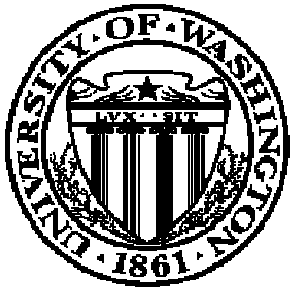

Information School

Exploring the Persistent Problem of User Assistance

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ABSTRACT

Users continue to report problems with user assistance systems. We conducted a study within three populations that have a stake in the user assistance process: users, developers (anyone who plays a role in creating the help interface, content, or functionality), and technical support providers. We administered a Web-based questionnaire to members of the three populations. Our preliminary study suggests that: (1) many users experience some difficulty with using user assistance; (2) users use Web-based content most frequently when they need assistance; (3) developers' perceptions of users lead them to develop less popular forms of user assistance and for tasks with which users have fewer problems; and (4) technical support providers address this gap by supporting users on tasks for which user assistance is missing or inadequate and by developing supplemental resources to help users.

Author Keywords
User Assistance, Online Help, Software Applications, WWW, Mobile Devices.

ACM Classification Keywords
H.5.2. Information Interfaces and Presentation: User Interfaces – *Training, help, and documentation.*

INTRODUCTION
Software applications, large web sites, and mobile computing devices like PDAs continue to increase in complexity as new features are added. Furthermore, as we enter the era of ubiquitous computing, interaction with computer technologies will increase. Thus, help systems are needed and extremely important to enable users—especially novice users—to use these tools effectively. Despite their importance, studies continue to show that existing help systems are not very helpful at assisting users in accomplishing their tasks [1, 2, 3, 4].

Our study aims to shed some light on this persistent problem. We administered questionnaires to examine the current state of user assistance from the users', developers', and technical support providers' perspectives. We are not aware of any other study of its kind.

METHODOLOGY
We developed three Web-based questionnaires, one for each of the three populations: users, developers (i.e., anyone who plays a role in creating the help interface, content, or functionality), and technical support providers. We designed the questionnaires to explore each population's perspective on user assistance systems. Each questionnaire collected extensive background information, such as age, ethnicity, gender, and computer use habits. Questionnaires also collected extensive information relevant to each population's perspective.

The user questionnaire contained 45 questions and surveyed the tasks for which users need help, which forms of help they use, the problems they have with help systems, and how satisfied they are with different aspects of help. The developer questionnaire contained 49 questions and examined which types of help they develop, how they perceive users' use of help systems, their satisfaction with user assistance development technology, and if and how they evaluated their systems. The technical support provider questionnaire consisted of 54 questions and explored how technical support providers communicate answers to users, what resources they use to provide answers, how they perceive users' use of help systems, what technology they use to support their work, and the extent and nature of their communication with developers.

The number of responses for the user, developer, and technical support provider questionnaires was 107, 71, and 84, respectively.

Participants and Recruitment
With respect to the user questionnaire, our primary goal was to gather input from a diverse population of IT users, including people who are considered "traditionally underrepresented." Thus, we specifically targeted racial/ethnic minority groups (i.e., African Americans, Native American Indians, Latinos, etc.) and people who speak English as a second language, have low incomes, and have visual, cognitive, and other impairments.

We recruited IT users from the general population of Seattle, WA to participate in the study. We had three recruitment strands: (1) recruitment targeting the general population, (2) recruitment targeting diverse users, and (3) recruitment targeting blind users who use screen readers to navigate web pages. We targeted organizations that served the needs of each group. For the general population, we posted flyers at libraries and community centers in the Seattle/King County area. We also posted information within Craig's List for the Seattle area; Craig's List is an online community for posting classified advertisements [5]. For the special population, we contacted computer labs,

organizations, and libraries which served underrepresented populations. We compensated study participants with a $10 Amazon.com gift certificate.

We followed a similar approach to recruit developers and technical support providers from the Seattle area to complete the respective questionnaires. For the developer questionnaire, our goal was to include diverse development roles from content writing to interface design and programming. For both populations, we posted messages on relevant email distribution lists and mailed letters to technology organizations and businesses.

RESULTS

We present findings for each population within this section.

Users

Users were experienced with computers and the Internet: 98 percent used a computer and accessed the Internet at least once a day, half of them had used computers for 11 years or more, and half of them had used the Internet for 8 years or more. They used Windows operating systems (95%); some used Macintosh operating systems (20%). Mobile computing device use was not popular among our respondents: 62 percent had never used a mobile device, but 19 percent used one multiple times a day. The mobile device of choice was largely a PDA (83%).

