In-Service Teachers and their Information-Seeking Habits: Does Library Instruction Show a Relationship to Information-Seeking Habits for Professional Use?

Todd Shipman

Abstract: This study describes an investigation of the information-seeking habits of in-service teachers specifically in the context of seeking information for their professional practice. Data were also collected to investigate the participants' past participation in information literacy training via library instruction programs. Few publications have been published on information-seeking habits of in-service teachers and fewer on those habits as they relate to finding information for professional purposes. For this study an anonymous online survey was developed and disseminated to teachers in eight school districts in a southern state. The results were analyzed and the findings indicated statistically significant relationships between participation in library instruction and information-seeking habits. Additional data were collected that indicated only a minority of survey respondents had participated in library instruction at the academic libraries at their undergraduate institutions. The findings provided possible implications in regard to library instruction in information literacy for students in teacher education programs.

About the author: Todd Shipman is a reference and instruction librarian at Auburn University. He is the education librarian at Auburn University Libraries serving as library liaison to the College of Education and to the department of Foreign Languages and Literatures.

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INTRODUCTION

One of the ongoing challenges that school teachers face in the 21st century is the continual development of newer means for searching, accessing, and using information. As new information tools and resources are introduced, teachers may find it beneficial to improve and expand their information literacy skills to be effective and efficient consumers of information, not only for their own personal and professional use, but also for the use of their students with whom teachers should share the skills they have learned. Considering the significant role that the use of information plays in the field of education, this study provides new data about the information-seeking habits of a sample of in-service classroom teachers and it examines factors that show a relationship to the teachers' habits, including library instruction experiences during their undergraduate and/or graduate programs.

Although there are a number of literacies currently discussed in the literature, this study examines the information-seeking habits of teachers in light of information literacy skills as defined by the American Library Association (ALA). In 1989, the ALA Presidential Committee on Information Literacy defined an information literate person as being one who is "able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association. Presidential Committee on Information Literacy 1989, p. 1). For this study, the primary intention for investigation was to collect data on the information sources frequently used by in-service teachers as well as data about their experiences with library instruction. Subsequently the data were analyzed in order to see if there were any statistically significant relationships between the teachers' information-seeking habits, particularly in the context of seeking information for professional use, and their participation in library instruction, especially instruction that occurred as part of their teacher education programs. A broader purpose was to collect data that contribute to the growing body of research related to the role of library instruction in information literacy skills for students in teacher education.

RELATED LITERATURE

Information literacy and pre-service teachers

A larger body of literature has been published about information literacy or library instruction as they relate to pre-service teachers than has been published in regard to in-service teachers. Most publications have focused on the idea that information literacy instruction for pre-service teachers would be beneficial because it would train and equip teacher education students to teach the same skills to their students in the future. O'Hanlon (1988) discussed the benefits of library research instruction for students in teacher education with emphasis on how the information literacy skills they learned would improve their critical thinking skills and by extension strengthen the development of problem solving skills of their future students. Similarly Franklin and Toifel (1994) conducted a study on the effects of bibliographic instruction (currently referred to as library instruction) for education students. They concluded that library instruction provided by qualified professional librarians was an effective way to train the students in library research skills. In a subsequent study, Toifel and Franklin (1998) found that teacher education students who attended instruction sessions taught by a professional librarian showed significant differences in their searching skills with electronic resources compared to those of peers who had not attended library instruction. Having studied the that pre-service teachers had about information literacy before and after their participation in a class on resource-based learning, Branch (2003) recommended that teacher education programs provide specific instruction to train students to integrate information literacy into their own teaching. Laverty and Reed (2006) surveyed a group of outgoing teacher education students and found that the students did not accurately understand information literacy, nor did they express having had adequate preparation to teach information literacy to their own students. In addition, participants in general did not express a good awareness of the information resources available to education professionals, especially in the context of finding information for their own professional development (pg. 68). Demiralay and Karadeniz (2010) also found that many teacher education students reported an incomplete understanding of information literacy, specifically expressing the perception that information literacy skills were primarily related to their computer skills and frequency of Internet usage.

As part of their study, Stockham and Collins (2012) surveyed a sample of school librarians/media specialists for their perceptions of new teachers' familiarity with information literacy. Similar to the findings of earlier studies, the school librarians reported that many new teachers thought the skillful use of Google was equal to proficient information literacy skills and that information literacy skills were equal to have good technology skills. A number of successful models and programs related to information literacy and teacher education have also been published. Asselin and Doiron (2003), Asselin and Lee (2002), Crouse and Kasbohm (2004), Emmons, Keefe, Moore, Sanchez, Mals, and Neely (2009), Earp (2009), Floyd, Colvin, and Bodur (2008), Miner (1989), and Witt and Dickenson (2003) reported successful collaborative projects between academic libraries and colleges of education to develop improved information literacy instruction for pre-service teachers.

Information literacy and in-service teachers

In the area of information literacy and in-service teachers, the body of literature is smaller. Nevertheless there are a number of publications in this area of study. Landrum, Cook, Tankersley and Fitzgerald (2007) studied teachers' perceptions of the usability of information, specifically in regard to two formats: data-based (*e.g.,* texts or documents that reported research findings) and personal (*e.g.,* the experiences of veteran teachers as reported via interpersonal contact). The findings showed that participants found the personal information to be more useable than the data-based information. Williams and Coles (2007) investigated the perceptions of in-service teachers in the United Kingdom in regard to their use of research information in their teaching. The findings showed that study participants found research-based information to be less useful to them. They also expressed a lack of confidence in their own abilities to find, evaluate and use the information in their professional practice. Williams and Coles reported that the limited development of the teachers' information literacy skills may have been a prohibitive factor in their use of research-based information.

