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"Screenagers" and Live Chat Reference: Living Up to the Promise

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Abstract: Today’s 12-18 year old members of the Millennial Generation have been referred to as “screenagers” because of their affinity for electronic communication via computer, phone, television, etc. screens (see Rushkoff, 1996). These young Millennials are at home in the instant messaging and chat environment. It is well known that their communication and information-seeking behaviors are distinctly different from those of other age cohorts and radically different from those of the baby boomer generation. Libraries are providing Web-based virtual reference services (VRS) as alternatives to traditional face-to-face (FtF) reference services to meet the information needs of virtual as well as FtF library users. This paper presents the revealing results of an international study of communication and information-seeking including a series of three focus group interviews with 12-18 year olds and analysis of a random sample of 431 live chat reference transcripts drawn from an international population. Focus groups were conducted with the cooperation of public and school librarians in collaboration with public school teachers. Analysis of these focus group interviews with groups of urban, suburban, and rural screenagers reveals their communication and information-seeking preferences. These groups have revealed that they use IM for socializing and collaborative homework, yet perceive library VRS differently then these other virtual encounters; they also express a preference for FtF encounters with librarians. Implications of the findings for school librarians are discussed.

Introduction

Much scholarly and popular literature focuses on the Millennial Generation, born from 1979-1994 (Sweeney, 2006), also called Net Generation, Digital Generation, or Echo Boomers (Sweeney, 2006; Oblinger & Oblinger, 2005, 2006; Hallam & Partridge, 2006). This generation is second in size to the Baby Boomers (born 1946-1964) and will eventually outnumber Boomers, perhaps as early as 2010 (Sweeney, 2006, p. 2). Millennials have "behaviors and characteristics that distinguish them in degree or kind from previous generations *at the same age"* (emphasis in original, p. 1). Their communication and information-seeking behaviors are distinctly different from older cohorts and radically different from baby boomers. Millennials prefer electronic interfaces that offer more choice/selectivity; flexibility/convenience; and personalization/customization options, and demonstrate a penchant for experiential learning, impatience, a results-oriented approach to communication and searching tasks; and an aptitude for multi-tasking (Sweeney, 2006).

Twelve to18 year old Millennials are referred to here as "screenagers" because of their affinity for electronic communication via computer, phone, television, etc. screens (see Rushkoff, 1996). Agosto and Hughes-Hassell (2005) found: "when these teenagers have information needs, they turn to telephones, televisions, computers, and radios before turning to print resources such as newspapers, books, and magazines. In fact, books and magazines, still staples of many public and school libraries, were listed at the bottom of their list of resources" (p. 161). Screenagers are at home in instant messaging and chat

environments to a degree unmatched by preceding generations, and exhibit Millennial characteristics to a greater degree than the older group (19-27 year olds).

Responding to user demand and technological trends, an increasing number of libraries provide Web-based virtual reference services (VRS) as alternatives to traditional face-to-face (FtF) reference. VRS include asynchronous (e.g., e-mail), and synchronous (e.g., instant messaging/chat) formats. Information seekers increasingly turn to VRS for anonymity, convenience, (Tenopir, 2004), and extended hours (Ruppel & Fagan, 2002). Yet Braun (2002) noted that libraries have been slow to adopt instant messaging or chat that screenagers find more appealing than e-mail.

Literature Review

The proliferation of VRS underscores the need to understand the behavior of users and providers, examine participant satisfaction, explore the needs of specific populations, and promote successful interactions. Interpersonal aspects have been shown to be critical to clients' perceptions of successful FtF reference interactions (Radford, 1993, 1998, 1999; Dewdney & Ross, 1994) and in virtual environments (Radford, 2006a; Walter & Mediavilla, 2005). VR encounters produce a complete transcript of each interaction, allowing researchers to conduct content analyses of the dialogue that may be too difficult and/or obtrusive to attempt during FtF encounters.

Much VRS research involves evaluations of task-related dimensions such as accuracy (see Arnold & Kaske, 2005, Foley, 2002; Gross & McClure, 2001; Kaske & Arnold, 2002; Sloan, 2004; and White, Abels, & Kaske, 2003). More investigators are turning their attention to the interpersonal characteristics of VRS (see Carter & Janes,

2002; Janes & Mon, 2004; Mon, 2006; Nilsen, 2004; Radford, 2003, 2006a, 2006c; and Walter & Mediavilla, 2005).

Millennials and Libraries

Millennials have unique approaches to communication and information-seeking that influence their perception and use of libraries. They have "grown up with computers and video games…accustomed to multimedia environments: figuring things out for themselves without consulting manuals; working in groups; and multitasking" (Lippincott, 2005, p.13.2). Sweeney (2006) believes: "While some in the older generations may adapt quickly, they will always be immigrants and will never be as competent, resourceful, or 'natural' as the Millennial 'natives' born into this new culture" (p. 1). Older generations tend to search the web to complete a given task, but Millennials see the "web as their information universe…[and] prefer the global searching of Google to more sophisticated but more time-consuming searching provided by the library" (Lippincott, 2005, p. 13.3, see Schacter, Chung, & Dorr, 1998). They want easy access to full-text documents and become impatient with complex searching that yields citations or abstracts and "want not just speedy answers, but full gratification of their information requests on the spot (p. 13.13, see Connaway and Prabha, Forthcoming).

Millennials make limited use of libraries and view librarians in negative terms. Radford (2006c) found that librarians who reprimand adolescents for chat behaviors (such as flaming) can provoke or exacerbate rude behavior, and provides recommendations for promoting positive encounters. Research with urban teens found: "participants conveyed negative attitudes toward libraries and librarians and reported frustration with…aspects of library service such as strict rules, unpleasant staff, lack of

culturally relevant materials, dreary physical spaces, and limited access to technology" (Agosto & Hughes-Hassell, 2005, p. 161).

