appeared to be excited about going back home and trying new things.

Though many of the participants started the experience feeling frustrated and uncomfortable, the majority of them left with an improved understanding of a complex issue and a new set of resources and tools to address food sustainability in their local communities. The structure of the experience encouraged empathy and engagement in the design thinking process. “A defining condition of being human is that we have to understand the meaning of our experience” (Mezirow, 1997, p. 5).

Finally, this chapter can provide some suggestions for the use of social media to educate people on food sustainability and to foster the agency of young adults around these issues. Through social media, people can create new conversations, ask and answer questions, and discover new possibilities to help refine their solutions. If food and sustainability education aims to teach students how to think and act in a sustainable manner, then the design thinking process is undoubtedly an important part for resetting and creating a new information experience in this field.

Incorporating social media in food and sustainability education could allow more collaboration and conversation, for the development of empathy and stronger leadership skills in individuals.

As part of the process of “learning how to think,” the concept of design thinking has been gaining traction in classrooms, from primary education through college and beyond. The concept of design thinking is illusorily simple: there is a problem and potential solutions are identified, a prototype solution is created, and then refined based on feedback. However, the idea behind this type of thinking in education is not only to encourage creativity and find new ways to approach challenges, but instead to encourage transdisciplinary and system thinking and more collaborative in-depth research among students. Along these lines, the dissemination of information on food sustainability to young people should be made more accessible (also through the use of social media), using an approachable, understandable, and accessible language, which can give them the opportunity to both discuss together and broaden their knowledge and then move from theory to practical actions.

Another key aspect of design thinking is the concept of empathy. As shown in the example presented in this chapter, the process of design thinking requires problem-solvers to consider the end users of their solutions throughout the entire process. Rather than focusing on problem-solving for its own sake, design thinking instead focuses on people who need solutions and keeps their needs and desires in the forefront of the design process. As described in the case of the workshop analyzed here, design thinking encouraged participants to learn to listen to others and fully understand their needs to design solutions that truly work for them and the planet. As highlighted also in the EOE model (Massari, Allievi, et al., 2021), which presents a three-level empathy process (empathy toward yourself, others, and the environment), media should account for these three different levels to improve the activation of empathic mechanisms in their audience. This approach would ensure the shift toward a more systemic approach to sustainability issues.

Appendix

Survey instrument

A written survey was distributed to conference attendees with the consent form (two copies) attached to the first page.

- Age (options: 18–24; 25–30; 30–55; 55+)
- Gender (options: Male; Female; Other)
- Profession/affiliation (options: Higher education professional; Other professional; Student; Other/please specify)
- How well did you understand the issue of food insecurity before today’s workshop? (options: Very well; Somewhat; Not much; Not at all)
- What meal did you receive at the workshop? (options: meal descriptions)
- How did your meal compare with the meals of others? (options/check all that apply: Less food; more food; healthier food; more sustainable food; other/please specify)
- Did the workshop help you to better understand issues related to food insecurity? (options: A great deal; Somewhat; Not much; Not at all)
- Did the workshop help you to identify new opportunities to address food insecurity? (options: A great deal; Somewhat; Not much; Not at all)
- Please provide your thoughts on your workshop experience. How would you describe it to someone else? (open response)
- Please explain how you felt during the workshop. What emotions did you experience? (open response)
- Did anything about the workshop surprise you? Please explain. (open response)
- Describe the most important insight you took away from your experience today. (open response).

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