

## COMMENTARY

# Engaging young audiences: A reflective commentary on food safety outreach to school-aged children

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## Introduction

Science outreach plays a pivotal role in fostering understanding of scientific concepts, enhancing community engagement, and inspiring the next generation of scientists. This engagement with the public is significant for land-grant universities, which were established with the mission to enhance agriculture education and research and to ensure that knowledge is accessible to the public (Mcdowell, 2003). Included in the mission is a dedicated effort aimed at younger audiences, including elementary, middle, and high school students. Such engagements are valuable at stimulating early interest in science. There is evidence that engaging students with hand-on scientific exploration and inquiry enhances their understanding and fosters a positive attitude toward science (Clark et al., 2016; Ecklund et al., 2012). Career fairs, specifically, can serve as valuable platforms for such out-

reach, particularly with bridging the persistent gap between academia and public understanding. They can help to inform, engage, and inspire students and encourage them to explore various career paths, including agriculture and food science. Young people consume food without fully appreciating the intricate components of the food system, which encompasses agricultural production, harvesting, processing, distribution, and retail. This system is highly interconnected and complex, involving multiple stakeholders such as farmers, processors, distributors, retailers, and consumers.

Food safety is one critical aspect of the complex food system; an effective food safety program can prevent widespread outbreaks of illness and protect public health. Therefore, outreach initiatives focused on food microbiology and food safety among a younger audience promote not only public health but also consumer confidence in the food they are eating. For example, educating kindergarten through eighth graders (K-8) students on the role of microbes can lead to better food handling and hygiene practices at home, effectively nurturing a more informed next generation of con-

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sumers (Macbeth et al., 2021). More importantly, it can create a ripple effect where children may educate their families and peers, enhancing community engagement in food safety issues.

I am an extension faculty in the Department of Food Science at Cornell AgriTech in Geneva, New York. My primary responsibilities at the Cornell Microbial Food Safety, Quality and Outreach Program are to support food businesses with microbiological testing and technical expertise to improve food safety and quality. This work keeps me deeply rooted in science and applied research aligning closely with the land-grant mission of translating academic research into practical solutions. In recent months, I've experienced a significant increase in requests to participate in outreach efforts in my local community of Geneva. While these invitations were initially unexpected, they have proven to be rewarding by reaffirming the essential role that extension specialists play in fostering science literacy and community engagement beyond the university walls. Engaging with a younger audience has not only deepened my appreciation for the land-grant mission but also has highlighted the unique positions that scientists hold in inspiring the next generation and building trust in science.

In this reflection, I share three unique outreach activities in the Geneva School District and offer lessons learned through these efforts, with the goal of guiding other scientists and extension agents who are interested in community engagement and may not be sure where to begin.

### 1. Introducing Food Safety to Elementary Students at a Career Fair Engagement

As part of my outreach efforts, I participated in the Geneva North Street Elementary career fair, where I interacted with third- to fifth-grade students. The event provided an opportunity to introduce foundational concepts in food safety and microbiology to a young and inquisitive audience. To facilitate learning, I prepared a variety of interactive and visual materials:

- **Fermentation demonstration:** A poster board illustrated a simple experiment comparing the metabolic activity of baker's yeast when

exposed to different sugar sources (e.g., sucrose vs. artificial sweeteners). The poster highlighting microbial metabolism and fermentation.

- **“Safe or Not Safe?” game:** A custom-designed activity presenting real-life food safety scenarios. Students were asked to evaluate behaviors such as handwashing, cross-contamination, and the use of food thermometers. This interactive game fostered critical thinking about hygiene and foodborne illness prevention.
- **Microscopy station:** Prepared petri dish samples were made available for viewing under a microscope, allowing students to observe microbial colonies and appreciate the hidden world of microbes.
- **Microbe word search:** A vocabulary-based activity featuring fermented foods (e.g., kimchi, yogurt, bread, wine) aimed at reinforcing the concept of beneficial microbes.
- **Career information sheet:** A handout titled “What is a Food Microbiologist?” outlined the educational pathways, core competencies, and typical responsibilities associated with the profession.

### *Reflections and Lessons Learned*

- **Focus enhances engagement:** While I arrived with a broad array of materials, I found that elementary students responded best to one or two well-structured, hands-on activities. Overloading the session with content reduced the opportunity for deeper engagement.
- **Interactivity drives learning:** The “Safe or Not Safe?” game was particularly effective. Its relatable scenarios encouraged participation and helped students connect food safety principles to their daily routines. However, time constraints limited the depth of discussion.
- **Visual aids and storytelling are powerful:** The fermentation poster and petri dish samples sparked curiosity and prompted thoughtful questions, underscoring the importance of visual and narrative elements in science communication.
- **Audience-appropriate content is crucial:** Some materials were too advanced for the target age group of 3<sup>rd</sup>-5<sup>th</sup> graders. Simplifying the lan-

guage and focusing on concrete examples would have improved their comprehension and engagement.

## 2. Inspiring High School Students Toward Science Careers

The second outreach initiative took place at Geneva High School, where I was invited by a food science teacher to speak with her students over breakfast. This session provided an opportunity to engage with older students who had a foundational interest in science. Drawing from my earlier outreach experience, I approached this visit with a more structured and audience-specific plan. I delivered a presentation titled “A Sneak Peek into the Life of a Food Microbiology Extension Associate,” designed to offer students a realistic perspective on the scope and impact of my work. To complement the presentation, I brought petri dishes displaying diverse microbial colonies. These visual aids served as a tactile and engaging component, helping students visualize microbial diversity and understand that not all microbes are harmful.