The majority of users used help systems. Twenty percent sought help for PC applications at least once a day. Another 39 percent sought help for PC applications at least once a month. Users also sought help when using the Web: 21 percent sought help at least once a day, while an additional 27 percent sought help at least once a month. Overall, users sought help for some tasks at least once a month. Figure 1a shows that users sought help primarily for office (i.e., document and spreadsheet creation), information-seeking (i.e., Internet searches), and system administration tasks (i.e., installing hardware or software).

When users do encounter a problem, 68 percent turned to the Internet to find a solution (Figure 1b). Users preferred to use Web-based content more so than using product manuals (printed or electronic) or the help system that is embedded within an application, site, or device. (We refer to the help system that is accessible within an application, web site, or mobile device as its embedded help.) Despite not favoring the use of embedded help, 57 percent of PC users frequently or always knew how to access embedded help. What forms of embedded help do users use most frequently? Quick reference guides and the index of help contents were the most popular.

We asked users a series of questions to help to identify areas of potential problems. Of particular note, 47 percent of users found that it was sometimes difficult to quickly and easily find the information they seek within a help system. Once they found that information, another 47 percent were only able to understand this information sometimes. As much as two-thirds of users had experienced some difficulty when using help systems.

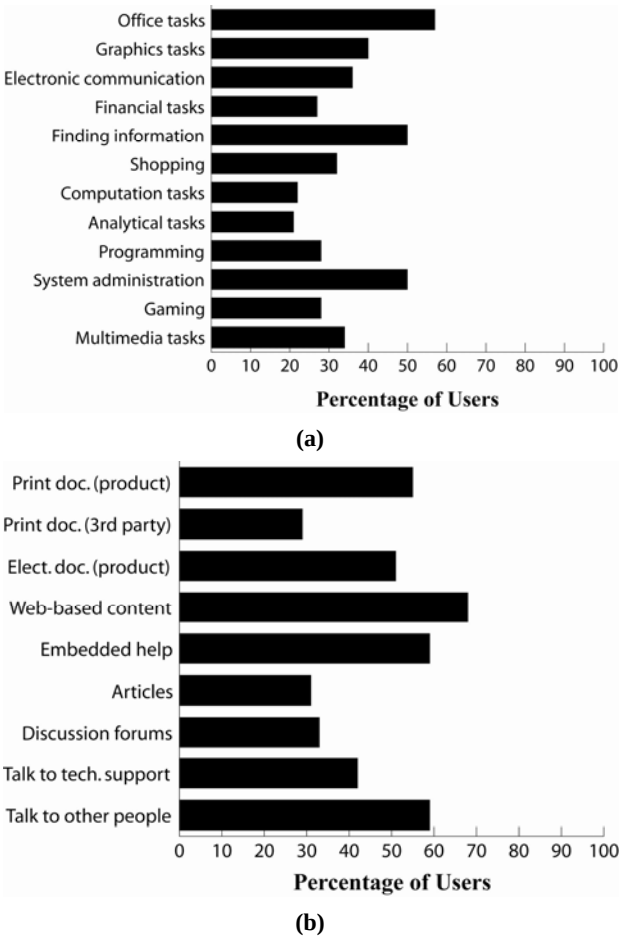
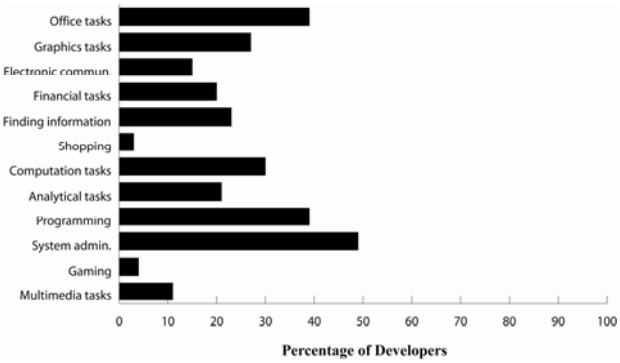


Figure 1. Tasks for which users seek help (a) and ways in which they seek help (b).

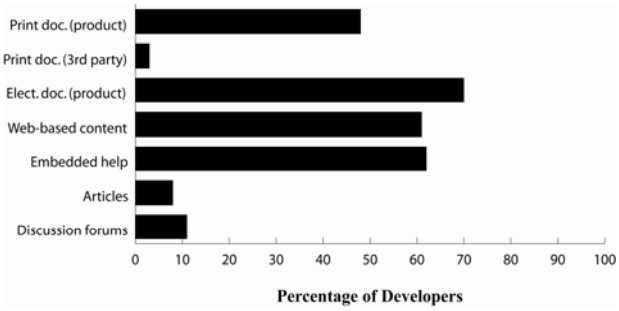
User Assistance Developers

All the developers who responded to our questionnaire used a computer multiple times per day. All of them were familiar with Windows operating systems. Another 18 percent also used Macintosh operating systems, and 25 percent also used Unix/Linux operating systems. Of the 71 developers, 87 percent had used computers for 11 years or more. All the developers used the Internet multiple times per day, and 79 percent had used it for 8 years or more. About half of the developers used mobile computing devices.

