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Recommended Citation

Hurley, David A. and Adrienne Warner. "Does proactivity drive use? Understanding growth in chat reference services." (2022). doi:10.1080/15228959.2021.1896412.

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Does proactivity drive use? Understanding growth in chat reference services

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Abstract

Libraries that implement trigger-initiated proactive chat reference services see substantial increases in the number and complexity of reference transactions. However, it is not clear if this growth is a result of something inherent to proactivity, or other factors such as increased awareness of the service. To investigate this, we compare usage during periods with and without proactivity in databases in which our chat reference service is established. Steep and immediate increases when proactivity is enabled and sharp declines when it is disabled suggests that proactivity itself is driving the changes. We recommend human computer interaction (HCI) and user experience (UX) approaches to further understand chat reference service.

Keywords: proactive chat; chat reference; reference services; HCI

Introduction

It has been 25 years since traditional reference services were declared dead, (Lewis, 1995) and nearly 20 since it was “Resolved that Reference Librarians are “Toast” (Anhang & Coffman, 2002). However, with the recent introduction of proactive chat, libraries are seeing substantial, in some cases overwhelming (e.g., DeMars et al., 2018) increases in the number of reference questions they are fielding. Beyond an increase in quantity, there is often a change in kind: questions are more likely to be “good” questions, in the sense of being more complex (e.g., Maloney & Kemp, 2015) or more likely to be related to research (e.g., Warner et al., 2020; Zhang & Mayer, 2014) after proactive chat is introduced. We seem at last to be seeing the beginnings of the “reference renaissance” (Ronan, 2003, p. 53) promised by the advent of chat reference, but why?

Chat reference has typically involved a chat box or link that is embedded into web pages that patrons can use to initiate a chat with reference staff. The box or link remains static until a patron initiates a chat session. We call this static chat. Proactive chat, on the other hand, is an implementation of chat reference in which patrons are automatically invited to chat when certain conditions, called triggers, are met. For example, if zero search results is a trigger, a search with no results will generate a chat message to the patron, or an invitation to chat in the form of a pop-up overlay, flashing message, or similar indicator.

While the increases in number and complexity of questions that accompany proactive chat are pronounced, there are typically other factors co-occurring with the introduction of proactive chat that make it difficult to disentangle the drivers of this growth. For example, the University of Texas at San Antonio’s proactive chat initiative coincided with the adoption of a

new platform for chat, and came on the heels of a major marketing campaign promoting reference services (Kemp et al., 2015; Peters & Kemp, 2014). The growth in chat may be the result of the publicity around the new service, in which case the increased volume would persist with either static or proactive chat. Alternatively, at our institution, the University of New Mexico, proactive chat was first introduced in vendor-specific database platforms that had previously not had chat available in any form (Warner, 2019). In this case, it is possible that there was an untapped demand for assistance from database users, and the introduction of any form chat reference, proactive or not, would have generated the same increases in growth. Combining both ideas, the triggered invitations to chat may themselves be primarily awareness raising. It is conceivable that once our patrons discover the service, by triggering a chat and engaging with us, they would continue to use the service, initiating chats on their own.

Is proactivity a good marketing tool that is finally making patrons aware of our service? Or is the jump from “being there” to actively offering assistance changing our patrons’ expectation of the service? To say it another way, does proactivity *market* our reference service, or does it *transform* reference service?

This distinction is important, with implications for how libraries should implement and promote chat reference: proactive chat can be annoying (Epstein, 2018), and integrating it into various web interfaces poses technical challenges (Warner, 2019). If effective marketing is driving demand, we may be able to find less intrusive ways to achieve these higher levels of use for our reference services either without implementing proactive chat, or by implementing it for a short, targeted, period each semester. We could meet our patrons’ needs while avoiding some of the costs to user experience. On the other hand, if something about the proactivity itself is driving the change in use of chat reference, increased integration into our vendor supplied interfaces becomes a priority, as does a human computer interaction (HCI) approach to reference research and service design. Reducing the annoying aspects of proactive chat while building on its successes can only happen if we understand why it is attracting so much use.