Walther and Mediavilla (2005) believe VRS will appeal to Millennials who are frequent users of IM and social networking sites such as MySpace.com® (Hempel, 2005). Further, Millennials "were not competent participants in the text-oriented discourse environment created by reference librarians. When teens go online with their friends, spelling is less important than rapid response, and capital letters and punctuation are nonexistent. The aim is to connect. Content is almost irrelevant. Indeed when teens go online with their friends, the medium is the message" (Walter & Mediavilla, 2005, p. 12, see also Fagan & Desai, 2003, and Janes, 2002). Walther and Mediavilla (2005) believe that: "Unfortunately, the librarians we studied seem to have grafted inferior versions of the communication styles and protocols of face-to-face reference onto some rather clunky software" (p. 14). They conclude that VRS has not yet lived up to its promise for young people.

Theoretical Perspective and Research Questions

This research builds on the work of Watzlawick, Beavin and Jackson (1967), as applied by Radford to FtF (1993, 1999) and chat (2006a, 2006c) reference encounters. Watzlawick et. al, (1967) proposed that all messages have two dimensions**:** content (information) aspects and relational (affect, interpersonal) aspects. Research questions derived from gaps in the literature and application of the Watzlawick et al. (1967) perspective are:

- What are teenager's communication and information-seeking preferences?
- What relational dimensions are present in chat reference?
- What are the differences in the relational dimensions of teenaged VRS users, other users and librarians?

- What critical factors influence decisions to use VRS?
- How is the lack of nonverbal cues compensated for in VRS?
- How does VRS users' satisfaction with FtF reference compare to VRS?

Method

Data were collected from three focus groups and from analysis of a random sample of 431 VRS transcripts from an international service provider. Procedures for data collection, selecting participants, data analysis, and a report of results are given below.

Focus Group Interviews

Three focus groups were conducted with young Millennials (screenagers), in three Northeastern states, one each from rural, suburban, and urban areas who were regular library users, but had not used VRS. Participants were recruited by librarians from one school and two public libraries in collaboration with public school teachers. Two (rural and urban) groups were held at public libraries, one (suburban) at a public high school. The suburban high school participants were from a history class. The urban and rural participants were recruited by public librarians.

Of the 33 total participants, 18 (55%)[1] were female and 15 (45%) male. Ethnic composition was: 21 (64%) Caucasian, 6 (18%) African-American, and 6 (18%) Hispanic/Latino. Thirty-one (94%) participants were in high school and 2 (6%) were in junior high, with ages from 12-18. Participants signed informed consent forms and parental signatures were also obtained for those under 18.

The transcripts were audio taped and transcribed verbatim. Names were removed for confidentiality. The transcripts were qualitatively analyzed and common themes were identified for each question (see Appendix A for focus group questions).

Focus Group Results and Discussion

Preference for Independent Information-seeking

Several common themes emerged across all three groups. These screenagers prefer to use Google, other search engines, browse the web, ask friends, or find information themselves, rather than ask a librarian for help (see also Agosto & Hughes-Hassell, 2005, 2006). Urban and rural teens trusted Google results above advice from librarians (see also Schacter, Chung, & Dorr, 1998). A rural teen voiced the majority opinion: "I wouldn't really trust my librarian. I trust Google." Another rural teen said: "I find something on Google and there's enough information on it and it seems logical, I'll just go with it." Another usually used Google results without verification, but would check for research papers: "Especially if it's something like you're doing a paper in class and you already know the subject pretty well and all you're looking for are sources to validate what you, you're putting like your argument on paper. You validate your argument. I really don't double check it. I'm like well 'this is what I'm trying to say. This is the source I'm going to use.' But if it's like a research paper, I'll double check my sources a couple of times just to make sure it's the right information."

Google is seen as easier and more convenient than library subscription-based databases. Suburban teens alone trusted results from databases (such as SIRS or Galenet) above Google or web surfing. They had been taught to use these resources in English class and have easy access to them through their school library's website. They agreed, however, that Google would be used to gather background information in beginning

research projects. Suburban teens had also been taught to evaluate web content**. O**ne urban student said: "What I've seen lately is that you can have a page that's perfectly structured and everything, but yet it can be inaccurate with, um, information… Some pages like that are biased like towards one thing. So you have to make sure you look at everything on the page." Many teens trusted their ability to evaluate web resources above that of the librarian, although others understand that librarians know where to find quality information. Valenza (2006) notes that adolescents have an "apparent lack of concern for their ability to discern the quality of their sources…students spend little time evaluating what they have on the screen, apparently not able to distinguish wheat from chaff" (p. 19) and asserts that "People, teens included, stop their searching at *good enough*" and frequently choose to "satisfice," following "a path of minimum effort" (p. 20, emphasis in original, see also Prabha, Connaway, Olszewski, and Jenkins, Forthcoming).

Preference for FtF Interaction

Unexpectedly, the majority prefer FtF interactions with the librarian to mediated communication when they choose to ask for help. Participants had established strong relationships with their public (urban) and school (suburban) librarians. One suburban teen noted: "Yeah. I think it's easier to have her right there because you can get her feedback on the articles. Like she'll pull up a few and then she'll tell you like what she thinks; it's scholarly or like what she thinks. Then if you're 'This isn't right for me,' she can help you find what you actually need." Another suburban teen agreed: "As long as you're having conversation with someone else at least you can build a relationship. That's just something that you can't get through a computer typing in stuff." Both rural

and urban screenagers reported that they were more likely to ask their public librarians for reader's advisory help than for school-related information.

Although the majority carried cell phones, they had never used their phones to call a librarian for homework help and were largely unaware that their library had a phone reference service. One urban female was unaware of the library's web page. None of the teens would ever email a librarian.

Librarian Stereotypes

Although they valued the interpersonal relationships with their librarians, the urban and rural groups held negative stereotypes. This excerpt from the urban group reveals that the adult reference librarians were viewed negatively.

> Lisa:[2] Yeah, like if they're not helpful, they'll point me in the direction and say "Oh…(talk-over)
>
> Joe: Yeah. Sometimes, sometimes I've asked them like where's a certain book and they'll be like, they'll just point at a random shelf… And then, and then I look and there's like three shelves next to each other and I'm like "Which one is it?" So, it's like you have to go and look at every book to see if the book is there.
>
> Sarah: And you get embarrassed; you don't want to ask them again once you've already asked them…(talk-over)
>
> Joe: …It's like they close their eyes and they're like that "That one right there." (laughs)
>
> Multiple Participants: (laughter)
>
> Sarah: And then cause you've already asked them, you don't want to feel like you're pestering them too much so you don't go and ask them again. It's like, it's like, you don't want to go "So which shelf are you pointing at?" Because, I mean, once they do their famous point, it's just like… (laughs)
>
> Multiple Participants: (laughter)
>
> Sarah:…you don't want to go near them again. That's it. So, you'd rather try your luck in searching it out yourself or going on the computer.

