

Susan Wyche, Ph.D.

Portfolio

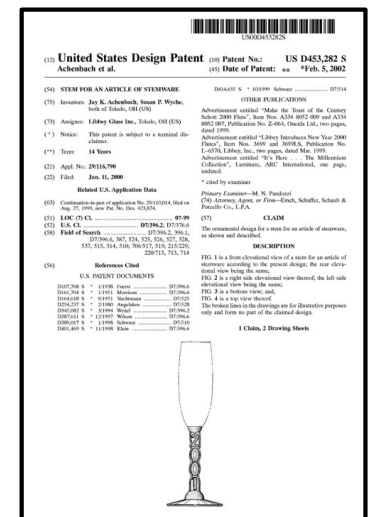
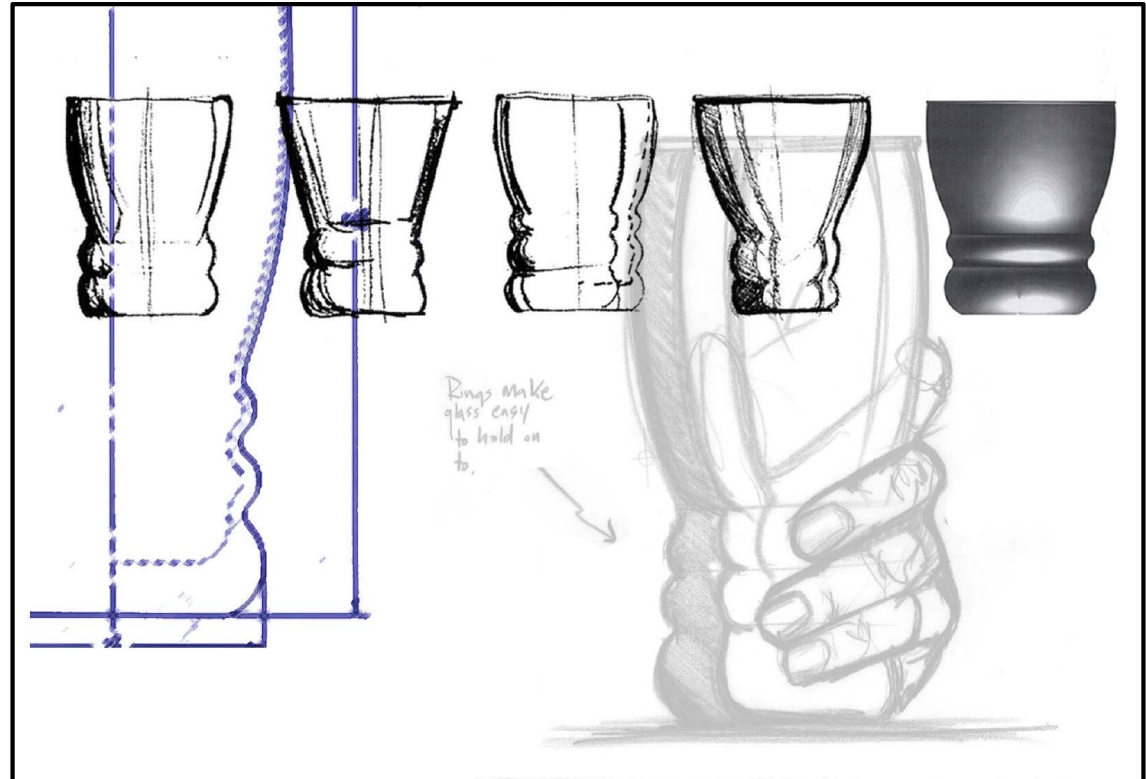
Commercially Available Glassware (1998-2000)

Prior to graduate school, I worked as a professional designer at Libbey LLC, in Toledo, Ohio. I designed glasses that are sold in stores and are used in restaurants around the world. I was awarded 12 design patents for this work.