Testing for other possible explanations

Based on our review of the literature and our own experiences, we see two possible explanations besides either the marketing effects of triggered invitations or something inherent to proactivity that could, either alone or in combination, account for the changes and growth in chat. The first possibility is that our users have become more willing to use chat. As chat has become more common on retail websites, this mode of interaction is more familiar and comfortable to our users, leading them to use chat reference services more. A second possibility, as mentioned above, is that the contexts where chat is being introduced for the first time as proactive chat represent previously untapped need. Engaging patrons in those spaces drives growth, regardless of the method of engagement.

These are both relatively straightforward to test. We can compare use of a static chat service before proactivity is offered with use of the same service, in the same context (e.g., database interfaces or library websites). If multiple institutions find an immediate increase with the introduction of proactive chat, as they have (see the literature review that follows), the chance that the growth is coincidental to the proactivity is negligible.

Testing for marketing effects

Disentangling the proactivity itself from the marketing effects, i.e., the increased awareness of the service, is much less straight forward. Each proactively generated invitation is essentially an advertisement for the service, making it impossible to look at proactive chat

separate from the marketing of proactive chat. One possible approach is to alternate periods of proactive and static chat. This would provide data with which we may be able to gain insight: if the *primary* contribution of proactivity to chat is to increase awareness in the service, an established chat reference service that has been well promoted via proactivity should have established awareness of the service within the community of users of the interface where the service is offered. The more dramatic a drop in the number of reference transactions when proactivity is turned off, the more likely it is that there are factors other than marketing that are driving the growth.

This approach has one significant drawback: it is neither desirable nor ethical to withhold what we believe to be an effective and valuable educational intervention solely to observe the effects of its absence. However, through fortunate misfortune, incidental outages at [institution name] provide this data: we have had two periods without proactivity in the otherwise proactive chat service we have offered in our EBSCO databases since May 2017. In Period 1 proactivity was turned off for 13 days to address a technical issue with the service. Period 2 was nine days during which proactivity was turned off unintentionally. In both cases, static chat remained available, and the static chat button was visually identical to the un-triggered proactive chat button, i.e., how the chat option is presented when a proactively generated invitation to chat is not being offered. This provides an opportunity to isolate proactivity as a factor in use of the service. Additionally, related to the second period, we accidentally turned on proactivity in our discovery layer for approximately one day, which previously had only static chat.¹

In this article, we examine the changes to number of chat reference transactions originating in our EBSCO databases during the two periods in which proactivity was turned off, as well as the one-day period in which proactivity was inadvertently turned on in our EBSCO Discovery Service interface.

Literature Review

There has long been a tension between the predictability of a designated location, i.e., a desk, where librarians, surrounded by the resources they most use to respond to questions, wait ready to respond to patron requests for assistance, and the inefficiency and level-of-service limitations inherent to that model (Ford, 1986). Perhaps the biggest limitation is that even patrons who recognize they need help often don't initiate an interaction with the librarians (Radford, 1998). This has been an area of research interest for decades, with a common finding being that patrons need some indication that the librarian is willing to provide assistance before they will engage. These indicators range from nonverbal communication designed to make the librarian seem more approachable (Kazlauskas, 1976) to "roving reference," wherein the librarian leaves the desk behind and approaches patrons who may need assistance (Bregman & Mento, 1992). This

1. In Period 1, the technical issue was that chat was being triggered multiple times in the same session, regardless of whether patrons had already declined or accepted assistance. Period 2 occurred through a series of mistakes: we had wanted to obtain a screenshot of an earlier version of the proactive chat widget that appears in our EBSCOHost databases. The change involved editing a footer file in the administrative site that manages our EBSCO product. While returning undoing our temporary change, we accidentally applied the file to our EBSCO Discovery Service (EDS) interface as well as our EBSCOHost database interface. Once we realized that the proactive widget was appearing in EDS, we edited the file to call the non-proactive widget instead, not realizing that file also applied to, and therefore removed proactivity from, the EBSCOHost databases. After nine days, we realized that chat volume was suspiciously low and fixed our error.