> Ed: I have actually, uh, left the library and came back another day for the book. Because they would do **the the** point and then,…(talk-over).

It is especially poignant that Ed "actually, uh, left the library and came back another day for the book" rather than interact with the librarian a second time to clarify directions. Sarah refers to "their famous point" evoking one of the components of the librarian stereotype (see Radford & Radford, 1997). Clearly, screenagers choose to avoid possible embarrassing situations (see Goffman, 1967).

A rural teen was concerned about approaching a school librarian after an orientation session: "they spend like the first forty-five minutes of that first day explaining everything that you've heard for like four years and you know how to do it and you're just like 'Can I go and do this? I know what I'm doing.' And I'm like, if you go ahead they'll yell at you and it's just like, uh, it drives you crazy." An urban teen voiced a stereotypical view that librarians: "go and use books and just do more traditional librarian kind of thing." One rural teen described his school librarian as mean and the school library atmosphere as unwelcoming: "Aaaah, if it's necessary, I'll go. But if not, I'd rather stay away from it."

Reasons for Not Using VRS

Several reasons emerged to explain why participants had not tried VRS, although nearly all of the participants were avid IM users, except for the urban students who use email (see also Agosto& Hughes-Hassell, 2005). Participants used IM for socializing, not for serious pursuits like homework help. One reason teens did not use VRS was that they were unaware that these services existed—even though two of the locations had free statewide VRS available 24/7. Some feared that chat librarians either would not understand, ignore, or would not care about their information needs. One rural teen said:

"Plus I think the IMing kind of gives it a cold feeling to it like, you know. They really don't care. They're just doing their job. When you can actually sit and talk to someone face-to-face you kind of can see if they care or not, you know. If they don't care, you're like 'Well, you're not going to help me very much anyway' and you can move on. But the IM, you can keep trying to ask the same person the same question like over and over. And if they don't care, they're just going to keep ignoring you."

Participants had little confidence in the multi-tasking or technical abilities of the librarians. One rural teen said: "A librarian's trying to do like 15 of those conversations at once they're going to mix up replies, mix up the …what and it **it**, I just don't think it'd be a very applicable…"

Reflecting Millennial impatience, a suburban teen thought VRS would be time consuming: "I don't really want to take the time actually to type out, like explaining what I'm doing, what I need it for, what type of sources I need." Others felt that asking difficult, e.g., high-level math and science, questions would prove too complex for VRS librarians.

Privacy Concerns

Participants had serious privacy and security concerns that stem, in part, from, widespread media attention to internet predators. Already warned to avoid disclosing personal information in chat rooms, teens are reluctant to engage with VRS librarians since they may possibly be dangerous strangers or cyber stalkers. One urban screenager said; "I don't usually like to talk to like people I don't know on the internet." A rural participant said: "I'm not going to go get tutored on the Internet by somebody who I

personally don't know who might be some psycho serial killer out there when I could get personal help from my home and people in my community."

Factors Influencing Future Use

When asked what would encourage them to try VRS, some said a trusted librarian, teacher, or friend's recommendation—or better marketing and publicity by service providers—might help. One rural student said: "I like going to people I know. I would probably try it as a last desperate resort…I'd feel a little creeped out talking to some random person about it but okay, I'd give it a shot." Others felt that if they could choose a trusted librarian, or one wanting to develop a positive relationship they would try VRS.

Chat Transcripts – Data Collection and Analysis

Six hundred chat reference transcripts were randomly selected from a population of approximately 479,673 from OCLC's QuestionPoint[3] service over eighteen months (July 2004 to November 2006). Four hundred ninety-two transcripts were analyzed for this paper; 431 of these were deemed usable after eliminating system tests or technical problems. Transcripts were first coded for educational level through user self-identification or inference. The five education level categories were: Primary School Student (grades k-5), Secondary School Student (screenagers, grades 6-12,), College Student (undergraduate/graduate), Adult (not in college), and Unknown. Self-identified cases revealed their year/grade level in school or age, or were tagged in the XML data for grade level. When such information was not expressly stated, cues in transcripts were used to infer education level, such as context or subject of questions. When education

level was ambiguous (e.g., when an assignment could be for an advanced high school class or an introductory college class) the educational level was coded "unknown."

To check coding reliability, a second coder reviewed education levels for 86 (20%) of 431 transcripts. There was 92% agreement initially, but all but one disagreement was resolved after discussion for 99% final agreement.

Once educational level had been coded, all transcripts were stripped of identifying information (e.g., name, email address, IP address, telephone number). The "cleansed" transcripts were then coded using Radford's Relational Communication Category Scheme to identify type and frequency of interpersonal communication. Qualitative analysis involved repeated reading, identification, comparison, and categorization of issues, patterns, and themes following the constant comparative method (Glaser & Strauss, 1967; Lincoln & Guba, 1985). The category scheme and coding method was applied in a manner used in previous studies (see Radford, 1993, 1999, 2006a) and was further expanded and refined during transcript coding for this project.[4] The theoretical perspectives of Watzlawick, Beavin, and Jackson (1967) and Goffman (1972, 1956) provide frameworks for category development focusing attention on content (task) versus relational (interpersonal) aspects of communication. See Appendix B for the Radford Relational Communication Category Scheme.

Chat Transcript Analysis – Results and Discussion

In the 431 usable transcripts, 22 (5%)[5] users self-identified**;** an additional 72 (17%) users were inferred to be screenagers (secondary students) for a total of 94 (22%). The remaining users were classified into: primary school students, college students, adult (not in college) and unknown. Results for the 94 (22%) screenagers were compared to

results for 150 (35%) users with identifiably different education levels. The educational level of the remaining 187 (43%) could not be determined.