The developer study included developers who had many different user assistance roles: 72 percent wrote content, 25 percent programmed, and 45 percent designed user interfaces. Developers also held different positions. For instance, 69 percent worked as communication specialists (technical writing, etc.), 17 percent were training specialists, 4 percent had experience as human factors engineers, and 21 percent were consultants.



(a)



(b)

Figure 2. Tasks for which developers create help (a) and the type of help they create (b).

Developers had created user assistance for a variety of tasks; however, as Figure 2a shows, the tasks for which developers most frequently create help center around system administration, programming, office tasks, and computational tasks. For the study population, it is interesting to note developers' concentration on programming and computation tasks compared to the degree to which users need help on these tasks (Figure 1a). Developers also tended to develop electronic documentation as a user assistance system more so than all other forms (Figure 2b). Note that, except for electronic documentation, developers tended to develop systems which were aligned with our users' use of them (Figure 1b). When developers developed embedded help, they tended to develop context-sensitive help (60%), tables of help contents (52%), and indexes of help contents (50%). Tables of contents and indices were used predominantly by our users, but only 20 percent used context-sensitive help.

We also asked developers about their views of user strategies for solving problems. Specifically, we asked developers what they thought users used as a first source of support; 85 percent of developers thought that users preferred to ask their friends for help, 50 percent thought that users would go to technical support first, 37 percent thought that users might search the Web first, and 33 percent thought that users might use embedded help first. Again, it is interesting to note how their perceptions of user behavior compare to users' reported behavior (Figure 1b); there is a large disparity between actual and perceived behavior.

Finally, we asked developers to what extent they received feedback on their help systems and from where this feedback came. Almost all user assistance developers evaluated their work via some form of feedback (96%). The three most common sources of feedback were from users' comments (66%; not via formal testing or questionnaires), personal evaluations (59%), and friends' and colleagues' comments (56%).

Technical Support Providers

Technical support providers were very experienced technologically. Similar to the developer population, 97 percent of the technical support providers used computers and the Internet multiple times per day. They were all familiar with Windows operating systems; 15 and 27 percent were also familiar with Macintosh and Unix/Linux operating systems, respectively. The majority of them (71%) had used computers for 11 years or more, and 67 percent had used the Internet for 8 years or more. Most of them (60%) used mobile computing devices.

Technical support providers supported users with a wide range of tasks. Tasks that they most commonly supported were system administration, office tasks, and finding information (Figure 3a). The top three tasks which this group supported were aligned with the top three tasks for which users reported needing help. The majority of support providers (53%) frequently found it necessary to use multiple resources to answer support problems. Figure 3b shows that personal knowledge (68%), Web content (60%), and conversations with other technical support providers (58%) were the most frequently used resources.

When interacting with users, 73 percent of providers frequently or always communicated support answers directly in conversations. Many of them (52%) sometimes created supplementary electronic documentation to support users. A third frequently created Web-based content to support users, another third did so sometimes, and the final third rarely or never created Web-based content to answer support problems. For our study population, it is interesting to compare the likelihood that support providers would develop Web-based content to users' tendency to use such content. Web-based content was the most frequently used help format (Figure 1b).

The majority of technical support providers never wrote articles for magazines and rarely posted to discussion forums or wrote supplementary print documentation. Their emphasis on personal conversation seemed appropriate, given users' problems with technical jargon and our analysis of providers' views on users. We asked providers about what barriers they thought prevented users from utilizing other help resources like embedded help. Some providers (29%) thought that the lack of correct information was the main barrier. Another 20 percent thought that users preferred to use technical support; others (12%) thought