has been codified in the Reference and User Services Association's Guidelines for Behavioral Performance, which includes that a successful reference librarian, working with in-person patrons, "[u]ses cues, verbal or nonverbal, to determine which patrons need help, and approaches patrons and offers assistance with lines such as, 'Are you finding what you need?'; 'Can I help you with anything?'; [and] 'How is your search going?'" (RUSA 2013). Thus, even the most traditional face-to-face reference services therefore have always incorporated some level of proactive engagement with potential users.

As library services moved online, the problems of place-based reference were exacerbated. Approaching the librarian at the desk becomes much more of a hurdle if one is not in the library to begin with. Chat reference promised to solve this: by being online, we are where our patrons are. However, the traditional proactive elements of reference service did not immediately transfer to the online environment: we were there, but unseen and unseeing, and you can only do so much to make a button on a webpage seem approachable. Indeed, early on, chat reference struggled to gain traction among users, with numerous services discontinued due largely to the low volume of questions (M. L. Radford & Kern, 2006), and findings of limited use continuing to be reported today (Mavodza, 2019).

Proactive chat, on the other hand, consistently sees much higher levels of use. In the earliest example of proactive chat reference in the library literature, Zhang and Mayer (2014) reported that at John Carroll University chat reference accounted for 21% of reference transactions within six months of launching proactivity, compared to 3% prior to launch. This sudden growth in chat reference has been seen over and over. The University of Texas at San Antonio saw an immediate increase "from an average of eight questions per day to eight questions per hour" (Kemp et al., 2015). University of San Diego saw a 600% increase (Epstein, 2018). DeMars et al. (2018) use a mushroom cloud to symbolize the explosive growth California State University at Long Beach experienced, an overwhelming increase that led them to scale back their proactive presence. Many more examples abound. It is worth highlighting Bowling Green State University, which saw their chat traffic more than double despite choosing an intentionally unobtrusive way of implementing proactivity (Rich & Lux, 2018).

Of even greater import, the increase is largely in more complex questions. In the studies cited above, Zhang and Mayer found that 74% of proactive chat questions were reference/research questions, compared to 57% of patron-initiated chats. Kemp et al. report 81% of proactive chats were scored three or above on the READ Scale, compared to 63% of patron-initiated chats. Epstein found 70% of questions in the proactive service were "research assistance" questions. At our own institution, we found that 98% of questions received via proactive chat were research related (Warner et al, 2020)

In sum, chat reference has been an incomplete resolution to a long-standing tension of reference service, e.g., between being in a consistent, set location where patrons can find us and being amongst our patrons as they work and encounter the need for our assistance. The concerns that plagued face to face reference, namely relatively low use and relatively basic questions, were replicated online. Substantial increase in demand for chat reference as well as question complexity coincide with the move to proactive chat.

Methods

At the University of New Mexico, we first launched proactive chat on May 3, 2017. We embedded a Springshare LibChat widget in databases offered through the EBSCOhost interface. This platform was selected because of the ease of integrating the chat widgets into the platform

interface, as well as because these databases are commonly featured in library instruction for general education classes. The widget initially appeared as a tab vertically centered on the right edge of the browser window, labelled “Chat-UNM Librarian”. During chat reference service hours, the tab would slide out and present the opportunity to start a chat session if users either clicked the tab or remained on the page for 30 seconds. If the patron elected not to chat, the tab would slide to the closed position and remain closed for the remainder of the session. In November 2018, the appearance changed to a button in the upper right of the interface. After 30 seconds on a page, an overlay pop-up inviting users to chat appears. If accepted, a chat session initiates. If declined, the overlay is removed but a chat button remains.

