

Using an Educational Graphic Novel Series to Supplement a Project-based, Food and Nutritional
Safety Secondary School Curriculum

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Introduction

The Food and Nutrition Science (FNS) curriculum was created in conjunction with the Shiga Toxin-producing *E. coli* Coordinated Agricultural Project (STEC CAP) grant. As the goal of the STEC CAP grant was to decrease the occurrence of foodborne illness resulting from Shiga toxin-producing *Escherichia coli*, the education and outreach component of the project used research done at higher education institutions to create project-based curriculum for secondary education students to learn about food and nutritional sciences. In an effort to increase public education, researchers developed a four-course curriculum intended for secondary education classrooms. Additionally, seeking to expand the reach of the curriculum and the impact it has on students' knowledge of food safety and science of *E. coli*, a three-part graphic novel series, entitled *Megaburgerz and the E. coli Outlaws*, was developed to enrich the FNS curriculum.

Graphic novels were chosen because they offer a variety of educational benefits. Capitalizing on storytelling and imagery, graphic novels are a multimodal way to introduce readers to new content (Boerman-Cornell, 2017; Schwarz, 2006), effectively sparking readers' interest which can be used to deepen disciplinary understanding (Boerman-Cornell, 2017; Schwarz, 2006; Short & Reeves, 2009). Additional benefits of graphic novels, suggested by Boerman-Cornell (2017) are as follows:

- Reinforce comprehension
- Present new content in a different format
- Illustrate difficult or abstract concepts
- Encourage close reading of text
- Foster critical thinking
- Negotiate multiple perspectives of thinking and practice (p. 40)

The goal of the FNS graphic novel series was to capitalize on the previously discussed educational benefits by bringing awareness of food safety and the dangers of foodborne illnesses, specifically *E. coli*, to high school students. Using characters and short stories to translate challenging scientific material into understandable and relatable concepts, the graphic novel series serves as an accompaniment to the curriculum, providing teachers with both informative reading materials for students and an intriguing way to build interest among students. The idea was generated after reviewing other informative graphic novel series produced through the University of Nebraska, such as *World of Viruses* (World of Viruses-University of Nebraska Press, n.d.).

Methods

The development process for the graphic novel series included gathering all scientific materials and ideas for relatable short story lesson plans. The next phase was to identify a graphic firm with the ability to write and illustrate the curriculum needs. Many firms were considered, but a graphic novel business with science-based, graphic novel experience was chosen in order to accurately relate underlying scientific principles to the story arc.

Once a firm was chosen, the curriculum and story writing processes began. To aid writers, scientific resources related to *E. coli* and food safety were compiled and submitted to the firm. Following writer familiarization to *E. coli*, the process proceeded with story development and revision, illustration, coloring, and finally, lettering (i.e., the written story in the novels). At each stage of the graphic novel development, the story, pictures, and lettering were all reviewed and factually verified by scientists involved with the STEC CAP grant and teacher-educators involved with the FNS curriculum development and testing.

Distribution and Results

The three-part graphic novel series *Megaburgerz and the E. coli Outlaws* was completed in Fall of 2017. The graphic novel series includes 60 pages of content with a story detailing the experiences of two teenagers beginning work at a fast-food restaurant. Through the two teenagers' experiences, the reader is introduced to *E. coli* and the importance of simple food safety procedures, such as Clean, Separate, Cook, and Chill (USDA). The graphic novel series is a free resource and is available for download from the FNS curriculum webpage (www.ksu.edu/FNS). Additionally, for each book in the three-part series one-thousand copies were printed, and those prints were allocated to approximately 70 teachers who previously partnered with the STEC CAP FNS curriculum.

Significance

This project meets one of the STEC CAP grant project's overall goals of creating a curriculum for educating the public and students on the dangers of foodborne illnesses. Additionally, it engages high school students in understanding scientific terms and lessons by allowing them to read creative and engaging short stories. By providing multimodal enrichment of food safety and foodborne illness curriculum, the series helps students understand the key points in preventing illness and allows them to use this knowledge in their own lives just by following along with the characters in the novels.

Advice to Others

If seeking to create a graphic novel series, several steps can be taken to ensure timely, quality production. First, gather resources relating to the main idea of the proposed graphic novel. Graphic novel firms may not be familiar with the chosen concept, but easy-to-find resources enable the story developer to become acquainted quickly. Second, research the firms available for such production and seek guidance from places with experience creating these materials helps, such as the University of Nebraska Press. Third, designate one person to take the lead and coordinate with the graphic novel firm to allow for more efficient reviews and editing of content and overall project communications.

Costs

The 60-page *Megaburgerz* series total cost for creation of a finalized, digital proof was approximately \$30,000. Total printing costs were \$4,770 for 1,000 copies of the three-part series, or approximately \$1.59 per copy of each issue.

References

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