Situational Virtual Reference: Get Help When You Need It

Joel DesArmo[1], SukJin You[1], Xiangming Mu[1] and Alexandra Dimitroff[1]

[1] School of Information Studies, University of Wisconsin-Milwaukee

Abstract

This study aims to increase the use of virtual reference service by increasing the awareness of the availability of the service to users who really need it. A new situationally-based virtual reference interface, called the sVR interface, has been designed to reflect different levels of user search success. Findings from an eight-month field study done in a university library improved our understanding of how to effectively enhance the availability of virtual reference service to users who need it. A discussion about balancing the availability and the intrusiveness of virtual reference service is also provided.

Contact: jdesarmo@uwm.edu, yous@uwm.edu, mux@uwm.edu, dimitrof@uwm.edu

1   Introduction

Virtual reference services in academic libraries are an important component of library services that have a positive perception among patrons. Research by Rawson, et al., found that 92% of users in their study indicated that virtual reference service was helpful and 93% indicated they would recommend it to a friend (2013, p. 96). However, the problem is that despite a positive perception, virtual reference service has also been found to have low usage (Radford & Kern, 2006). Although it has been shown that demand for virtual reference service is increasing (Nicol & Crook, 2013), total virtual reference service use remains low (Wagner, 2013).

Research has been conducted investigating the use of a pop-up to increase the saliency of virtual reference service (Mu, Dimitroff, Jordan, & Burclaff, 2011). Mu et al.'s study also raised the question that using a pop-up may increase the perceived level of intrusion felt by the users. Specifically, they found the pop-up intrusive when the user does not need virtual reference service or if the user would like to continue to try by themselves.

This study aims to make virtual reference service more salient to users who need it. We also examine the balance between the intrusiveness and the availability of the virtual reference service.

2   System Design

We introduce a situational virtual reference service in an attempt to balance the intrusion of the offer of virtual reference service and the availability of the virtual reference service by delivering the offer to those who really need help. This study establishes four conditions in which the color, size, and location of the virtual reference service are altered based on the level of success of the user's search in order to attract the attention of users who need help.

- Condition 1: 1-200 results
- Condition 2: zero results
- Condition 3: more than 200 results
- Condition 4: three consecutive occurrences of either Condition 2 and/or Condition 3

Condition 1 is considered to be the normal condition. In this condition, the user retrieves 1-200 results. We consider this to be a successful search. Condition 2 occurs when a user receives zero results in response to

a search query and Condition 3 occurs when a user receives more than 200 results. In this study, we consider Condition 2 and Condition 3 as undesirable search results and define them as search failures (Bates, 1984). Condition 4 is triggered by any combination of Condition 2 and/or Condition 3 happening three times in a row.

These four conditions are associated with Brajnik et al.'s theory of critical and enhanceable situations (2002). An isolated search failure, Condition 2 or Condition 3, is most closely linked to Brajnik et al.'s enhanceable situation in which a user may still try to improve the results by himself or herself. Consecutive failure, as in Condition 4, is treated more as a critical situation in which virtual reference service might be appreciated by the user.
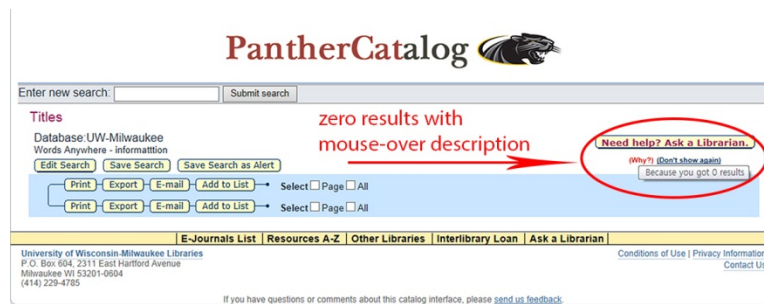

Figure 1: Condition 2: zero results. The virtual reference service button is displayed at the top of the page
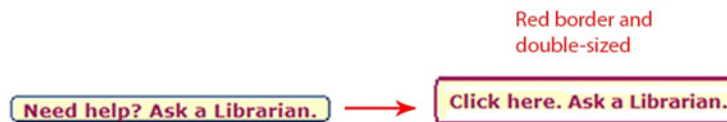

Figure 2: Condition 4: Three consecutive unsuccessful searches. The virtual reference service appears in red and its size is doubled

3   Methodology

Four computer stations were used in this study. Three computers had the sVR design installed, and one machine had the control interface. The control and experimental interfaces were identical prior to entering a search query. The only difference in the machines was that the sVR machines displayed the virtual reference service link according to the search success, and the control machine displayed the same virtual reference service link regardless of the level of the search success. The link to the virtual reference service on the control interface was the same as link on the new sVR interface's Condition 1: 1-200 results. The four machines were placed in a cluster on the first floor on the library in an area that was relatively far from the reference librarians and out of their line of sight. This location was chosen to increase the likelihood that users would use the virtual reference service for help rather than asking a librarian face-to-face.