Since launching the service, the widgets have remained consistently proactive during chat reference service hours outside of two periods, 13 days and nine days respectively, during which proactivity was shut off. Period 1 was June 15th to June 27th, 2017, during which proactivity was intentionally disabled. Period 2 was March 18th to March 26th, 2019. During both outages, a static chat widget remained in the databases, in the form of a tab for Period 1, and a button for Period 2. See the previous footnote for an explanation of the circumstances surrounding the suspension of proactivity.

We compared the two periods in which chat in databases was not proactive with similar periods in which the widgets were proactive in those same databases. In period 1, proactivity was disabled by changing the slide-out interval from 30 seconds to 0, with 0 meaning no slide-out, and therefore no invitations to chat were generated. We compared this period to the bracketing periods of the 13 days immediately preceding and immediately following the period, and the same 39 day period (that is, the 13 day outage and the two 13 day brackets) period one year later. We used the aggregated widget usage reports for this data.

In period 2, the proactive widget in the database was replaced with the static widget that also appears in our EBSCO Discovery Service (EDS) interface. The look and placement of the static widget was identical to the proactive widget, the only difference being the lack of a trigger-initiated pop-up-overlay invitation to chat. We compared this nine-day period with the bracketing periods of the preceding and subsequent nine-day periods, and with the same 27 day period (that is, the 9 day outage and the two 9 day brackets) one year prior and one year later. The data used for these comparisons were taken from the referring URL field captured in the metadata recorded for each chat transaction.

In addition, the proactive widget from our databases was embedded in EDS on March 18th, 2019 and was active during service hours on March 19, 2019, resulting in one day of proactive service in that discovery layer, which had not previously had proactive chat. We compare the number of transactions on this day bracketed by the 30 days preceding this day and the 30 days that immediately follow this day.

Known Limitations

The most significant limitation to our method is that the periods without proactive chat occurred incidentally, rather than selected specifically for research purposes. Period 1 occurred during Summer session², a time that typically sees less use of our reference services than Fall or Spring

2. Summer session was June 5 –July 29, 2017

semesters. In this case, the lower baseline use would limit how pronounced the difference could be between proactive and non-proactive periods.

Period 2 occurred immediately after spring break.³ This is significant because it means that seven of nine days of the comparison period that precedes the outage are during a time of reduced hours and lower use. Here too, a decrease in chat sessions during Period 2 compared to the preceding period would appear less pronounced than it might otherwise, while an increase would appear exaggerated: we would expect the period after spring break to have more transactions than we see during spring break.

A second important limitation is that chat sessions from our proactive chat widgets are not necessarily the result of a proactive invitation to chat. Patrons can initiate a chat session before or after the invitation. The metadata generated automatically by our proactive chat widget does not provide any way to differentiate chats that were initiated from the proactively generated invitation to chat from those that were patron initiated. However, since other factors, apart from calendar issues mentioned above, remain constant, this shouldn't impact our interpretation of differences between the comparison periods.

Lastly, this method, limited as it is to analysing the usage logs of the software, does not allow us to make strong claims about our patrons' decision-making about whether or not to use our chat services.

Results

During Period 1, zero chats were initiated via the widget in the EBSCO databases. In the preceding 13 days, we had 22 chats via this widget, and 16 in the following 13 days. A year later, we saw similar, if slightly lower use in the two periods bracketing the anniversary of Period 1, and 10 chats during the anniversary itself.