Many interpersonal dynamics present in FtF reference interactions were found to be present in VR. As seen in the Radford Category Scheme, facilitators that assist in relationship development and barriers that impede relationship development were identified in the transcripts. See Appendices C and D for examples of transcripts with Relational Facilitators and Barriers.

Table 1 defines Facilitators and Sub-Themes used to classify the data. Greeting Rituals establish contact with a “Hi” or “Hello” in response to a (usually) canned script sent by the system, e.g., “Hello and welcome to Ask-A-Librarian. I am reading your question now.” Similarly, Closing Rituals refer to exchanges during which the user may thank the librarian and/or add a farewell such as “good bye” and are met with similar response/script from the librarian such as “Thank you for using Ask-a-Librarian. Please return if you need additional information.” Users and librarians demonstrate deference by employing polite expressions, apologies, and repair strategies when mistakes are made. Rapport Building consists of conversational give and take, self-disclosure, inclusive language (i.e., let’s or we), use of informal language, and other strategies common in FtF dialogue. Nonverbal communication is rerepresented by use of emoticons [e.g., ;)] spelling of nonverbal behavior (i.e., ha ha), phrase abbreviations (i.e., LOL for Laughing Out Loud), use of all caps (i.e., FLAMING), and other rapidly evolving text-based techniques.

Table 1 Relational Facilitators- Themes and Definitions[6]

MAJOR THEME	**Definition**
Relational Facilitators	Interpersonal aspects having a positive impact on the librarian-client interaction and enhancing communication (Radford, 1993, 1999, 2006a).
SUB-THEME	**Definition**
Greeting Ritual	Hello message, marking the beginning of an interpersonal interaction by exchanging "salutations" (see Goffman, 1972, p. 76).
Rapport Building	Aspects of the interaction that "involve[s] conversation encouraging give and take, establishment of mutual understanding, and development of relationships" (Radford, 1999, p. 25).
Deference	Showing courtesy and respect. Regularly conveying one's appreciation and confirming the relationship between participants (Goffman, 1956).
Rerepresentation of Nonverbal Cues	Use of text characters or characteristics to compensate for nonverbal cues not present in chat (see also Walther & D'Addario, 2001).
Closing Ritual	A goodbye message signaling the end of interpersonal encounters, "some form of farewell display performed during leave-taking" (Goffman, 1972, p. 79).

Differences in Facilitators – Screenagers Compared to Others

The process of **c**omparing counts and averages of occurrences for the Facilitators found in Screenagers' transcripts revealed interesting differences. Screenager transcripts had lower numbers/averages in a number of categories (see Table 2).

Table 2 Relational Facilitators – Lower Numbers/Percentages for Screenagers

Category	Number Occurrences Screenagers (n=94)	Number Occurrences Others (n= 150)
Thanks	88 (.94%)	193 (1.29%)
Self Disclosure	53 (.56%)	136 (.91%)
Seeking Reassurance	51 (.6%)	106 (.71%)
Agreement to Try Suggestion	47 (.5%)	111 (.74%)
Closing Ritual	34 (.36%)	79 (.53%)
Admitting Lack of Knowledge	9 (.10%)	32 (.21%)
Encouraging Remarks	1 (.01%)	8 (.05%)

Teens typically have low levels of self-disclosure and are reluctant to admit lack of knowledge or agree to advice, so these results are not unexpected (Radford, 2006b). They engage in fewer closing rituals, since they are generally impatient and may suddenly leave the chat session. However, they say "thanks" at nearly the rate of those at other educational levels, demonstrating better manners than usually attributed to teens. Screenagers are also enthusiastic (Sweeney, 2006), so it is also not surprising that they express their gratitude.

Screenager transcripts had higher numbers/averages in some Facilitator categories (see Table 3). Teens favor typing shortcuts and alternative spellings, having embraced the key-stroke-conserving tactics of Instant Messaging and text messaging, as seen prominently here (see Carter, 2003; Zlinko 2006). It is therefore not surprising that Millennials frequently use alternate spellings, lower case, and alpha-numeric shortcuts such as "ne1" (anyone).

Table 3 Relational Facilitators – Higher Numbers and Percentages for Screenagers

Category	Number Occurrences Screenagers (n=94)	Number Occurrences Others (n= 150)
Alternate Spellings	34 (.36%)	22 (.15%)
Punctuation/Repeat Punctuation	27 (.29%)	33 (.22%)
Lower Case	22 (.23%)	26 (.17%)
Slang	11 (.12%)	3 (.02%)
Self-Correction	10 (.11%)	6 (.04%)
Enthusiasm	9 (.10%)	10 (.07%)
Explanation for Abrupt Ending	6 (.06%)	3 (.02%)
Alpha-Numeric Shortcuts	3 (.03%)	0

Table 4 Relational Barriers[7]

MAJOR THEME	Definition
Relational Barriers	Interpersonal aspects of the chat conversation that have a negative impact on the librarian-client interaction and that impede communication (see also Radford, 1993, 1999, 2006a).
SUB-THEME	Definition
Relational Disconnect/Failure to Build Rapport	Failing to encourage give and take, establish mutual understanding, and engage in relationship development (see Radford, 1999, p. 25).
Closing Problems	Ending the chat interaction without a closing ritual or exchange of farewell or goodbye (see Goffman, 1972).
Negative Closure	Strategies "that library staff uses to end the reference transaction, apart from providing a helpful answer" (Ross & Dewdney, 1998, p. 154).

Table 4 defines Barriers and Sub-Themes that emerged from the data. Screenager transcripts had higher numbers/averages in four barrier categories (see Table 5). Abrupt Endings come with the "cyberterritory" in chat, but the "disappearing user" is puzzling for librarians who wonder if technical problems occured, or if the user has left the computer. Millennials, known for their multi-tasking (Sweeney, 2006), may have other chat windows open, get involved in a phone conversation, or abruptly transfer their focus to other tasks. Millennials are also impatient, so again this result is not unexpected

(Sweeney, 2006). The number of users who were rude/insulting or goofing around was low, reflecting findings from analysis of a statewide VRS (Radford, 2006a) that may be viewed as surprising since many librarians believe that teens are often rude in VRS encounters.

