Clothing Care Calculator: An Interactive Tool to Evaluate Environmental Impact

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1. Level	Pre-16, FE, UG, PG
2. Pre-requisite knowledge required by educators	A. No background knowledge required
3. Pre-requisite knowledge required by students	A. No background knowledge required
4. Number of students	Any number
5. Length of time required	10 to 30 minutes
6. Type of activity	Individual work, Group work, Interactive activities, Ideas for projects, assignments and briefs
7. Discipline	Design
8. Topics covered	Care and repair, Environment

OBJECTIVES / LEARNING OUTCOMES

- To introduce the care and maintenance stage of Life Cycle Analysis for clothing using an interactive tool.
- To evaluate the environmental costs of clothing care and maintenance, and apply the results in clothing design as a designer or in behavior choices as a consumer.

For a copy of the Clothing Care Calculator, please visit:
http://fashioninganethicalindustry.org/resources/teachingmaterials/carecalculator

THE CLOTHING CARE CALCULATOR

The Clothing Care Calculator is an interactive tool using Excel[1] and is available at www.fashioninganethicalindustry.org/teachingresources/calculator. It was developed by Dombek-Keith based on the Energy Star Calculator (www.energystar.gov) to calculate energy use of an individual's clothing care behavior and alternatives that would lower energy expended[2]. Its intent is to raise the awareness of designers, consumers and businesses to the major impact of everyday clothing care on the total energy use in a garment's lifecycle. It can be used as: 1) an assignment for students, or in the classroom as a tool to introduce Life Cycle Analysis and the clothing care stage; or 2) as the basis for a design problem, reflecting the importance of considering the clothing care stage of the lifecycle of a garment in the design process.

LEARNING ACTIVITY

We have used the Clothing Care Calculator in two settings. First, during the opening reception for an exhibit of Dombek-Keith's master's thesis designs, Re-Fashioning the Future: Eco-friendly Apparel Design; and then in a web-based course offered by Loker, Re-Designing "Green" Apparel, through Cornell University, the University of Delaware, and Colorado State University. In both settings, the Clothing Calculator was presented as a self-directed activity with instructions embedded in the tool. As such, there was little specific discussion about applying the results to the clothing design process or to change consumer behavior. Below, we outline a possible approach to engage students in the Life Cycle Analysis process for clothing, and particularly the significant impact of the care and maintenance stage of clothing in considering environmental costs. Both would begin by assigning students the readings about Life Cycle Analysis of clothing completed by Patagonia and other organizations, and trying out the Clothing Care Calculator.

THE DESIGN PROBLEM

Design an article of clothing that limits the amount of energy in the care and maintenance life stage and/or leads to changed consumer care and maintenance of clothing.

1. Consider specific care activities that have high energy use, such as hot water, small loads, adjusting water levels to load size, type of washing and drying machines, air drying, criteria for and frequency of washing garments, dry cleaning, steaming, and other alternatives.
2. Brainstorm approaches to clothing design that:

a) increase awareness of environmental costs in clothing care and maintenance;
b) limit environmental costs in clothing care and maintenance,
c) provide several ways to approach clothing care and maintenance that are easy and flexible to provide consumer choice; and
d) embrace current trends of style and consumer behavior, including environmental consciousness.

3. Select several design approaches as a class that meet these criteria. Students can select from these or others that emerge for their design concept and begin generating design ideas.
4. Critique of initial design ideas.
5. Selection of final designs for execution and final critique.

[1] The Calculator was designed with macros that, while not essential, make it easier for the user to navigate through the file and to reset the file to its original look. The macros are harmless but may trigger a security warning pop box when opening. If the pop box shows up when opening and asks if you want to enable macros, then enable them. If the pop box won't allow you to open the files because of the macros, then you need to lower your security level in Excel to "Medium" by following the instructions given (depending on which version of Excel you are using, this can usually be done by selecting the Tools menu option and then Macro and Security).

[2] The Calculator has been created with a US audience in mind. The authors give permission for the Calculator to be amended to other currencies.

LIFECYCLE ANALYSIS READINGS

Brown, M.S. and Wilmanns, E. (1997) 'Quick and dirty environmental analyses for garments: What do we need to know?', *Journal of Sustainable Product Design*, 1(1), 28-34

Patagonia's Footprint Chronicles Tool www.patagonia.com/web/us/footprint/index.jsp

Patagonia's Methodology for Environmental Cost Calculations www.patagonia.com/pdf/en_US/method_for_cost5.pdf

Walsh, J. A. H. and Brown, M. S. (1995) 'Pricing environmental impacts: a tale of two t–shirts', *Illahee* 11:3&4, 175-187

Allwood, J. M., Laursen, S. E., de Rodriguez, C. M. and Bocken, N. M. P. (2006) *Well dressed? Report on the present and future sustainability of clothing and textiles in the United Kingdom*. Cambridge, Great Britain: University of Cambridge, Institute for Manufacturing

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