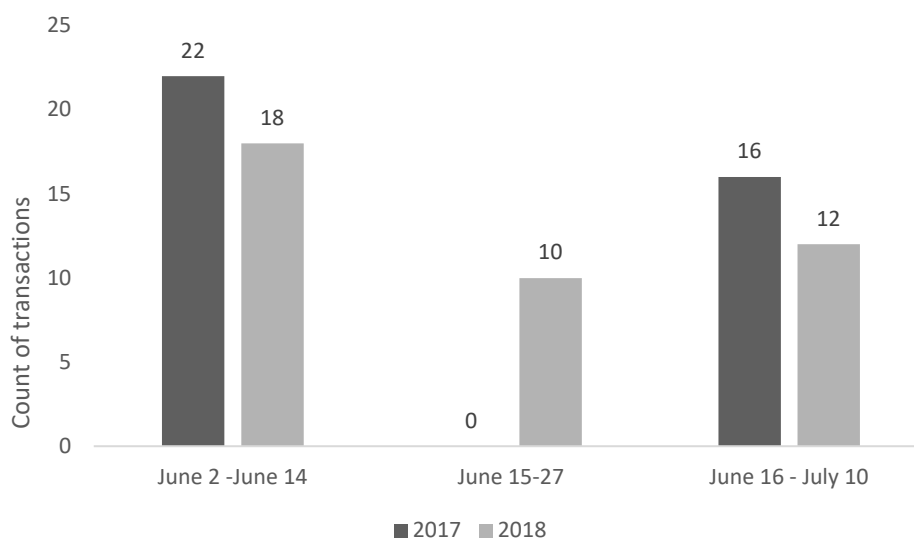


Figure 1. The first period of no proactivity, June 15-27, 2017, bracketed by comparison periods.

3. Spring break was March 10-17, 2019

In Period 2, three chats originated in the static EBSCO database widgets. During the preceding nine days, which, as mentioned above, includes seven days of Spring break, 10 chats originated in the databases, while 12 occurred in the following nine days. In the same nine-day period in the preceding year, we had 19 in that widget.

Figure 2 shows Period 2 bracketed by the three 9-day periods before, after, and the year before and the year after.

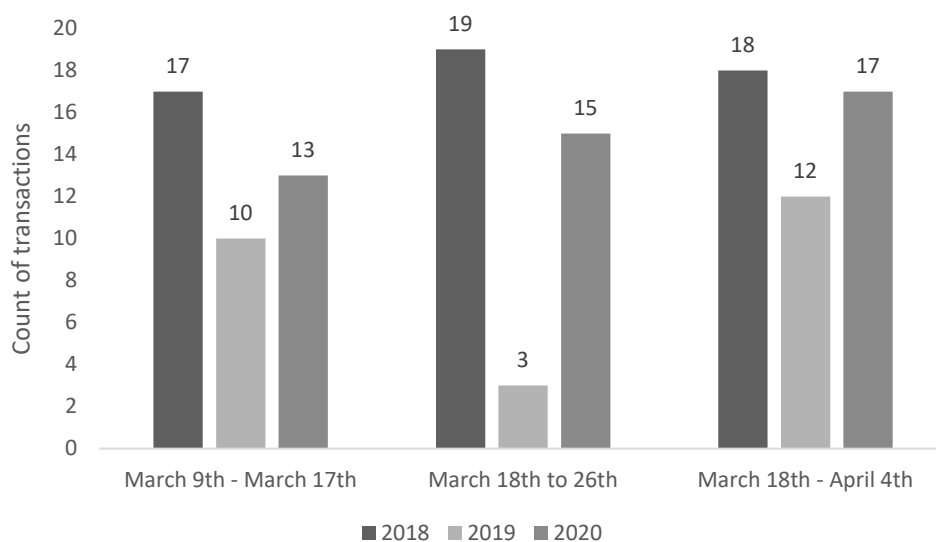


Figure 2. The second period of no proactivity, March 18-26, 2019, bracketed by comparison periods.

While the comparison periods in 2018 and 2020 were higher than 2019 across the three periods, the difference is most pronounced during the period when proactivity was turned off. Indeed, in the other years, March 18th to 26th was a period of increased chat activity from the previous period, while in 2019, the number of chats dropped by 70%.

