

# Is It “Writing on Water” or “Strike It Rich?” The Experiences of Prospective Teachers in Using Search Engines

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## Abstract

Information searching skills have become increasingly important for prospective teachers with the exponential growth of learning materials on the web. This study is an attempt to understand the experiences of prospective teachers with search engines through metaphoric images and to further investigate whether their experiences are related to the variables of years spent in the program and years of experience with computers. Participants were comprised of 335 prospective classroom teachers registered at Pamukkale University, Faculty of Education, Primary School Teaching Program (1-5) in the Department of Elementary Education. In this descriptive study, data were collected through asking participants to produce a metaphor with reasoning that demonstrates their experiences with search engines. Gathered data were analyzed by using the techniques of content, frequency, and percentage analyses. Upon this procedure, themes were emerged. *Chi-square test* was used to identify whether participants' experiences relate to their years of computer experience and years spent in the program. Findings drew attention to the categories of *provisions*, *opportunities*, and *problems* in searching for information and demonstrated the dominance of *problems* with respect to other themes. Participants' experiences were not related to their experiences with computers but were related to their years in the program. Findings revealed a need to offer learning experiences to enhance prospective classroom teachers' searching skills.

## Key Words

Accessing Information, Teacher Education, Search Engines, Metaphor.

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As the internet usage has become widespread, students frequently use the internet in order to meet their needs of information (Bakay, 2005; Ersoy, & Türkkan, 2009; Kennedy, Judd, Churchward, Gray, & Krause, 2008; Oliver, & Goerke, 2007) and they prefer the internet over the printed and other alternatives sources of information (Şahin, Çermik, & Doğan, 2009a; Yalçınalp, & Aşkar, 2003). Although research generally indicates that the internet users have high self-perception of information search (Albion, 2007; Usluel, 2006), it is known that many users experience problems in effective use of the search engines (Albion, 2007; Colaric, Fine, & Hofmann, 2004; Graham, & Metaxas, 2003; Huerta, & Sandoval-Almazán, 2007).

A new study points out that prospective teachers face issues related to *(i)* self, *(ii)* medium, and *(iii)* content during their search engine use (Şahin, Doğan, & Çermik, 2009b). In another study (Colaric et al., 2004), it was suggested that 36 percent of prospective teachers were devoid of knowledge about the effective use of search engines and that many of the participants were unaware of the search engine commands to restrict the search results. Other studies revealed that the courses offered on the usage of the internet technologies at teacher education programs were found to be insufficient or partially sufficient (Karahana, & İzci, 2001). Prospective teachers request courses in order to learn effective use of search engines (Aldemir, 2004). Considering the findings from the previous research demonstrating that students prefer the internet to the library and other information sources for their homework and projects (Akdağ, & Karahan, 2004; Akkoyunlu, & Yılmaz, 2005; Kurbanoglu, 2002; Oliver, & Goerke, 2007; Şahin et al., 2009a), it could be said that an investigation of prospective teachers' experiences of search engine use is a worthwhile pursuit. Analyzing the metaphors reflecting the user experiences with search engines may provide important contributions to teacher education process.

A metaphor means learning any subject by another subject or turning it into an experience (Lakoff, & Johnson, 1980). Metaphors give an opportunity to compare, to draw attention to the similarities between two things, and to explain something by putting it into the place of another (Saban, Koçbeker, & Saban, 2006). By analyzing the metaphors produced, one can catch the meaning beneath the statements that are directly or consciously asserted (Parsons, Brown, & Worley, 2004). For this reason, metaphors have become one of the important tools used

by instructors and researchers (Ivie, 2001; Silman, & Şimşek, 2006). Yıldırım and Şimşek (2005) state that the data gathered by means of metaphors provide rich and visual image about the studied subject or event. It is therefore not a coincidence to come across metaphor-based research frequently in recent years (Saban, 2004; Saban et al., 2006; Silman, & Şimşek, 2006; Thomas & McRobbie, 1999).

Though a metaphor is a shortcut to reveal its producer's existing mental images, it illuminates only one aspect of any uttered concept (Lakoff, & Johnson, 1980). Metaphors we use also shape our perceptions, attitudes, and activities (Saban, 2004). To investigate the quality of prospective teachers' experiences during their search engine use, it is aimed to answer the following specific research questions. (i) What are the conceptual themes drawn from the metaphors demonstrating prospective teachers' experiences with search engines? (ii) Do the themes, coming from experiences of prospective teachers, differ in terms of their years of computer experience and years in the program? (iii) What kind of implications do the obtained conceptual themes and other findings propose about the quality of the experiences of prospective teachers and transformation of teacher education process?

## Method

This is a descriptive study investigating prospective teachers' experiences with search engines. Descriptive research aims to describe the characteristics of the phenomena being investigated (Borg, Gall, & Gall, 1993). The data were gathered by asking participants to respond to an open-ended metaphor question. The gathered data were divided into themes by using a technique of qualitative data analysis. Afterwards, relations were analyzed by statistical analysis on the emerged categorical data.