Table 5 Relational Barriers – Higher Numbers and Percentages for Screenagers

Category	Number Occurrences Screenagers (n=94)	Number Occurrences Others (n= 150)
Abrupt Endings	41 (.44%) (41 transcripts)	47 (.31%) (47 transcripts)
Impatience	12 (.13%) (8 transcripts)	4 (.03%) (3 transcripts)
Goofing Around	8 (.09) (4 transcripts)	8 (.05) (1 transcript)
Rude or Insulting	3 (.03) (3 transcripts)	0 (0 transcripts)

Implications of Focus Group and Transcript Analysis

These results have many implications for school librarians working with young Millennials. Teen's stereotypical images of librarians and fear of being reprimanded or embarrassed suggest that librarians need to be more aware that teens may be hesitant to ask questions. Results suggest that teens should be encouraged, treated gently, and invited to ask for follow-up help. Librarians might consider accompanying teens to shelves to locate materials and checking with them often during the information seeking process. Teens clearly value FtF interaction, so librarians may want to take extra time to get to know students, create positive relationships, and use constructive feedback techniques (e.g., catch them being good).

Since Millennials like collaborative work, ample group space ought to be designated wherever possible. Teen's preference for independent information seeking needs to be accepted and respected. However, they require guidance in becoming savvy

searchers and evaluating resources. Teens are impatient so instruction on efficient use of search engines and library databases could be promoted as time saving in the long run.

Librarians could do much to allay teens' fear of using VRS. Teens reveal that they would try VRS if encouraged by trusted librarians. Demos of VRS could be given along with discussion of what types of questions and chat behaviors are appropriate (see Radford, Barnes, & Barr, 2006, for user guidelines). Techniques to avoid dangerous chat situations could be offered. Results also suggest that students should be encouraged to enter library phone numbers into their cell phones for quick ready reference or verification questions.

School librarians are urged to try VRS with their students or join/promote a local consortium since these results indicate that screenagers will respond positively to these services if encouraged to do so and treated with respect as users. This research suggests that the above strategies would increase teen use of FtF as well as VR library services.

Conclusion

Results clearly indicate that screenagers have different communication and information behaviors than those of previous generations. The teens' traditional views of librarians carry over into their decision-making process for choosing VRS. They do not think of chat as a possible venue for homework help**,** worry about chat conversations with strangers**,** and have been told to avoid potentially dangerous situations online, so they need to be reassured by trusted adults or friends before they will try VRS.

Focus group interviews reveal that relational dimensions are critically important to adolescents who are experiencing a period of rapid emotional as well as physical development (see also Kuhlthau, 2004). Valenza (2006) notes that a blend of FtF and

electronic services may be best: "For today's learners, libraries can be exciting hybrid experiences of face-to-face lessons learned, reinforced with effective online supports" (p. 23).

Walter and Mediavilla (2005) recommend involving teenagers in developing and evaluating VRS services. "It would be interesting to see what would happen if the designers of such online reference services followed the principles of good young adult library practice and involved the teens as active participants in both the planning and the delivery of the services. At the moment, teens are from Neptune, librarians are from Pluto. Better services would result if they could meet somewhere closer together in cyberspace" (p. 14).

This research project is reaching out to young Millennials to learn more about their communication and information-seeking behaviors. One goal is to gain a greater understanding of their preferences and needs to ensure that virtual and FtF library services are effective and responsive. VRS offers a promising avenue to reach young Millennials if they are encouraged and welcomed by librarians. Future relevance and sustainability of library services may hang in the balance in this Google-dominated information environment if VRSdoes not live up to this promise.

Appendix A – Focus Group Questions for Non-Users of Virtual Reference Services (Ages 12-18)

1. When you are stuck in a homework assignment and need information, what do you do when you need help?

2. When you need help with homework and decide to get help from a librarian, what do you do?

   [PROBES: do you usually go to the library, email a librarian, or call the library on the phone? How do you decide what kind of help to try?]

3. Do you know that you can ask librarians questions or for help using email or IM (instant messaging)? If yes, why haven't you tried them?

4. Would you like to try "IM"ing or chatting with a librarian for help? What would make you interested in trying email or IM to get help from librarians?

5. What have you heard about getting librarian help or getting library resources on the Web from your friends or teachers?

Appendix B – Radford Relational Communication Coding Scheme

FACILITATORS
- Greeting Ritual
- Deference
  - Agreement to Try What is Suggested or To Wait
- Apology
  - Asking for Other to Be Patient
- Expressions of Enthusiasm
- Suggesting Strategy or Explanation in a Tentative Way
- Polite Expressions
- Praise, Admiration
- Self-Deprec ating Remarks
- Thanks
- Rapport Building
- Fam iliarity
  - Humor
- Inform al Language
  - Alternate Spelling, Abbreviated Single Words
- Slang Expressions
- Inter jections
- Offering Confirmation
- Approval
- Em pathy
- Inclusion
- Offering Reassurance
- Encouraging Remarks, Praise
- Enthusias tic Remarks
- Repair Self Correction
- Seeking Reassurance, Confirmation Self Disclosure
- Self Disclosure
- Adm itting Lack of Knowledge
- Explaining Search Strategy
- Explaining Technical Problems
  - Offer Personal Opinion Advice, Value Judgment
  - Rerepresentation of Nonverbal Cues
  - ALL CAPS
- Alpha-Numeric Shortcuts
- Asterisk for Emphasis
- Ellips is
- Em oticons
  - Lower Case
- Phrase Abbreviations
- Spells Nonverbal Behaviors
- Punctuation or Repeated Punctuation

Closing Ritual
Explanation Abrupt Ending
Invites to Return If Necessary
Makes Sure User Has No More Questions
Offers to Continue Searching & E-Mail Answer