Finally, we look at one day in which chat was inadvertently turned on in our primary discovery layer, EBSCO Discovery Service. During the day in which EDS had proactive chat, we had 30 chat transactions. This was higher than any day prior or since. Table 3 shows data from two months, centered on the day proactivity was turned on.

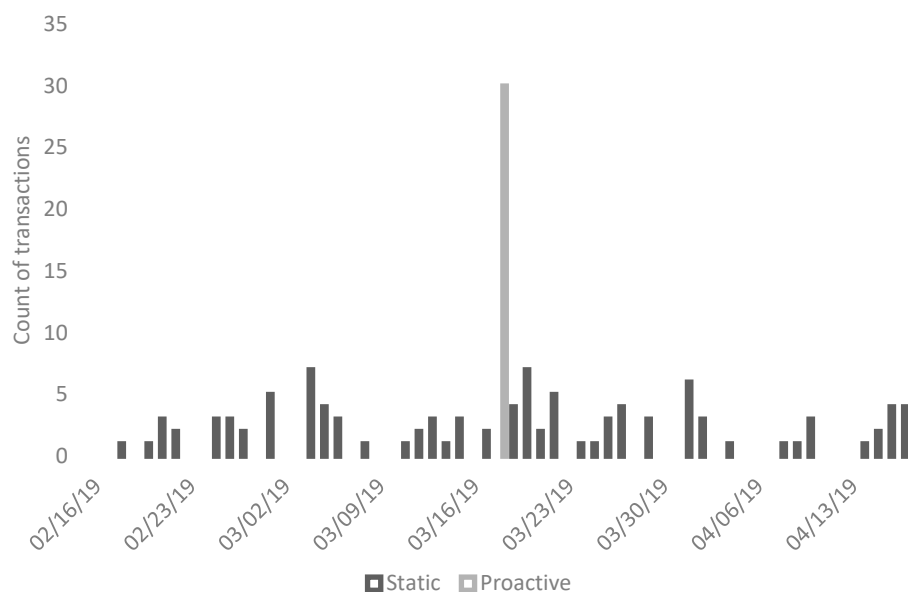


Figure 3. Two months of chat transactions in EDS, centered on the one day in which proactivity was enabled.

Discussion

In this study, we set out to determine the most likely driver of the increase in chat reference transactions that coincide with introduction of proactive chat. We came up with four possibilities. First, that patrons have an increased willingness to use chat in general, coincidental to the introduction of proactive chat. Second, that introduction of proactive chat into contexts with no prior chat service found untapped demand, i.e., the context is the driver, not the proactivity. Third, that increased awareness of the service drove growth: that is, proactivity serves primarily as a marketing tool. Fourth, that proactivity itself drives the growth.

While factors one through three undoubtedly play a role, the dramatic decrease in chat frequency when proactivity is turned off, both when the service was new and as an established service, strongly suggests proactivity itself is driving growth. Based on the comparison periods, we would expect 12 to 15 chats to occur in the databases during Period 1. Instead, no chat interactions happened during this period. In Period 2 we see results similar to those in Period 1. We could expect between 10 and 14 chat transactions during Period 2. However, only three transactions occurred while the widget was static.

If, per possibility three, the effect of proactivity was primarily to raise awareness of the service, we might expect that when the service was new, as it was in Period 1, use would drop while proactivity was turned off. However, by Period 2, when invitations to chat had been sliding out for nearly two years, we can reasonably expect that regular users of those databases were aware of the service. The marketing effect should be considerably less pronounced at this point. And yet we see a similarly dramatic drop in chat reference during the nine days when proactivity is disabled.

If, per possibility two, the growth is primarily because of previously untapped demand, we would not expect the pronounced spike in transactions that occurred for the one proactive day – and only for that day – in a context that had long had static chat embedded. Furthermore, as a result of our research on proactive chat, we ultimately introduced proactivity more permanently into our discovery layer, and observed an immediate and sustained higher number

of transactions. Table 4 shows the full history of chat in our implementation of EBSCO discovery service, before and after proactivity.