## Participants

The participants were 335 prospective teachers studying at the Primary School Teaching Program (1-5) in the Department of Elementary Education at Pamukkale University. In order to have the best representation of participant characteristics (gender, year in the program etc.), purposeful sampling was employed (Patton, 1990). In such a sampling, researchers use their special knowledge or expertise to select participants

who represent the studied population (Berg, 1998). Maximum variation sampling was used to increase the likelihood that all relevant aspects of phenomenon being studied would be reflected (Patton, 1990).

### **Instruments**

The first part of the data gathering instrument included personal questions (e.g., year in the program, gender, etc.). The second part included an open-ended metaphor question aiming at identifying the characteristics of the experiences of the participants in using search engines. Open-ended questions provide flexibility in a limited terrain for the participants (Seidman, 1998). The question was asked in the “fill in the blanks” format. Participants were asked to respond to the following question. “*To search for information by using a search engine is like... because...*”

### **Data Collection**

Data were gathered within 2007-2008 autumn semester. Survey forms were distributed to the selected participants in classrooms and administered by the researchers. Sufficient time was given to the participants to produce their own metaphors and justifications.

### **Data Analysis**

While six of the participants did not produce any metaphors, the rest produced 329 metaphor statements in total. Metaphors produced by 27 of the participants were also eliminated for various reasons, and the remaining 302 metaphors were analyzed. Analysis process of the produced metaphors was implemented in the following stages.

**Recording the Data:** Survey forms consigned by the participants were numbered. Then, the metaphor stated in each survey form was transferred to a new file with its justification.

**Elimination:** The metaphors stated by prospective teachers were scrutinized one by one. All the metaphors were analyzed in terms of (i) *its topic*, (ii) *source*, (iii) *the relation between the topic of the metaphor and its source* (Saban et al., 2006), and additionally (iv) *the quality of metaphors in displaying experiences of prospective teachers*. After eliminating 27 metaphor statements, the remaining 302 robust metaphor statements were taken for the analysis.

**Forming the Themes:** The selected metaphors were analyzed by using "content analysis" technique. Content analysis refers to the determination, counting, and interpretation of the repeated subjects, problems, and concepts among the gathered qualitative data (Denzin, & Lincoln, 1998; Miles, & Huberman, 1994; Silverman, 2000). The second and third researchers studied every metaphor statements for the concepts as the source of metaphor and coded them with a certain code. In order not to misinterpret the source of metaphors, justified explanations were taken into account. In the coding process, idioms and metaphorical statements were used to better present the findings (Bogdan, & Biklen, 1998). Data, gathered under certain codes, were expressed in three main conceptual themes.

**Issue of Reliability:** The first researcher, independent from others, allocated all the attained metaphor statements into the emerged themes. Reliability of the research was calculated by the formula of  $Reliability = Agreement / (Agreement + Disagreement)$  and 87 percent of consistency was accepted for reliability (Miles, & Huberman, 1994).

**Presentation of Data:** Obtained themes were presented by exemplifications of the produced metaphors. At the end of each metaphor statement, questionnaire number of the participant was stated.

Following the determination of themes, all data were transferred to the statistical package program, SPSS. To identify if the main themes that feature experiences of the participants would relate to their year in the program and year of computer experience, *chi square test* was applied. Then the findings were presented.

## Findings

### Experiences of Participants

Emerged findings from the data of metaphors involve three main themes: *provisions* (21%), *opportunities* (17%), and *problems* (62%). The internet offers many opportunities to the users, yet "opportunities" theme appears to be the least repeating theme within the experiences of participants. Metaphors produced by some of the participants highlight the importance of provisions to access to information. Two-third of the participants' metaphorical images point problems.

The first theme, *provisions* (20.54%), conveys some of the main necessities during the use of search engines. It includes two different sub-

categories. The first, *to know on which side one's bread is buttered*, means knowing how to act to reach the requested result. *It resembles drawing metals from the sand with a magnet because we need to extract the useful information within lots of information* (15). The second sub-themes *to pick up spirit* could be defined as integrating and combining the reached and gathered partial information. *It resembles cooking a special meal because we integrate it by gathering the components* (240).

The second theme, *opportunities* (16.55%), is related to the facilities and conveniences that search engines serve to the users. Opportunities consist of three different sub-themes. The first one is *to strike it rich* which means reaching the requested information not only easily but also accidentally. *It resembles a magic wand because it gives what you want immediately* (85). The second sub-theme *to do with one's hand tied behind one's back* describes the one who reaches the result easily and quickly. *It is like to see the coal on the snow because I reach the information easily* (231). The third sub-theme *to get pleasure*, means reaching the requested information with pleasure. *It is like flying in space because it is enjoyable to reach the desired place* (172).