BARRIERS
Negative Closure
Abrupt Ending
Discla imer
Failur e to Refer
Ignoring Cues that User Wants More Help
Premature or Attempted Closing
Prem ature Referral
Sends To Google
Relational Disconnect Failure to Build Rapport
Condescending
Derisive Use of Spelling NV Behaviors
Disconfirm ing
Failing to Offer Reassurance
Failure or Refusal to Provide Info
Goofing Around
Ignoring Humor
Ignoring Self-Disclosure
Im patience
Inappropriate Script or Inappropriate Response
Inappropriate Language
Jargon, No Explanation
Lack of Attention or Ignoring Question
Lim its Time
Mirrors Rude Behavior
Mistak es
Misunderstands Question
Reprim anding
Robotic Answer
Rude or Insulting

Appendix C – Sample Transcript with Relational Facilitators
“Mathematics in the Islamic Empire”

(Note: U=User, L=Librarian)

1	**U**	i need a good website about the accomplishments of mathrmatics during the islamic empire
2	**L**	[A librarian will be with you in about a minute.]
3	**L**	[A librarian has joined the session.]
4	**L**	[You have been conferenced with MD]
5	**L**	(Name) welcome to (service name) I'm looking at your question right now; it will be just a moment.
6	**L**	Hi (name) - sorry about the delay there. This is (name), a librarian in Baltimore County...
7	**U**	ok
8	**L**	Okay, we should be able to find something on that topic. Math and Islam. Just a minute or two while I search. Please let me know if there's anything specific in this area that you're looking for, okay?
9	**U**	i don;t care about the delay i have plenty of time
10	**L**	Thanks for understanding. We just had a very busy spell on the service and I just finished up another call. Let's see... searching now.
11	**U**	i just need any certan mathematicians or the accomplishments of mathematics during the islamic Empire
12	**L**	Okay, to start I'm going to send you an article linked from the Math Forum:
13	**L**	[Page sent]
14	**L**	It should show on your screen in just a few seconds. Are you able to see it? the title is Arabic mathematics : forgotten brilliance?
15	**U**	thank you very much
16	**L**	Great - glad you can see it! There was one other article - did you want me to send it to you, or are you okay with just this one?
17	**U**	yes plaese
18	**L**	Okay, just a sec.
19	**L**	[Page sent]
20	**U**	i spelled please wrong
21	**L**	The title of this 2nd page I just sent was, "The Arabic numeral system"
22	**U**	thank you
23	**L**	No problem on the spelling. :) Typing this fast it's giong to happen.
24	**L**	*going*
25	**L**	Okay, what do you think? Will these answer your questions?
26	**U**	yes thank you
27	**L**	Great! Please do write us back if you need anything else.
28	**L**	Thank you for using name service! If you have any further questions, please contact us again. If you provided an e-mail address, you should receive a full transcript in a few minutes. You may click the "End Call" button now.

29	**U**	i am doing a history reseach project and i am having trouble finding things
30	**U**	[patron - has disconnected]
31	**U**	i am doing a history reseach project and i am having trouble finding things
32	**L**	Oh, well if you need any more detailed info, the subscription databases available through the Harford County home page should help. Let me know if you'd like any assisitance in that area.
33	**L**	[Thank you for using (service name!) If you have any further questions, please contact us again. If you provided an e-mail address, you should receive a full transcript in a few minutes. You may click the "End Call" button now.]
34		Note to staff: COMP [user has closed this session]

Discussion of Relational Facilitators in "Mathematics in the Islamic Empire" Transcript

The above example of a positive interaction demonstrates a positive interaction between a librarian and user, with many examples of relational facilitators. Deference, for example, is shown by the librarian in several places. Immediately as the librarian greets the user, an apology is offered for the delay in responding to the user's query (line 6). Later in the transcript, the librarian thanks the user for being patient (line 10) and shares enthusiastic comments with the user (line 16). Another excellent example that highlights a relational facilitator in action is where the librarian reassures the user after a mistake in typing is noted (lines 20 and 23) and crowns the reassurance with a smiley face emoticon. The user demonstrates deference in return by in repeated use of polite expressions and thanks (lines 15, 17, 22, & 26). In line 25 the librarian is again deferential to the user in seeking feedback and approval. The librarian shows kindness, encouragement (line 23) and enthusiasm (line 27) to the user, all of which are relational facilitators which build rapport Lastly, even after the user logs off the librarian continues the positive interaction by inviting the user to return to use the service if further help is needed (lines 32 & 33).

Appendix D –Sample Transcript with Relational Barriers
"Physics"

(Note: U=User, L=Librarian)

1	U	Physics
2	L	[Please hold for the next available librarian. If you would like a transcript of this session emailed to you, please type your full email address now.]
3	L	[A librarian has joined the session.]
4	U	when you drive forward in a bumper car at high speed and then you slam into the car in front of you, you find yourself thrown forward in your car. Which way is ur car accelerating?
5	L	thank you for holding I was working with another patron.
6	L	Is this a homework question.
7	L	I'm not an expert on driving so I really can't answer that.
8	U	can u find a website or something
9	L	I'm not sure what you are asking.
10	U	when you drive forward in a bumper car at high speed and then you slam into the car in front of you, you find yourself thrown forward in your car. Which way is ur car accelerating?
11	U	....
12	U	hello?
13	L	Is this a homework a homework assignment. what subject is it.
14	L	I really don't understand how I can answer that for you.
15	U	can i hav another librarian
16	L	The information you gave you me does not help me find any resources to help you.
17	L	What do you mean by which way is your car accerlaerating. Are you sure thats what your assignment asks.
18	U	yes
19	L	What subject is this question from?
20	U	physics
21	L	Okay just one moment.
22	L	[Page sent]
23	L	This is one site that may help.
24	L	[Page sent]
25	L	[Page sent - LeapStart Learning Table. Learning Starts Here!]
26	L	this is another site that youmay try forhelp.
27	L	When we disconnect youwill have these links in a transcript.
28	L	[Page sent]
29	L	This site looks to be very helpful.
30	L	[Page sent - The Physics Classroom]
31	L	[Page sent - The Physics Classroom]

32	L	[Page sent - The Physics Classroom]
33	U	this isn't helpful
34	L	Well I really don't have any other resources that can assit you.
35	L	[Page sent - The Physics Classroom]
36	L	I cannot answer the question for you, I don't have the physics knowledge.
37	L	Maybe you will need to ask your instructor for a clear understanding.
38	L	[Page sent - The Physics Classroom]
39	U	do u kno ne1 who does
40	L	[Page sent - The Physics Classroom]
41	U	Sorry I do not.
42	U	ok
43	L	I have a few patron that I ned to assist.
44	U	ok bye
45	L	[Thank you for using (service name)! If you have any further questions, please contact us again.]
46		Note to staff: COMP [user has closed this session]