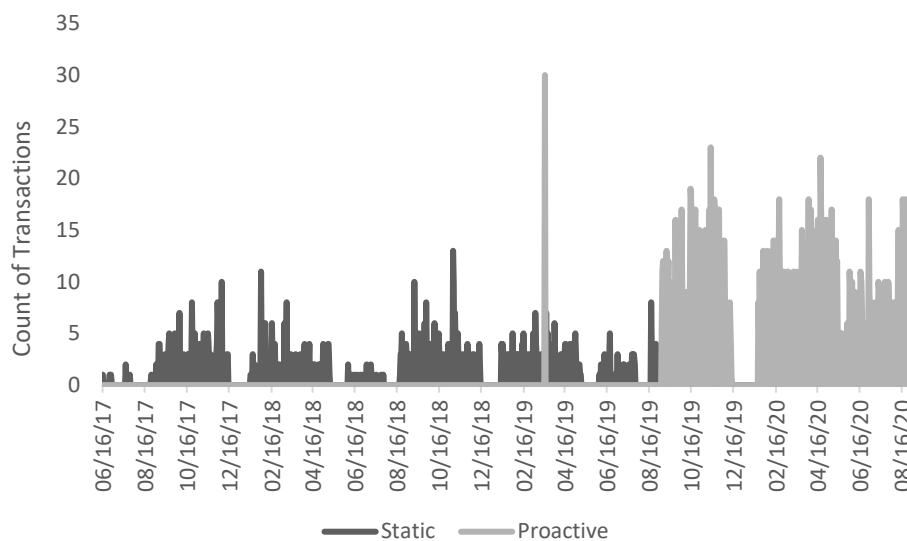


Figure 4. Chat reference transactions per day in EDS. We added proactivity on September 3, 2019.

This data also argues against the first possibility, of a coincidental increase in patron comfort with chat services generally. This possibility was discussed and discounted earlier, based on the consistent findings across institutions and from different years of sudden growth coinciding with the introduction of proactive chat. The increase in chat transactions is not coincidental to proactivity.

Conclusions

Proactive chat is transforming reference service. Libraries that introduce proactive chat are seeing sudden, substantial, and sustained increases in the number of transactions. Our data suggest it is the proactivity driving this change, not a change in our patrons, their awareness of our service, or the contexts in which we are offering the service. What's more, the questions coming in through proactive chat are more complex and more research oriented than before.

This has implications for staffing and staff training, especially in libraries where staffing models assume questions will be few and basic. It also has implications for how we evaluate database and other service platforms from our vendors: how easily proactive chat can be integrated should be a significant point of evaluation of products for libraries implementing or considering proactive chat.

Additionally, considering chat reference from a human computer interaction (HCI) perspective may prove fruitful for service planning, evaluation, and research. HCI principles may help us understand both what is working well and what might need to change. For instance, many of our current proactive chat implementations are “impolite” in that they interrupt our patrons while they are working (Whitworth, 2005). In what ways can we give control to our patrons for when and in what form an interaction is triggered?

There is also a great need for user experience improvements into proactive chat services, building on the work of Imler et al. (2016). In our current chat system, for example, a cookie records when an invitation to chat is declined, and so no additional offers are made during that session. However, when search results are opened in multiple tabs before the chat offer is declined, an invitation is generated in each tab, displaying to the patron numerous times in a single session. Such experiences increase the annoyance factor without any benefit to the patron. If we accept that proactivity brings engagement rather than just awareness, we can begin to fine tune the service for the benefit of our patrons.

In many ways, proactive chat is an entirely new service, using new technologies to reach new patrons to offer our assistance and expertise. We must not assume that this is 'reference' as we have come to know it. We have the opportunity to change our expectations for how we interact with our patrons. We should seize it.

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