For more information:

Google Patents:

<https://patents.google.com/?inventor=susan+wyche>



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Sun Dial (2008-2010)

I developed a cell phone application called Sun Dial. This app. prompts Muslims to their five daily prayer times. Sun Dial was available for download at Apple's 'App Store'; it has been downloaded more than 400 times.

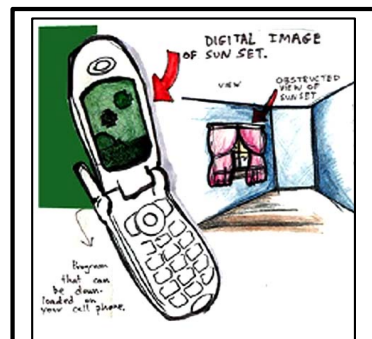
For more information:

Wyche, S. P., Caine, K. E., Davison, B., Arteaga, M., & Grinter, R. E. (2008). Sun dial: exploring techno-spiritual design through a mobile Islamic call to prayer application. In *CHI'08 extended abstracts on Human factors in computing systems* (pp. 3411-3416).

Wyche, S. P., Caine, K. E., Davison, B. K., Patel, S. N., Arteaga, M., & Grinter, R. E. (2009, April). Sacred imagery in techno-spiritual design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 55-58).

(video link):

<https://www.youtube.com/watch?v=DeBZhoTg--I>



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Sensor-Based Probes Technologies for African Households (2017-2021)

I have collaborated with Dr. Hope Chidziwisano (Carnegie Mellon University) to design and evaluate these prototype sensor-based systems: “M-Kulinda”, which uses sensors to monitor domestic security (top); “GridAlert”, which checks for power outages (bottom left); and “NkhukuProbe” which tracks poultry (bottom right). We have deployed these systems in 50+ households in Kenya and Malawi, to explore how sensors can support domestic activities.

For more information:

Chidziwisano, G. H., & **Wyche, S.** (2018, April). M-Kulinda: Using a sensor-based technology probe to explore domestic security in rural Kenya. In *CHI’18*.

Chidziwisano, G. H., **Wyche, S.**, & Oduor, E. (2020). GridAlert: Using a Sensor-Based Technology to Monitor Power Blackouts in Kenyan Homes. In *CHI’20*.

Chidziwisano, G., Mariakakis, A., **Wyche, S.**, Mafeni, V., & Gideon Banda, E. (2021).

NkhukuProbe: Using a Sensor-Based Technology Probe to Support Poultry Farming Activities in Malawi. In *ACM SIGCAS Conference on Computing and Sustainable Societies*.



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Jembe Njema (Swahili for “better tools”)(2018-present)

My other design efforts include a MSU-funded collaboration with Rural Outreach Africa (a Kenyan NGO), and “jua kali” (craftsmen) to redesign tools for farmers and manufacture new ones. A human-centered approach guides this project. Our research has included seven design workshops held with farmer groups in Western Kenya. During these events we asked farmers to draw new tools. The jua kali used these drawings to guide the development of prototype hand tools. We have evaluated these prototypes with 19 groups of farmers (233 farmers). Our evaluation suggests that our use of human-centered design resulted in new tools that were an improvement over farmers’ existing ones, especially our redesigned hand hoe for weeding.

For more information:

Wyche, S., Olson, J., & Karanu, M. N. (2019). Redesigning agricultural hand tools in Western Kenya: Considering human-centered design in ICTD. *Information Technologies & International Development*, 15, 16.

(video link): “New Tools for African Farmers: Human Centered Design,”

<https://www.youtube.com/watch?v=-HYEUIAuQpU&feature=youtu.be>



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Simu-Shape Up Videos

Video has been successfully used in agricultural training programs, but there have been no efforts to use the medium to improve device literacy.