Discussion of Relational Barriers in "Physics" Transcript

The above transcript demonstrates a negative interaction between a librarian and user with multiple examples of relational barriers. The user initiates the chat session by providing the subject area for the inquiry: "Physics." However, this primary piece of information is not attended to by the librarian who twice later asks the user to disclose this information again (see lines 13 and 20). While the librarian could have asked probing questions or performed a query negotiation at any moment during this encounter, no attempt was made to clarify the user's question other than asking about the subject and asking if this is a homework assignment (lines 6 and 13). Other examples of relational barriers include several occasions when the librarian avoids assisting the user and offers disclaimers (see lines 7, 34 and 36) including lack of subject knowledge. It becomes evident that the user is dissatisfied with the assistance from this particular librarian when he/she asks if another librarian can assist (line 15) and again when the user provides feedback that the web resources pushed to his/her desktop are not helpful (line 33). The librarian uses a negative closure strategy in attempting to refer user back to their teacher (line 37). In line 39 when the user asks if the librarian knows anyone (ne1) else who can help, the user is asking for a referral, but the librarian refuses to provide one (line 41). As a final rebuff, the librarian provides an excuse to leave and limits the time by saying he/she had other patrons to assist (line 43).

References

Agosto, D.E., & Hughes-Hassell, S. (2005). People, places, and questions: An investigation of the everyday life information-seeking behaviors of urban young adults. *Library and Information Science Research*, *27*, 141-163.

Agosto, D. E., & Hughes-Hassell, S. (2006). Toward a model of the everyday life information needs of urban teenagers, part 1: Theoretical model. *Journal of the American Society for Information Science and Technology, 57*(10), 1394-1403.

Arnold, J. & Kaske, N. (2005). Evaluating the quality of a chat service. *portal: Libraries and the Academy, 5*(2), pp. 177-193.

Braun, L. W. (2002). *Teens.library: Developing Internet services for young adults*. Chicago: American Library Association.

Carter, K. A. (2003). Type me how you feel: Quasi-nonverbal cues in computer-mediated communication. Etc, 60 (1), 29-39.

Carter, D. S. & Janes, J. (2002). Unobtrusive data analysis of digital reference questions and service at the Internet Public Library: An exploratory study. Library Trends, 49(2), 251-265.

Connaway, L.S. & Prabha, C. (Forthcoming). Identifying serials user's needs: Preliminary analysis of focus group and semi-structured interviews at colleges and universities. *Serials Librarian.*

Dewdney, P. & Ross, C. S. (winter, 1994). Flying a light aircraft: Reference service evaluation from the user's viewpoint. *RQ., 34*(2), 217-230.

Fagan, J. C. & Desai, C. M. (2003). Communication strategies for instant messaging and chat reference services. In B. Katz (Ed.). *Digital reference services* (pp. 121-156). Binghamton, NY: Haworth Information Press.

Foley, M. (2002). Instant messaging reference in an academic library: A case study. College and Research Libraries, 63(1), 36-45.

Gerhardt, P. (2004, September 7). Homework problems? Help is a click away. *Washington Post,* p. C08.

Glaser, B. G. & Strauss, a. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Hawthorne, NY: Aldine de Gruyter.

Goffman, E. (1967). *Interaction ritual, essays on face-to-face behavior.* Garden City, New York: Doubleday.

Goffman, E. (1959). *The presentation of self in everyday life.* Garden City, NY: Doubleday Anchor.

Gross, M. & McClure, C. (2001). Assessing quality in digital reference services: Overview of key literature on digital reference. Information Use Management and Policy Institute, Florida State University. [Retrieved on November 3, 2006 from: http://dlis.dos.state.fl.us/bld/Research_Office/VRDphaseII.LitReview.doc]

Hallam, G. & Partridge, H. (2006). Evidence based library and information practice: Whose responsibility is it anyway? *Evidence Based Library and Information Practice 2006, 1*(3). [Retrieved on November 3, 2006 from http://ejournals.library.ualberta.ca/index.php/EBLIP/article/view/107/145]

Hempel, J. (2005, December 12). The Myspace generation: They live online. They buy online. They play online. Their power is growing. *Business Week,* p. 86.

Janes, J. (fall 2002). Live reference: Too much too fast? *NetConnect*, 12-14.

Janes, J. & Mon, L. (2004). The thank you study: User satisfaction with digital reference. Presented at the ALISE Conference, San Diego, CA, January 6-9, 2004.

Kaske, N., & Arnold, J. (2002). An unobtrusive evaluation of online real time library reference services. American Library Association, Annual Conference, Atlanta, GA, June 15, 2002. [Retrieved on November 3, 2006 from: http://www.lib.umd.edu/groups /digref/kaskearnoldunobtrusive.html]

Kuhlthau, C. C. (2004). *Seeking meaning: A process approach to library and information services*, (2nd Ed.). Westport, CT: Libraries Unlimited.

Lincoln, Y. & Guba, E. (1985). *Naturalistic inquiry.* Newbury Park, CA: Sage.

Lippincott, J. (2005). Net Generation students and libraries. In D. G. Oblinger, and J. L. Oblinger, (Eds.), *Educating the Net Generation*. Educause. [Retrieved on November 3, 2006 from: http://www.educause.edu/content.asp?PAGE_ID=5989&bhcp=1]

Metz, C., Clyman, J., & Todd, M. (November 11, 2003). IM everywhere. PC Magazine, 22(20), 128-136).

Mon, L. (2006). *User perspectives on satisfaction with digital reference services.* Unpublished Doctoral Dissertation, University of Washington.

Nilsen, K. (2004). The library visit study: User experiences at the virtual reference desk. Information Research, 9(2) paper 171. [Retrieved on November 3, 2006 from http://InformationR.net/ir/9-2/paper171.html]

Oblinger, D.G. & Oblinger, J. L. (Spring 2006). Is it age or IT: First steps toward understanding the Net Generation. *CSLA Journal, 29*(2), 8-16.

