Development and Trial of a Usability Testing Protocol for Biomass Cookstoves: An Interdisciplinary Approach

By Nicholas Moses
Candidate for Master of Science in Mechanical Engineering and Applied Anthropology
Major Professor: Dr. Nordica MacCarty & Dr. Shaozheng Zhang

Abstract

Engineers and designers tend to focus on the technical attributes of cookstove designs, such as improved fuel and combustion efficiency, but neglect aspects that are important to cooks, such as usability. If a stove design does not meet a cook’s needs and preferences, however, the stove will likely be used only as a supplement to an existing stove, or not used at all, and will fall short in addressing the human health and environmental issues caused by inefficient, traditional biomass cooking methods. A testing protocol for cookstove usability was developed by the authors to help designers and implementers evaluate user needs more effectively. The proposed protocol is based on established usability practices from product and software design, and uses anthropological testing methods to increase validity in cross-cultural testing applications, where the test administrator and stove user come from different backgrounds.

Preliminary validation and refinement of the protocol was accomplished through studies in Northern Uganda and on a sample of common stoves models at the Aprovecho Research Center in the United States. Through the field testing process and feedback from local expert test administrators in Uganda, these trials demonstrated that the protocol is a viable tool for increasing the understanding of cookstove usability, as well as identified opportunities for additional research to validate, expand, and improve the protocol. The methods used by the protocol also elicited attitudes towards improved cookstoves and the relative importance of reducing air pollution and fuel use in the larger context of cooks’ lives. This information may be invaluable for better understanding the stove stacking and low adoption rates experienced by many cookstove projects. The interdisciplinary approach used may also be replicated in other work to increase the accessibility of user input in international development more broadly.

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School of Mechanical, Industrial and Manufacturing Engineering

Oregon State University