To explore this, I asked rural women farmers what information they would like to see in the videos, and then developed a series of clips, with support from USAID/DIV, and in collaboration with Nairobi-based Mediae (the production company behind “Shamba Shape Up,” (SSU) a popular Kenyan reality TV show about rural farm make-overs). The clips teach rural farmers how to perform operations on their mobile phones (i.e., send an SMS, delete messages, switch input modes, etc.) and also introduced them to the Internet and services, including Facebook and Google. The videos were incorporated into three episodes of “SSU”, which were aired nationally, and were viewed by an estimated 5 million viewers in Kenya and other East African countries.

For more information:

Wyche, Susan, et al. "Reflecting on video: Exploring the efficacy of video for teaching device literacy in rural Kenya." *Proceedings of the Eighth International Conference on Information and Communication Technologies and Development*. 2016.

(video link):

<https://www.youtube.com/watch?v=TIRyENivvZ0>



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Type 1 Diabetes (T1D) Diary for Kenyan Youth (2019-present)

I am currently working on an NIH-funded project titled, “Building Capacity in Human-Centered Design: Developing a Diabetes mHealth Application for and with Kenyan Adolescents.” The purpose of this grant is to teach designers at LakeHub (an innovation space in Kisumu) and public health practitioners affiliated with The Kenya Diabetes Management and Information Centre (DMI) to collaboratively develop an intervention application that will guide adolescents with type 1 diabetes (T1D) in managing the disease.

Our research has included two design workshops held with youth with T1D and their parents in Vihiga and Nairobi counties. During these events we asked youth to brainstorm ideas for artifacts that might support their T1D management. This diary is the outcome of these efforts. We are currently iterating on diary’s design and preparing to evaluate it in Spring 2023.

For more information:

<https://www.fic.nih.gov/Grants/Search/Pages/mhealth-r21tw011339.aspx>



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Design Workbook and Speculative Design (2018-present)

I use design methods in my research, including “design workbooks” and “speculative design.” I argue that these methods can address some of the limitations inherent in other design methods (i.e., interviews and workshops), by providing participants with different ways to participate in design processes and supporting different outcomes in design. I have found that these images prompt rich responses from participants about the contexts where the ideas would exist. These responses draw attention to the practical problems that might accompany the introduction of the ideas into their communities. Significantly, these responses also included critical feedback.

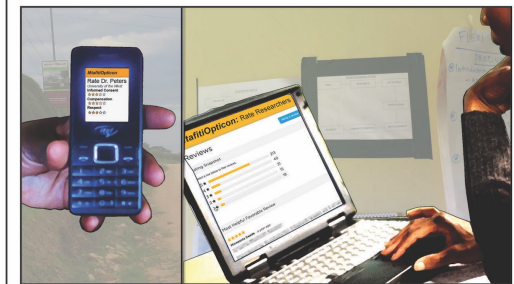
For more information:

Wyche, S. (2021, June). The Benefits of Using Design Workbooks with Speculative Design Proposals in Information Communication Technology for Development (ICTD). In *Designing Interactive Systems Conference 2021* (pp. 1861-1874).

Wyche, Susan. "Reimagining the Mobile Phone: Investigating Speculative Approaches to Design in Human-Computer Interaction for Development (HCI4D)." *Proceedings of the ACM on Human-Computer Interaction* 6.CSCW2 (2022): 1-27.



Maktaba ya umma yaliyofadhiliwa na Google katika miji midogo.



“MtafitiOpticon” inawezesha washiriki wa utafiti kutathmini mahusiano yao na watafiti.

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Teaching Human-Centered Design to Kenyan Computer Science Students

I have created and taught *Design for Social Development*, a studio-style course where students collaboratively developed technologies for populations in Sub-Saharan Africa. In summer 2019, I taught a version of this course to computer science students at Kenya's Jomo Kenyatta University of Agriculture and Technology (JKUAT). I recently received a gift (\$15,000) from Google Research to support teaching another iteration of this course at JKUAT in summer 2022.

For more information:

(video link): Teaching Human-Centered Design to Kenyan Computer Science Students,

<https://www.youtube.com/watch?v=bfEvAMMrJ3Q&t=1s>

