

COLLEGE OF DESIGN

Summer Research Fellowship Proposal

Project Title: Extending the Life Cycle of Single-Use Food Packaging

Student Name:

Mentor Name:

Objective: How can food packaging be repurposed into functional products?

Background:

Currently, articles such as “Recycling and Management Practices of Plastic Packaging Waste Towards a Circular Economy in South Korea,” address repurposing waste, but mostly in a commercial sense, which is not an accessible option for the consumer (Jang et al.). The packaging must be shredded and melted in a commercial facility to be reused. Companies often treat what happens to packaging at the end of its life as an afterthought. Other than transporting the food product, it has no purpose afterwards and will likely end up in the landfill (Sæter et al.). While the issue stems from the entire distribution system of food and food products, repurposing packaging waste could reduce 6.6 million tons of CO₂eq per year (Jang et al.).

Previously, I started a mini-project that looked into single-use food packaging. The focus of that project shifted from redesigning packaging to creating a reusable product. For this project, I would like to revisit single-use food packaging and further explore how it can be repurposed when most people have already condemned it to the landfill.

Over my academic career, I have conducted multiple research projects in the computer science area involving topics such as virtual reality and game design. In addition to the independent projects, sponsored collaborations in studio have exposed me to the design process in a professional context. Currently, I am conducting research with Dr. Kristi Bartlett, so I am familiar with working in a research environment.

Methodology and Research Plan:

In the first two weeks, I will focus on identifying the types of packaging that exist in the food industry. This will entail visiting grocery stores and applying ethnographic research methods to document and identify packaging

materials. After identifying materials, I will shift to understanding more about each material's physical attributes to see which would be best suited for repurpose.

The next stage would be design development. During Week 4, I will begin ideation sketching for what the final product should look like. Taking a brief look at the types of packaging that are used currently, the final product should be a soft good, possibly in reference to a bag. Using Clo3D (a digital pattern making software), I will translate the ideation sketch to a functioning pattern before testing out the pattern physically. The testing process will include experimenting with different backing fabrics, seam allowances, and hardware choices as well as how the pattern fits together. After a few weeks of testing, I will then create the final pattern version and physical prototype from repurposed food packaging.

Week 1: Material Identification & Sourcing

Week 2: Initial Research (Literature Review) + First Hand Interviews (Ethnographic Methods)

Week 3: Material Testing + Secondary Research

Week 4: Ideation Sketching, and Material Testing

Week 5: Pattern Ideation, Making, Testing

Week 6: Pattern Ideation, Making, Testing

Week 7: Pattern Making, and Testing

Week 8: Finalize Pattern and Begin Final Product

Week 9: Finish Final Product

Week 10: Work on Written Report

Outcomes & Impact:

The final deliverables of this project include a digital pattern and a physical prototype of the soft good design. In addition to the product, I will write a paper to submit for publication.

Circular design thinking considers the entire life cycle of a product from sourcing to after the product has been used. It aims to minimize the negative impacts on the environment after its use. Food packaging, however, is usually made from plastic as it is cheap and easy to mass produce. While companies claim their packaging is recyclable, the reality is consumers often throw packaging directly into the landfill (Nemat et al.).

This project will address the end of life for food packaging and transform it into a product with a new purpose; therefore, setting a precedent for food packaging waste going forward.

I will share my findings through poster presentations at University of Kentucky-hosted conferences and externally through a written paper, submitted to a softgoods/textile/design publication.

Budget:

Clo 3D is a digital software that allows for pattern creation, editing, and simulation. It will be used to create the pattern for the final product. The sewing supplies include items such as zippers, hardware, and thread that will be used to test prototypes and assemble the final project. The backing fabric will be used to reinforce or line the bag material if needed, and the test fabric will be used to experiment with the patterns.

- Clo 3D (3 months subscription) - \$75
- Sewing Supplies - \$100
- Backing/ Test fabrics - \$75
- Hours (15 hours x 10 weeks) - \$2,250
 - Total Budget: \$2,500

Works Cited

- Jang, Yong-Chul, et al. "Recycling and management practices of plastic packaging waste towards a circular economy in South Korea." *Resources, Conservation and Recycling*, vol. 158, July 2020, p. 104798, <https://doi.org/10.1016/j.resconrec.2020.104798>.
- Nemat, Babak, et al. "The role of Food Packaging Design in consumer recycling behavior—a literature review." *Sustainability*, vol. 11, no. 16, 12 Aug. 2019, p. 4350, <https://doi.org/10.3390/su11164350>.
- Sæter, Frøydis, et al. "Reuse principle for primary packaging circularity in the food system." *Balancing Innovation and Operation*, 2020, <https://doi.org/10.35199/norddesign2020.3>.