Evidence Based Library and Information Practice

Evidence Summary

Elementary, Middle, and High School Students Vary in Frequency and Purpose When Using Online Digital References

A review of:
Silverstein, Joanne. "Just Curious: Children's Use of Digital Reference for Unimposed Queries and Its Importance in Informal Education." Library Trends 54.2 (Fall 2005): 228-44.

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Abstract

Objective – To determine 1) how and with what frequency children use digital references to answer their own unimposed questions; 2) whether digital reference services support their self-initiated learning; 3) whether digital reference services support the transfer of student motivation and curiosity from the formal to the informal; and 4) what instructional and software designers should consider in creating tools that support learning.

Design – Inductive analysis.

Setting – Virtual Reference Desk's (VRD) Learning Center (http://vrd.askvrd.org/) and the National Science Foundation's (NSF) digital reference service (http://www.esteme.org) during Excellence in Science, Technology, Engineering, and Mathematics Education Week (ESTEME), April 11-16, 2005.

Subjects – Elementary (K-5), middle (6-8), and high school (9-12) students from the general public. One hundred fourteen questions were analyzed, however there is no indication of the number of different students who submitted the questions.

Methods – This study was conducted using a pool of 600 questions from students, teachers, parents, and the general public that were submitted to two digital reference services intended for students. Three hundred experts in the fields of Math and

Science volunteered to answer the submitted questions during Excellence in Science, Technology, Engineering, and Mathematics Education Week. Because the digital services employed a pull-down menu to describe the user as a student, teacher, parent, etc., the questions could be narrowed to those submitted by students. The questions were also narrowed to those marked as "just curious" from a question purpose menu that contained categories including "written report," "science fair project," and "just curious." A total of 114 unique questions from elementary, middle, and high school students were analyzed to determine the study objectives. The 114 questions were loaded into a qualitative software application (HyperResearch) for inductive analysis. Questions from students were coded as elementary, middle, or high school and only those questions derived from students' self-initiated interests were analyzed.

Main results – Analysis revealed that elementary students submitted a large portion of the questions. Middle school students asked the most questions, of which some questions were compound (more than one question in a given query). Older students submitted the least amount of questions. an unanticipated finding was that students' grade levels correlated to the foci of their queries, which regarded "My Life," "My Stuff," "Other People," "The World," "The Universe," or "Abstract Thought." High school students were interested in the narrowest foci pertaining to their immediate circumstance rather than the larger topics of other people, the world, and the universe. The majority of middle school students were interested in abstract concepts, and 45% of elementary school students' queries were about how the world works. Although this study was not longitudinal, results suggest that student curiosity may shift over time. Results also indicated that younger children demonstrated interests outside the classroom that were related to formal learning previously introduced within the classroom. This carry over of interest declined in upper grades. Queries that were unimposed but related to an academic subject such as science or social studies were most evident in questions submitted by elementary students, while questions dealing more with career planning, health, death, and anxiety were most frequently addressed by middle school students. The findings also indicated that the use of digital reference services is at its highest in elementary school, peaks in middle school, and falls drastically in high school.

Conclusion – 1) How and with what frequency do children use digital reference services to answer their own unimposed questions? The results of this study revealed a trend on the frequency and purpose of use of digital references when seeking answers to self-initiated questions. Elementary students tend to use the digital reference services more often and for answers to questions that may be related to classroom curriculum. Middle school students utilize digital references to look for information pertaining to careers, health and welfare, death and anxiety. High school students submitted questions pertaining to their immediate circumstances ("My Life and My World") rather than focusing on others. 2) Do digital reference services support self-initiated learning? Of the original 2,258 questions submitted, 13% were considered "informal." These findings indicate that digital reference services support self-initiated learning. 3) Could digital reference services support the transfer of student motivation and curiosity from formal to informal education and learning? The frequency of questions from elementary students that were coded as "Curriculum Related Interest" leads one to conclude that digital reference services can indeed support the transfer of student interest from formal to informal education. 4) What should

instructional and software designers consider when creating tools that support the notion of transformed education and learning? Although it is impossible to actually know the nature of the difficulties experienced by users, duplicate questions from the same user were received by the reference services, which suggests that the user may be experiencing difficulty with the software or that the software may actually be malfunctioning during usage. Compound questions were also frequently submitted. Software designers should take note of these findings to design services that are age-appropriate, especially regarding the type of questions each age group tends to ask, and that support the needs of elementary, middle, and high school students. Software designers should perhaps even consult with students who use these services during the design process.

Commentary

The results of this research were based on only two digital reference services. Each was designed for a different purpose: one for academic subjects and one for only science-related questions. This circumstance could, by nature, influence the type of queries that were submitted and the validity of the results. After weeding non-appropriate questions and users, the pool of subjects was small; however enough data was collected to observe a trend relevant to digital reference librarians and software designers. Some data from this study may have been invalid due to the fact that teachers and parents often register as "students" when using the services. Even with these limitations, this research contributes to our understanding of the nature of unimposed questions different age groups seek to answer via digital reference services. Conclusions from this study could be used to improve the structure and services of such tools. A close look at the type of questions and questioning techniques used by students could also prove helpful to reference librarians and software designers.

Works Cited

ESTEME: Excellence in Science, Technology, Engineering, and Mathematics Education. Department of Education. 4 Nov. 2006 <http://www.esteme.org/>.

Virtual Reference Desk AskA Service. 2006. DREI Learning Center. 4 Nov. 2006 <http://vrd.askvrd.org/default.aspx>.