

# Online Support Systems

STUART A. SELBER

*Clarkson University (sselber@craft.camp.clarkson.edu)*

JOHNDAN JOHNSON-EILOLA

*Purdue University*

BRAD MEHLENBACHER

*North Carolina State University*

## KEY DEFINITIONS

Online support systems can be divided into three classes, online tutorials, online help, and online documentation. Online tutorials have the broadest focus, helping users learn about features and tasks through explanation, example, and hands-on experimentation. Online documentation typically has a narrower focus, providing users with overviews or assistance on specific task-oriented procedures [Horton 1990]. Online help has the narrowest focus, supporting users who must solve particularly pressing problems as quickly as possible and with a minimum of interruption.

## UNDERLYING PRINCIPLES

To develop effective systems, designers should consider the differences between online and print-based support and apply rhetorical perspectives to their design processes [Brockmann 1992].

*Differences between Print-Based and Online Support.* Designers converting print-based to online support may be tempted simply to dump their source files online without significantly rethinking core design decisions. But such timesaving approaches can spell disaster for users. In general, the physical differences between print-based and online support relate to resolution, display

area, aspect ratio, and presence (see Table 1), while the rhetorical differences relate to organizational, navigational, and contextual structures (see Table 2).

*Rhetorical Framework for Online Support.* Designers must carefully consider the needs of users, including their previous experiences and abilities, their short- and long-term goals, and the environments in which they work. This developmental framework carefully considers two important areas: the rhetorical issues of users, goals, and time/space frames, and the formal characteristics of tutorials, documentation, and help. Online support systems of any type must help users achieve goals as they negotiate the constraints of various time/space frames (see Table 3).

## PLANNING ONLINE SUPPORT SYSTEMS

Failure in online support systems is commonly caused by poor or inadequate planning [Caernarven-Smith 1990]. During product development, these problems include incomplete style and design guidelines, overlapping work duties, missed deadlines, and significant deviations from standard practices. Planning early can open lines of communication between managers, designers, and users; coordinate the tasks and activities of project team members; encourage systematic approaches to online

**Table 1.** Physical Differences Between Print-Based and Online Support

	<b>Pages</b>	<b>Screens</b>
<b>Resolution</b>	70-1200 dots per inch	50-100 dots per inch
<b>Display Area</b>	generally larger	generally smaller
<b>Aspect Ratio</b>	generally taller than wide	generally wider than tall
<b>Presence</b>	physical static immutable	virtual static dynamic interactive mutable

**Table 2.** Rhetorical Differences Between Print-Based and Online Support

	<b>Pages</b>	<b>Screens</b>
<b>Organizational</b>	linear familiar hierarchical logical/deductive fixed	linear and nonlinear familiar and unfamiliar hierarchical and non-hierarchical logical/deductive associative and dynamic
<b>Navigational</b>	familiar limited static	familiar and unfamiliar robust static and dynamic
<b>Contextual</b>	generally rich	generally poor

support; and, in the long run, save both human and economic resources.

During the first stage of planning, designers collect feasibility studies and related artifacts, business plans, product requirements, cost/benefit analyses, mission statements, user surveys, research on competitive products, demo-

graphic information, and other market research. These artifacts are required during subsequent planning stages.

Specifications, often called documentation plans or blueprints, outline courses of action for developing online support systems, including both product and process descriptions. Product de-

**Table 3.** Rhetorical Frameworks for Online Support

	<b>Help</b>	<b>Documentation</b>	<b>Tutorials</b>
<b>Users</b>	expert	intermediate	novice
<b>Goals</b>	narrow/ short-term	medium/ short-term	broad/ long-term
<b>Time/Space Frames</b>	parasitic/ internal	parallel/ internal	encompassing/ external

descriptions detail the rhetorical and physical dimensions of deliverables: feature summaries, audience profiles, and system organizations. Process descriptions outline approaches to accomplishing work, including development and production schedules, review protocols, and testing procedures.

Although there are many different ways to develop specifications, the following twelve elements are usually included: background information, audience profiles, topic outlines, detailed outlines, style/design specifications, project responsibilities, production specifications, review protocols, development schedules, cost estimates, dependencies and risks, and sign-off sheets.

Effective specifications also consider both global and local design issues early in the development process. It's often difficult, if not impossible, to incorporate them after a project has begun.

Global design issues critical to effective online support include accessibility, maintainability, support on support, organization, metaphors and maps, navigation, user control, modelessness, consistency, reversibility and error recovery, visual aesthetics, and feedback structures and context sensitivity.

Local design issues, though less critical to overall success, are nevertheless important to consider—well-designed systems are still often criticized if users find spelling errors or screens that are

cluttered and difficult to read [Rubens and Krull 1985]. At a minimum, the following topics and issues are usually considered: levels of explanation, chunking, discourse cues, structured headings, bullets and lists, iconic markers, typographic legibility, and negative space.

### EVALUATING ONLINE SUPPORT SYSTEMS

Evaluating the usability of online support systems should be a central component of the development process. Usable systems are accessible, maintainable, visually consistent, comprehensive, accurate, and oriented around the tasks that users must perform. Usability testing measures user effectiveness and efficiency. At a secondary level, it checks accuracy, consistency, and completeness. Developers should conduct both formative evaluation (interim) and summative evaluation (post-release) [Duffy et al. 1992]. Evaluations can be conducted in both laboratory (controlled) and workplace (natural) contexts, as well as through techniques such as telephone interviews.

There are eight sequential steps in evaluating online support systems: (1) forming an evaluation team, (2) identifying evaluation goals, (3) selecting evaluation methods, (4) developing realistic scenarios, (5) enlisting real users, (6) implementing the evaluation, (7) analyz-

ing the data, and (8) distributing the findings.

### RESEARCH ISSUES

While planning, designing, and evaluating online support systems, many issues can complicate the development process. The most difficult challenges relate to interpersonal, cultural, and pedagogical areas, both internally (among development team members) and externally (with customers). Specifically, the five research issues that remain under discussion in the literature on online support systems are collaboration, diversity among end users, translation and internationalization, user motivation and aesthetic response, and designer training.

### SUMMARY

The development areas we've discussed require online support system designers to consider rhetorical as well as technical issues, recursive rather than linear approaches, and qualitative as well as quantitative methods for understanding

user behavior. Our increasingly sharper focus on the human dimensions of online support highlights the complexity of productively understanding human-computer interactions within the richly textured cultural contexts of users and their work.

### REFERENCES

- BROCKMANN, R. 1992. *Writing Better Computer User Documentation: From Paper to Online*, 2nd ed. Wiley, New York.
- CAERNARVEN-SMITH, P. 1990. Annotated bibliography on costs, productivity, quality, and profitability in technical publishing: 1956–1988. *Tech. Commun.* 37, 2, 116–121.
- DUFFY, T. M., PALMER, J. E., AND MEHLENBACHER, B. 1992. *Online Help: Design and Evaluation*. Ablex, Norwood, NJ.
- HORTON, W. 1990. *Designing and Writing Online Documentation: Help Files to Hypertext*. Wiley, New York.
- RUBENS, P. AND KRULL, R. 1985. Applications of research on document design to online displays. *Tech. Commun.* 37, 4, 29–34.
- SHNEIDERMAN, B. 1987. *Designing the User Interface: Strategies for Effective Human-Computer Interaction*. Addison-Wesley, Reading, MA.