In general, when a user is searching for a resource, multiple searches may apply, resulting in a set of search actions that are considered a single search session. In this study, we determine session boundaries with a two-step process. In the first step, session boundaries are determined automatically based on three scenarios. Three scenarios were established in order to distinguish the session boundaries. Firstly, if less than one minute elapsed between actions, the system always treated that action as the same search session. In the second scenario, a new Session ID was generated whenever five minutes had elapsed without action from the user. This is in line with the findings of Spink and Jansen, which found in regards to search sessions, "…a substantial percentage [of sessions] lasting less than 5 minutes" (2004, p. 121). The third

scenario occurred when one to five minutes had elapsed since the previous action. In this scenario, the system compared the two search queries. If at least 50% of the search terms in the two queries matched one another, the same Session ID was maintained. If not, a new Session ID was assigned. In the second step of the two-step session boundary detection process, the researchers manually checked and validated the results of the first step.

4   Results and Analysis

Data was collected eight months from Nov, 2012 to June, 2013. The data was processed and cleansed to remove meaningless data such as records without search terms or test data that had been input by the researchers. After the data was processed and cleansed, there were a total of 587 valid actions which comprised 191 sessions. Of the total number of search sessions, 117 sessions were performed on the experimental interface, while 74 search sessions took place on the control interface. This translates to 38.74% of the sessions having been performed on the control interface and 61.26% of the search sessions having been performed on the experimental interface. Actions were coded into three types of actions: entering a search query (370 instances); clicking an individual search result to display the full bibliographic record (214 instances); clicking the virtual reference service link to request the assistance of an online librarian (3 instances).

