

How Adolescents Search the Internet with Keyword Interfaces

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Children 7, 9, and 11 inhabit search roles, or patterns of behavior, that influence how they search and interact with the computer [2]. In our prior work, we identified seven of these roles and examined the characteristics relating to each role. The study was conducted in the homes of 83 participants in Maryland and the surrounding area. During interviews in front of the child's home computer, we asked five search questions, ranging from the open-ended, "Can you show me how you usually search for information on the computer?" to the targeted, "Which day of the week will the current Vice President's birthday be on next year?"

To analyze the video data, we applied Beyer and Holtzblatt's [1] concepts of flow, sequence, artifact, and culture. These concepts acted as lenses through which we were able to observe the searching behavior. Flow allowed us to observe communications of the children with other people, and showed us who the *influencers* of search were for each child. Sequence revealed the process of search, and showed us what *triggers* led to other behaviors. We treated the interface of the computer as the artifact, and were able to discern differences in interactions depending on factors such as the layout of the results page. Finally, we treated culture as the context of the search and as the home environment of the searcher. We were able to gain insight into search behaviors due to differences in parenting style and home environment. By using these lenses as we watched the children search, we were able to develop a set of criteria describing each search role.

We have completed a pilot study with eleven 16-year-olds duplicating our prior methods to examine whether our previous finding hold true as children age. We have determined which roles and characteristics appear to be stable, and which are less permanent, and are able to now compare the search behaviors of children ages 7-11 with 16-year-olds. The current study serves as a pilot for a larger examination of adolescent search. We had three male and eight female participants. We were able to confirm our theory of roles, although there were slight shifts in what the

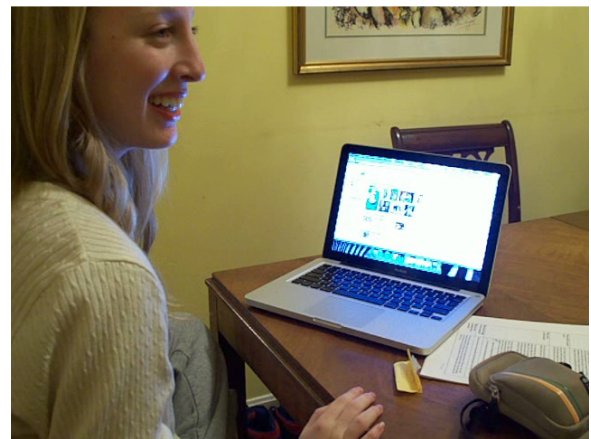


Figure 1: A 16-year-old Power Searcher viewing images in Google search

roles are; for children, one role was that of Distracted Searcher, which does not exist for adolescents. New roles in adolescents appearing during this pilot are those of the Doubting Searcher and the Social Searcher.

ADOLESCENT SEARCH ROLES

Developing Searchers are the most frequently observed type of searcher in younger children. Adolescent Developing Searchers are focused searchers. They have a limited knowledge of search tools, and display unplanned search paths. Adolescent Developing Searchers also display difficulty when confronted with multi-step search tasks that require them to break the search apart.

Domain-Specific Searchers make up the second largest group in our study. These searchers use their searching ability to gather information around a specific topic of interest, for example, basketball players' statistics. They have developed skills and source knowledge around their particular domain, but have not necessarily learned to apply this knowledge in a broader searching context.



Power Searchers are able to verbalize their search process when asked, and are reflective, demonstrating an understanding of how the search engine works and the features of the search engine. They often have a high typing and spelling skill level when compared to other searchers, and they display confidence when searching. Power Searchers uniquely have the ability to appropriately approach multi-step queries, breaking the query into parts that the search engine is capable of handling, in comparison to children in other roles who type long queries with many phrases or unrelated parts. They also understand the tools offered by the search engine.

Non-motivated searchers are complaint with directions to search, but do not choose searching or computer use as an activity of their own accord. This disinterest is the hallmark of the Non-motivated Searcher. These searchers have hours comparable to children in other roles logged on their home computers, so their lack of enthusiasm is not due solely to inexperience. When considering affect, Non-motivated Searchers do not show a sense of excitement towards the affordances of the Internet or web searching in the way that we observed in many of their peers.

Adolescents characterized into the role of Visual Searcher overall displayed a desire to retrieve information from visual sources such as pictures or videos. While children often inappropriately apply this preference for visual information, adolescents appear to be more discerning in their use. The preference for visual information is not incidental; Visual Searchers begin searches with the intention of looking in visual sources, and do not merely opportunistically click on visual search results. They have wide influencers, from siblings, school, and friends.

Rule-Bound Searchers display constrained searching patterns, repeating the same steps for every search. They verbalize and follow rules about searching or computer use frequently. These rules fall into a number of categories, such as rules about trusting the site used. While children in all roles have rules that they verbalize, Rule-bound Searchers are more constricted and unwilling to deviate from their search pattern. Rule-Bound Searchers are also most certainly heavily influenced by teachers and librarians at school, as all of them report influence by school, and also by watching friends searching.

Doubting Searchers are a new role, not present in younger searchers. Doubting searchers ask clarifying questions

while searching. They are quiet; by comparison to adolescents in other roles they are far less verbal. When explaining their search process or answering questions, Doubting Searchers will have a raised inflection at the end of their sentences, indicating that they are unsure of their answers. Doubting Searchers rate themselves as less skilled than other searchers. They report social use of the computer as a favorite activity and report influence from school.

A second role not present in younger children is that of Social Searcher. Social Searchers are identifiable by their use of social networking or communication sites as the primary and favorite activity on the computer. They also instigate conversations with other people on and offline while using the computer. Social Searchers are broadly triggered to search by images, music, conversations, personal interests, and school.

IMPLICATIONS

We intend to continue this research with up to eighty 15 and 16-year-olds to determine the distributions of the roles and more detailed characteristics defining them. We also intend to increase the difficulty of our multi-step query to further test the maximum skill level of Power Searchers. We have already determined that some traits, such as Visual Searchers' preference for information in pictures or Non-motivated Searchers' aversion to computers, are lasting qualities, while other traits, such as the desire for social computer use, develop during adolescence. Given that only some search traits are alterable, it becomes all the more important for designers, researchers, educators, and parents to provide a more appropriate searching environment and to better prepare children to interact with that environment.

PAPERS

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