The third theme includes the participants' negative experiences, which means *problems* (62.91%), with search engines. The first sub-theme, *to work day and night* means reaching the searched information with a great struggle and in a long time. *It is like finding a small piece of stone in a big bag of rice, because it is too difficult to find what I want in piles of information* (311). The second sub-theme, *turning to a tangle*, explains that the conducted search becomes a challenge and gets more and more complicated with increasing effort. *It is like a cat tangled up with a string, because the more I struggle to find what I need the worse it gets* (190). The third sub-theme, *to ramify and to get complicated* means expanding the search done. *It is like the way that has thousands of crossroads because all searches open new doors* (317). The fourth sub-theme *to turn into a planted tree* infers that the search done turns into a hopeless expectancy and waste of time as a result. *It is like waiting for the comet because it takes so much time* (132). The fifth sub-theme, *to beat the air* tells not being able to reach the desired result in spite of hard try. *It is like drawing water with a ripped bucket, because what I always find is pieces of information* (71). The sixth sub-theme, *to expect things to fall into the lap without doing anything*, is defined as waiting everything to be presented without showing any effort. *It is like cheating from the book in an examination*

*because everything is ready, and we just take it* (303). The seventh, *to hang around*, infers to do something unconsciously or unknowingly. *It is like looking for a place street by street, without knowing the address because it is not certain what is where* (218).

### **The Differences Related to Computer Experience and Year in the Program**

Findings in this section revealed that the themes emerged from the statements of the prospective teachers who have different experience years with computers did not differentiate significantly from each other (Pearson chi-square (df=4)=5.390; p=0.250). However, the themes emerged from the statements of the prospective teachers who are at a different stages of teacher education program (year in the program) were significantly different from each other (Pearson chi-square (df=6)=14.379; p=0.026). These results showed that the characteristic of the search engine usage experience of the participants relates to their year in the program.

### **Discussion**

In this research, findings demonstrating *provisions, opportunities and problems* dimensions draw attention to the following points. First of all, the dominance of problematic experiences of prospective teachers attracts attention. Although it is known that students from the age of primary school to the age of university use the internet and search engines to reach information (Ersoy, & Türkkkan, 2009; Kennedy et al., 2008; Oliver, & Goerke, 2007), the search engine use is a problematic field for the users. Findings in this study do not only verify the findings of previous studies demonstrating that students have problems to reach information (Albion, 2007; Colaric et al., 2004; Huerta, & Sandoval-Almazán, 2007), but also take the attention to the source of problems. One possible source, as displayed by previous studies, is that most prospective teachers are unaware of the crucial information about search engines and the search engine commands to restrict the results (Colaric et al., 2004; Şahin et al., 2009a). However, the emergence of *opportunities* and *provisions* dimensions demonstrate that a segment of the participants take the advantage of the internet. This draws attention to the details of those experiences.

Second, the metaphors produced by the prospective teachers give detailed information about each theme. Although metaphors usually give information about just one aspect of the reality (Lakoff, & Johnson, 1980; Saban et al., 2006), the codes and themes emerged from the metaphors obtained from a large sample can display other dimensions of reality. For instance, *to know on which side one's bread is buttered* and *pick up spirit* tell important provisions for the person doing a search. As understood from these conditions, to know the location of the information or the way to reach it is not always enough; there is also a need to integrate the obtained partial information. If this is not done, as it is stated in a study as well (Şahin et al., 2009b), users learn to expect everything presented on a silver platter.

Third, obtained metaphors draw attention to the need of education supporting new literacy skills in teacher education programs. Curriculum initiatives currently give a great deal of emphasis on improving the skills of *learning to learn* (Cornford, 2002; Güven, 2008) since existing technologies bring instant changes creating new needs. Therefore, the main means of reacting to those changes is *learning to learn*; one circumstance of it is to know the way to reach information (Güven, 2008). However, in societies where traditional and content-based approaches of teaching are common, the anxiety of “keeping up with the curriculum” takes the precedence. As stated in Hector’s argument (2005), the skills required in the 21st century should not be abandoned for the sake of keeping up with curriculum and of reaching specified objectives. Furthermore, it must be noted that most of the prospective classroom teachers come from families where only one parent is working and the education level of mother/father is usually low (Saban, 2003; Şahin, Çokadar, & Uşak, 2008). Thus, the need of learning information searching skills might be higher for classroom teachers than that of other prospective teachers or university students.

Fourth, findings indicate that the number of computer experience years does not significantly relate to the characteristics of their search experiences. When experiences of the participants are analyzed based on their year in the program, it is seen that the ones who put the experiences to the *opportunity* theme have been lowered as approaching to the last years of the program, in which the internet use is usually more frequent. The third graders, as being the group doing research-based projects most frequently among the all groups, express *provision* and *opportunity*

dimensions at minimum level, but express *problem* dimension at maximum level. It is considered that problematic experiences are encountered more often as participants' search experiences get more frequent.

In conclusion, findings draw attention to the weight of the problem dimension of experiences of participants compared to the opportunity and provision dimensions. Although it is known that students coming to a university are known to use "common" technologies yet they are heterogeneous for using technologies beyond these (Kennedy et al., 2008), findings of this study display that important problems are faced in using common technologies, as well. To view prospective teachers as the "digital natives" (Prensky, 2001) or "the internet generation" (Tapscott, 1998) may carry the problem of illiteracy to the future. If teacher training programs can turn problematic experiences of prospective teachers into experiences of *opportunities*, students' search engine use might resemble *milking a milky cow* or *doing something with one hand tied behind his or her back*.

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