Oblinger, D.G. & Oblinger, J. L. (2005). (Eds.), *Educating the Net Generation*. Educause. [Retrieved on November 3, 2006 from: http://www.educause.edu/content.asp?PAGE_ID=5989&bhcp=1]

Prabha, C., Connaway, L.S., Olszewski, L. & Jenkins, L. (Forthcoming). What is enough? Satisficing information needs. *Journal of Documentation.*

QSR NVivo 7. [Computer Software]. 2003-2006. Doncaster, Australia: QSR International Pty Ltd. [http://www.qsrinternational.com/index.htm]

Radford, M. L. (June, 2006a). Encountering virtual users: A qualitative investigation of interpersonal communication in chat reference. *Journal of the American Society for Information Science and Technology. 57*(8), 1046-1059.

Radford, M. L. (2006b). The critical incident technique and the qualitative evaluation of the Connecting Libraries and Schools Project. *Library Trends. 54*(1), 46-64.

Radford, M. L. (2006c). Investigating interpersonal communication in chat reference: Dealing with impatient users and rude encounters. In R. David Lankes, Eileen Abels, Marilyn White and Saira N. Haque. (Eds.) *The Virtual Reference Desk: Creating a Reference Future*, pp. 23-46. NY: Neal-Schuman Publishers.

Radford, M. L. (2003). *In synch? Evaluating chat reference transcripts.* Presented at the Virtual Reference Desk 5th Annual Digital Reference Conference, San Antonio, TX, November 17-18, 2003.

Radford, M. L. (1999). The reference encounter: Interpersonal communication in the academic library. Chicago: ACRL, A Division of the American Library Association.

Radford, M. L. (spring 1998). Approach or avoidance? The role of nonverbal communication in the academic library user's decision to initiate a reference encounter. Library Trends, 46(4), 699-717.

Radford, M. L. (1993). Relational aspects of reference interactions: A qualitative investigation of the perceptions of users and librarians in the academic library. Unpublished doctoral dissertation, Rutgers, The State University of New Jersey. DAI A54/07, 2368.

Radford, M. L., Barnes, S. B., & Barr, L. (2006). *Web Research: Selecting, Evaluating, and Citing*. (2nd ed.). Boston: Allyn and Bacon Publishers.

Radford, M. L. & Radford, G. P. (July, 1997). Power, knowledge, and fear: Feminism, Foucault and the stereotype of the female librarian. *The Library Quarterly, 67*(3), 250-266.

Rezabek, L.L. & Cochenour, J.J. (1998). Visual cues in computer-mediated communication: Supplementing text with emoticons. Journal of Visual Literacy, 18, 201-215.

Rice, R. E., & Love, G. (1987). Electronic Emotion: Socio-emotional content in a computer-mediated communication network. Communication Research, 14(1), 85-108.

Ross, C. S., & Dewdney, P. (winter, 1998). Negative closure: Strategies and counter-strategies in the reference transaction. *RUSQ, 38*(2), 151-163.

Ruppel, M. & Fagan, J.C. (2002). Instant messaging reference: Users' evaluation of library chat. Reference Services Review, 30(3), 183-197. [Retrieved on November 3, 2006 from http://www.lib.siu.edu/~jfagan/papers/imref.html]

Rushkoff, D. (1996). *Playing the future: What we can learn from digital kids*. NY: Harper Collins.

Schacter, J., Chung, G. & Dorr, A. (July 1998). Children's internet searching on complex problems: Performance and process analyses. *Journal of the American Society for Information Science*, *49* (9), 840-849.

Sloan, B., ed. (2004). Digital reference services: bibliography. [Retrieved on November 3, 2006 from http://alexia.lis.uiuc.edu/~b-sloan/digiref.html]

Sweeney, R. (2006). Millennial behaviors and demographics. [Retrieved on November 3, 2006 from: http://www.library.njit.edu/staff-folders/sweeney/Millennials/Millennial-Behaviors-August-14-2006.doc]

Tenopir, C. (November 2004). Rethinking virtual reference. *Library Journal*, *129*(18), p. 34.

Valenza, J. K. (2006). They might be gurus. *Teacher Librarian, 34*(1), 18-26.

Watzlawick, P., Beavin, J. & Jackson, D.D. (1967). *Pragmatics of human communication*. NY: Norton.

Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. Communication Research, 19(1), 52-90.

Walther, J.B. (1994). Anticipated ongoing interaction versus channel effects on relational communication in computer-mediated interaction. Human Communication Research, 20, 473-501.

Walther, J.B., & D'Addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. Social Science Computer Review, 19 (3), 342-347.

Walter, V.A. & Mediavilla, C. (2005). Teens are from Neptune, librarians are from Pluto: An analysis of online reference transactions. *Library Trends*, *54*(2), 209-227.

Zlinko, C. (October 9, 2006). Don't say it, type it. *San Francisco Chronicle.* [Available: http://www.columbusdispatch.com/emailme/emailme.php?story=dispatch/2006/10/09/20061009-F1-00.html]

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[1] Percentages are rounded to the nearest whole number for demographic data.

[2] Participants' names have been changed to protect anonymity. Participant comments appear verbatim. Interviewer comments to call upon next speaker have been removed to heighten readability.

[3] The international VRS provider, OCLC Online Computer Library Center's QuestionPoint, is supported by a global network. It has been developed by OCLC and the Library of Congress and has recently merged with 24/7 Reference developed by the Metropolitan Cooperative Library System in Southern California. QuestionPoint is used in more than 1,000 libraries in twenty countries; 24/7 serves approximately 500 libraries (http://www.oclc.org/questionpoint).

[4] QSR NVivo 7 (QSR International 2003-2006) software was used in data analysis and coding of the chat transcripts. NVivo enables the researchers to effectively sort large amounts of qualitative data into themes and provides numerous report options for data reduction and representation.

[5] Percentages are rounded to the nearest whole number for demographic data.

[6] An earlier version of this table was published in Radford (2006a, p.1049).

[7] An earlier version of this table was published in Radford (2006a, p.1053).