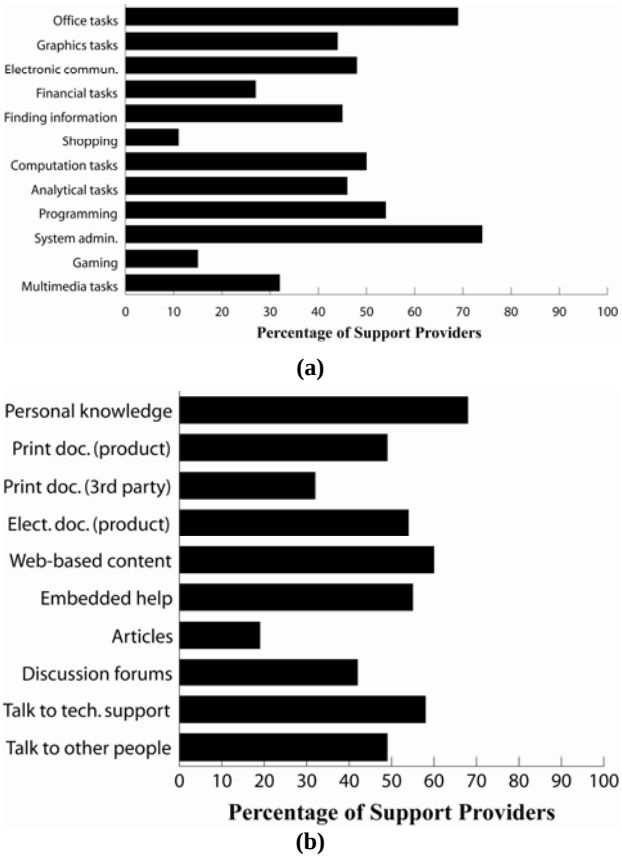


Figure 3. Tasks for which technical support professionals provide help (a) and ways in which they seek help when they assist users (b).

that users lacked the technical knowledge to use the other resources. Their perceptions of users seemed similar to developers' perceptions; there was a misconception that users wanted to talk to people before they used other resources. As we showed in Figure 1a, users were most likely to seek help by themselves. Furthermore, users were more likely to talk with people who were not technical support providers, than they were to talk with technical support providers.

Technical support providers are in a unique position to provide feedback to user assistance developers, based on their personal experiences and the experiences of the users whom they support. We found that support providers sometimes took advantage of this option. They frequently or always (40%) gave feedback to developers; some providers (31%) reported that they sometimes gave feedback to developers. When they did provide feedback, it was likely based on personal experiences with the product (70%) and experiences from supporting users of the product (64%). It was uncommon for them to provide feedback based on systematic studies of users or surveys (23%).

DISCUSSION

In our exploration of the user assistance problem, we found three key discrepancies that may help to explain why the problem persists. These discrepancies may be limited to our particular study population.

1. Users are most likely to need help with office, information-seeking, and system administration tasks. Developers are most likely to develop help for system administration (users' 3rd need), programming, and office tasks (users' 1st need). Technical support providers were likely to assist users with system administration (users' 3rd need), office (users' 1st need), and programming tasks.
2. Users are likely to attempt to resolve problems themselves before turning to other people (including technical support providers). Developers are likely to think that users first ask their friends for help, before attempting to resolve problems themselves. Technical support providers are likely to think that users prefer to talk to people for help, before attempting to resolve problems themselves.
3. Users are most likely to turn to the Web to find information to help them to resolve problems. Developers are most likely to develop electronic documents to assist users, as opposed to Web-based content. Technical support providers are most likely to develop supplementary electronic documents to assist users, as opposed to Web-based content.

Results suggest that developers and technical support providers have incorrect perceptions of users' needs or strategies for finding help. This misconception persists despite the claims of developers that they receive feedback directly from users and the claims of technical support providers that they give feedback to developers on the types of problems for which they frequently support users. The value of technical support providers, from a user's perspective, seems to be their ability to communicate to a user at his or her level of understanding. Also, if we speculate that technical support providers develop supplementary resources in proportion to the time they spend supporting users in completing them, then they seem to fill a gap that is left by developers who spend more time developing support for tasks (e.g., programming and computation) for which a minority of users need help.

Perhaps developers and technical support providers need to reprioritize their efforts to match users' needs. For instance, help and support for information-seeking tasks (users' 2nd need) does not match users' needs. We think that developers will continue to hold incorrect perceptions of users until they start utilizing systematic usability or user studies. Feedback from technical support professionals is helpful but, because support providers are somewhat similar to developers, their personal experiences with a product may not be a good proxy for user feedback.

CONCLUSION AND FUTURE WORK

We administered Web-based questionnaires to help users, user assistance developers, and technical support providers. Questionnaires probed about the current state of user

assistance from all three perspectives. Results suggest that developers and technical support provides have some misconceptions about users, which may be the reason why help problems persist. The study raises questions that should provide more insight into the problem of user assistance. A closer look at why developers and technical support providers hold incorrect views of users would be very beneficial. We will examine this issue and others during our second study phase, in which we conduct observation sessions with users, developers, and technical support providers. The current study also suggests that more effort is needed to develop solutions which help users to overcome technical jargon.

ACKNOWLEDGMENTS

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