The presentation was organized into three thematic sections:

1. **Shelf-life evaluation:** I described how I assist food producers in determining product shelf life under various storage conditions, emphasizing the role of microbial stability in food quality and safety.
2. **Industry case study:** I shared a real-world example involving a local juice manufacturer facing spoilage issues. The case illustrated how applied microbiological testing, troubleshooting, and technical consultation resolved their production challenges.
3. **Research integration:** I highlighted ongoing research projects in our lab, demonstrating how extension professionals serve as a bridge between academic research and industry applications.

### *Reflections and Lessons Learned*

- **Audience engagement varies by age group:** Despite careful preparation, student engagement was limited. Of the 30 students present,

only a small subset actively participated. This highlighted the need for more dynamic or relatable content for high school audiences.

- **Timing influences attention:** The session occurred near the end of the academic year, a period often marked by reduced student focus. This likely contributed to the lower levels of attention and interaction.
- **Visuals and interactivity remain effective:** While the lecture-style format was less impactful, the petri dish demonstration and discussion on “beneficial vs. pathogenic” microbes generated interest and helped dispel common misconceptions.
- **Relatability enhances career messaging:** In retrospect, incorporating personal anecdotes from my own educational journey, particularly from high school and college, could have made the career pathway more tangible and relatable for students.

## 3. Tailoring Food Safety for Middle Schoolers

The third outreach event took place at the Geneva Middle School career fair, just days after my previous engagements. With two recent experiences to draw from, I approached this event with increased confidence and a more streamlined strategy. My goal was to deliver a clear, accessible message while simplifying the complexity of the content. To better align with the attention span and interests of middle-school students, I prepared a concise, one-page handout titled “What Does a Food Microbiologist Do?” The handout offered a brief overview of my daily responsibilities, such as testing food products, conducting research, and advising companies on food safety practices. It also mentioned the skills essential to the profession, including problem-solving, communication, attention to detail, and patience, and outlined a simplified educational pathway for students interested in pursuing a similar career. To complement the handout, I brought a small selection of petri dishes displaying diverse microbial colonies, which I had found to be consistently effective in sparking curiosity across age groups.

The career fair itself was lively and well-attended, featuring more than 20 booths

representing a wide range of professions. Many of these booths offered promotional giveaways like candy, snacks, and branded merchandise, which naturally drew students' attention. In contrast, my colleagues and I from Cornell AgriTech arrived without such items, which initially made it more challenging to attract students in an environment filled with sensory stimuli and competing distractions.

### *Reflections and Lessons Learned*

- **Sensory appeal drives initial engagement:** Middle school students were strongly drawn to booths offering tangible rewards. In the absence of giveaways, it was more challenging to compete for attention in a crowded and dynamic setting.
- **Active engagement is essential:** Rather than waiting for students to approach, I initiated conversations by making eye contact, greeting them by name, and introducing myself. This proactive approach significantly improved interaction.
- **Relatability opens doors:** Informal, spontaneous moments such as a student complimenting my outfit provided opportunities to build rapport and transition into meaningful discussions about science and careers.
- **Depth over volume:** Although I interacted with fewer students compared to more visually or materially appealing booths, the conversations I had were substantive. Several students asked insightful questions, suggesting that even brief interactions can have valuable educational impact when approached with intention.

### **References**

- Clark, G., Russell, J., Enyeart, P., Gracia, B., Wessel, A., Jarmoskaite, I., Polioudakis, D., Stuart, Y., Gonzalez, T., MacKrell, A., Rodenbusch, S., Stovall, G. M., Beckham, J. T., Montgomery, M., Tasneem, T., Jones, J., Simmons, S., & Roux, S. J. (2016). Science educational outreach programs that benefit students and scientists. *PLoS Biology*, 14(2), Article e1002368. <https://doi.org/10.1371/journal.pbio.1002368>
- Ecklund, E. H., James, S. A., & Lincoln, A. E. (2012). How academic biologists and physicists view science outreach. *PLoS ONE*, 7(5), Article e36240. <https://doi.org/10.1371/journal.pone.0036240>
- Macbeth, A. J., Zurier, H. S., Atkins, E., Nugen, S. R., & Goddard, J. M. (2021). Engaged food science: Connecting K-8 learners to food science while engaging graduate students in science communication. *Journal of Food Science Education*, 20(1), 31–47. <https://doi.org/10.1111/1541-4329.12215>
- McDowell, G. R. (2003). Engaged universities: Lessons from the land-grant universities and extension. *The ANNALS of the American Academy of Political and Social Science*, 585(1), 31–50. <https://doi.org/10.1177/0002716202238565>

### **Conclusion**

These three outreach experiences spanning elementary, middle, and high school audiences offered valuable insights into the diverse ways scientific engagement can be tailored to different developmental stages. While each setting presented unique challenges, collectively they reaffirmed the importance of clear communication, adaptability, and personal connection in science outreach. For an extension faculty member at a land-grant institution, these efforts reflect a core part of its mission: to make science accessible, relevant, and inspiring to the communities we serve. By incorporating elements of the food system like food safety and food product distribution into outreach activities, students were introduced to the complex system that brings safe food from farm to table. Whether through hands-on demonstrations, career conversations, or spontaneous moments of curiosity, these interactions not only fostered scientific interest among students but also deepened my own understanding of how impactful and rewarding public engagement can be. Moving forward, I hope these reflections encourage other scientists to embrace outreach as a meaningful extension of their work. All the outreach materials developed for these programs are freely available upon request.

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