27. Usability

Emma J. Rose
University of Washington Tacoma

Definition and Background

Usability describes the quality of a system—whether it is information, communication, a product, or a service—and how easy that system is to use. Usability means that a system meets the expectations of users and it has value that users can see for themselves (Dumas & Redish, 1999). Designing for usability requires three key principles: an early focus on users and tasks, empirical measurement, and iterative design (Gould & Lewis, 1985). Usability can be further broken down into several components that can be empirically measured. According to ISO 9241 (ISO, 2010), usability is made of three components: effectiveness, efficiency, and satisfaction. Whitney Quesenbery (2014) goes further, defining five dimensions of usability, referred to as the 5Es: effective, efficient, engaging, error tolerant, and easy to learn.

Usability as a concept has changed and evolved over time. Initially, usability, or usability engineering, was used to describe both the process of designing usability into a system and its evaluation (Nielsen, 1993). As the field has matured and the importance of involving people throughout the design process has become more visible, there has been a shift from talking about usability to user experience (Hartson & Pyla, 2012). Usability has been critiqued for being too narrowly defined (Sullivan, 1989) and being overly concerned with effectiveness and efficiency in a way that overlooks both nuance and cultural context (Dilger, 2006). User experience takes into account the full experience a person has with a product or service and the organization responsible for it. This broader view of the field that shifts from usability to user experience includes all the qualities that inform and influence that relationship between a person and their experience, which includes emotional, social, and cultural factors (Kuniavsky, 2007). Strong usability fosters connection between users and the product or service they are using, which can enhance their perception of the value associated with a product or organization (Acharya, 2017). For a deeper discussion on usability testing, see Bradley Dilger's entry on ***testing*** in this collection. For more on the process of designing for usability, see Jason Tham's chapter on ***user-centered design***.

Design Application

The primary way to measure usability is through the applied research method of usability studies, also known as usability testing. A usability study can be

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conducted on information, a product, a system, or a service, to evaluate its usability at any point during the design process. Typically, usability studies are either summative or formative (Barnum, 2010). In a summative usability study, the aim is to understand how a functional and completed system performs for the purpose of benchmarking and comparison. Formative usability studies are conducted when a system is under development and the goal is to make iterative improvements based on user feedback prior to its completion. During a typical usability study, participants are asked to attempt to perform tasks with the system while thinking out loud (Boren & Ramey, 2000). Researchers collect performance data such as time on task and task completion, in addition to verbal protocols and participants' ranking and ratings of the system. Beyond usability studies, there are additional research methods that can gather data to help design, evaluate, and improve the usability of a system, such as heuristic reviews, surveys, and analytics, just to name a few.

While usability was once primarily the purview of software and documentation, it has broadened to a variety of other contexts with their own unique considerations. Where usability does not solely mean ease of use, but also usefulness, which is imperative for design contexts that grapple with complexity (Mirel, 2004). Take civic online spaces, where the focus is to enhance citizen action. In these contexts, usability must take into account and support people's ability to take multiple perspectives, encourage users to engage in productive inquiry, and support complex decision making (Simmons & Zoetewey, 2012). Further, working in community-based organizations demonstrates the need to expand and tailor usability considerations so they are appropriate for the audience and context. In the case of working with multilingual immigrant audiences in the US who were signing up for health insurance, usability considerations shift to prioritize comprehension and an in-depth understanding of lived experience and sources of anxiety, rather than standard metrics like time on task or performance (Rose et al., 2017). Other scholars have concluded that complex contexts call for new usability methods and approaches. Healthcare settings call for usability methods that take into account the situated context that patients experience as well as a clear focus on quality of life (Melonçon, 2017). Beyond nuance in different domains, speculative usability calls attention to the relationships beyond individual human actors to include the relationships between objects and examine nonhuman agency to consider how they impact use and usability (Rivers & Söderlund, 2016).

Pedagogical Integration

In reviewing technical communication core teaching resources, Felicia Chong (2016) noted a "lack of productive discussion that focuses specifically on usability practices and instruction in the classroom" (p. 23). Although national surveys have shown that technical communication programs are increasingly requiring

usability as a core or vital part of the modern curriculum, Chong argued that we—academics and industry practitioners—should collaborate to devise a shared plan for the future of usability pedagogy. Teaching about usability can include how to design for usability, through user-centered design or user experience, and how to evaluate usability through usability testing. A common approach to teaching usability testing is through client-based projects that can help students learn about the method while also highlighting the nuanced, rhetorical nature of usability work (Scott, 2008; Rose & Tenenberg, 2017). Students are typically assigned to work in teams to conduct a mini usability study (three to five test participants) on a client's product. This exercise exposes students to the process of testing the usability of a design, from identifying core usability problems to creating a test plan, running the test, and presenting findings and recommendations for improvement. For those who do not have the resources in terms of time and tools to conduct usability studies, students may perform heuristic (expert) evaluations and other "discount" usability methods (Nielsen, 1997).

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