The number of actions performed within each search session ranged from one action to a maximum of 20 actions in a given session, with the average number of actions being 3.07 actions per session. The average amount of time spent per session using the system was 2 minutes and 4 seconds. We clustered the sessions into three groups. Group 1 sessions have 1.38 actions per sessions on average with an average of 33.80 seconds time searching. In general, this group of users exhibits a "hit & run" behavior. Whether they are successful or fail at their search is unknown. But if they succeed, they can be said to be either expert users or lucky. If they fail, they are impatient. On average, Group 2 users perform 4.79 actions per session and spent 4 minutes and 6 seconds using the interface. This group spends more time and performs more actions than Group 1. This group comprised 35.6% of all the sessions (see Fig. 3). All three virtual reference clicks came from these users. The Group 3 users perform a relatively large number of actions per session. They average 16.5 actions per session and spent on average 8 minutes and 30 seconds using the interface. This group of users tended to continue to try to find the resources they desired by themselves without seeking help.
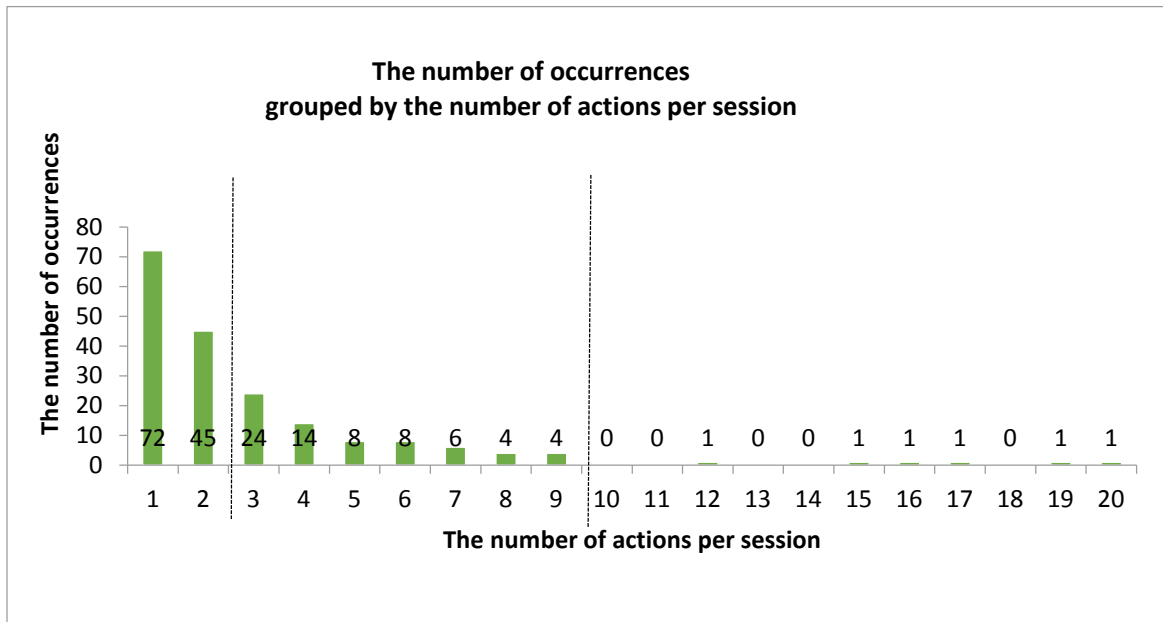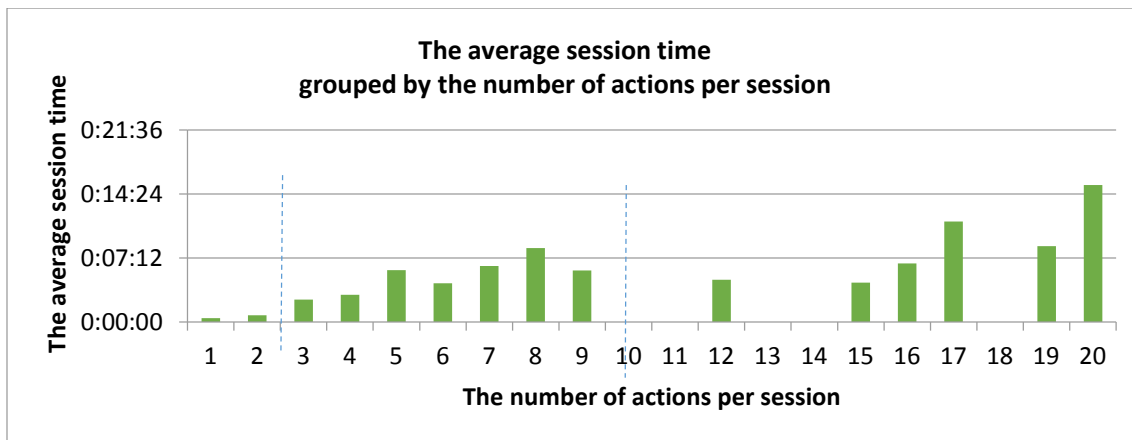
Figure 3: Number of actions per session

Figure 4: Average session times relative to the number of actions per session

In this study, 38.74% of the search sessions occurred on the control interface and 61.26% of the search sessions occurred on the sVR interface. Virtual reference assistance was never requested when using the control interface. The experimental interface logged three unique requests for virtual reference service.

In Case #1 the virtual reference service usage was a result of condition 2: zero results. Case #2's virtual reference service usage was a result of condition 3: a large number of results. Virtual reference service usage in Case #3 was also a result of condition 2: zero results. So while we are not able to provide a statistically significant conclusion to our research goal examining whether the new sVR interface will increase usage of virtual reference service, it is very interesting that all of the instances of virtual reference service use in this study occurred under conditions in which the user was experiencing an undesirable range of search results as defined within this study. The users who clicked virtual reference service link all came from Group 2 as described in Fig. 3. One possible explanation for why users from this group sought out virtual reference is that these users do not give up as easily as those in Group 1, yet do not seem be users who want to do their searches entirely by themselves as those in Group 3.

5   Conclusions

This study has designed and implemented a new situational virtual reference service interface to address issues of the availability of virtual reference service. The new design attempts to enhance the offer of virtual reference service within a search session to users who need it, with a secondary goal of being non-intrusive. Our new system includes three conditions under which a user may experience frustration: no results, too many results, and repeated search failure. By examining scenarios in which users elected to use virtual reference service, we obtained findings that provided insight into factors contributing to virtual reference service usage. Each case illustrates a condition under which users may be experiencing search frustration and need help. Finally, our study findings indicated that all virtual reference service requests came from our improved interface. We believe this study sheds light on some important issues related to increasing the usage of virtual reference service. A future study will use follow-up interviews and eye-tracking tools to further understand the conditions under which to offer virtual reference service.

6   References

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