For a study of secondary teachers, Smith (2013) interviewed in-service teachers to explore their understanding of information literacy and its role in the classroom. The findings revealed that many teachers did not express a clear definition of information literacy suggesting that the term itself may have contributed to the inconsistent perception of the idea (p.220). The study also described a presumption among the teachers that secondary students would eventually develop their information literacy skills when the need arises later and that the teachers should only integrate information literacy instruction into their classes when the students were bound for college or university studies.

Information literacy and standards for teacher education

Since the publication of the Final Report of the ALA Presidential Committee on Information Literacy in 1989, a number of standards information literacy have been adopted and published for use in various contexts. In 1998 the American Association of School Librarians (AASL), a division of ALA, collaborated with the Association for Educational Communications and Technology (AECT) to publish the *Information Literacy Standards for Student Learning*. The standards were included as part of the publication, *Information Power: Building Partnerships for Learning*, which outlines the professional guidelines for school librarians/media specialists (American Association of School Librarians, 1998). In 2007 AASL revised the standards, renaming them the *Standards for the 21st-Century Learner* and subsequently publishing them as part of a new publication, *Empowering Learners: Guidelines for School Library Media Programs* (American Association of School Librarians, 2009).

In the meantime, the Association of College and Research Libraries (ACRL), another division of ALA, published the *Information Literacy Competency Standards for Higher Education* which were designed for information literacy training for all college and university students (Association of College and Research Libraries, 2000). Stating a need to connect the ACRL standards specifically with the need of teacher education students, the Educational and Behavioral Sciences Section of ACRL drafted the *Informational Literacy Standards for Teacher Education* which were approved and published by ACRL in 2011 (Association of College and Research Libraries, 2011). The new ACRL standards were also drafted to support the *Professional Standards for the Accreditation of Teacher Preparation Institutions*, the accreditation standards adopted and published by the National Council for Accreditation of Teacher Education (NCATE) in 2008. The new NCATE standards provided a statement regarding the professional dispositions for teacher candidates which includes the ability to "appropriately and effectively integrate technology and information literacy instruction to support student learning" (National Council for Accreditation of Teacher Education, p. 22).

Although working with previous versions of the NCATE standards, Templeton and Warner (2002) and Birch, Greenfield, Janke, Schaeffer, and Woods (2008) reviewed the related student learning outcomes among the standards for teacher education and information literacy and they recommended an increase in partnerships between colleges of education and academic librarians to develop more robust instruction programs in information literacy for teacher education students. Duke and Ward (2009) reviewed the literature as part of a metasynthesis and noted that in spite of the inclusion of the information literacy in the NCATE standards, there remained a larger number of teacher education faculty who do not collaborate with academic librarians to teach information literacy skills to either pre-service or in-service educators (p. 248).

The Information-Seeking Habits of In-Service Teachers: Research Questions

Noting the paucity of published research on information literacy and the information-seeking habits of in-service teachers, this study was developed to collect data on this topic with emphasis on investigating the information sources that in-service teachers use for the specific purpose of seeking information for their professional practice. The study was also designed to collect data on their experiences in library instruction sessions (specifically being taught how to search for information using library databases) as well as whether they had participated in their library instruction as undergraduate students, graduate students, or outside of an academic library setting. The study was designed to answer the following questions:

1. Which sources do in-service teachers use for seeking information, especially for information needed for their professional use?
2. Is there a relationship between having participated in information literacy instruction by a librarian and the type of information sources the teachers use?

METHODOLOGY

Design of the Study

To collect the data for this study, an online survey was developed based on the review of the literature and the *Information Literacy Standards for Teacher Education*. Some of the constructs of the survey were based on those explored by Neely (2000), who surveyed college-level students to investigate their attitudes and perceptions about information literacy. The survey included questions about demographic information such as job position, years of teaching experience, grade levels currently assigned, and age based on ranges for year of birth. To investigate the information-seeking habits of study participants, the survey questions inquired about

the frequencies of using selected types of information, the frequencies of using selected information formats, the participants' preferences for information in online format versus print format, the purposes for which participants seek information for professional use, and the frequencies of using selected information resources for professional use. Lastly, survey questions were included to ask participants if they had ever participated in library instruction session and in what setting or location the session(s) had taken place.

Once developed, the survey was reviewed by a number of university and school librarians and changes were made before submission to the Institutional Review Board for approval. With approval, the survey was disseminated by e-mail to the professional development coordinators of fifteen school systems served by a regional inservice center in a southern state. Eight of the coordinators agreed to disseminate via e-mail a hyperlink to the online survey along with the informed consent notice to certified personnel in their school districts. The survey was active online form November 2011 through March 2012. The design of the survey maintained the anonymity of all participants. Of the three hundred eighty-two surveys that were returned, Three hundred forty-eight were valid and able to be used for analysis.

RESULTS AND ANALYSIS

Although the study was designed to investigate the information-seeking habits of a variety of K-12 educators, including administrators, counselors, and school librarians, this article focuses on the largest group of study participants, classroom teachers. Of the three hundred forty-eight valid surveys, two hundred twenty-two (64%) indicated that the participants held positions as classroom teachers. Therefore only the 222 survey results for classroom teachers were analyzed for this article.

Demographic Information

Survey results showed that 55.2% (n=122) of the 221 teachers who responded to the question had 11 or more years of teaching experiences and 26.7% (n=59) reported having 6 to 10 years of experience. Those with 0 to 5 years of experience made up 18.1% (n=40) of the group. In regard to grade level assignment 54.5% (n=121) indicated teaching at the preschool/elementary school level (Pre- K- grade 5) and 45.5% (n=101) indicated teaching at the secondary school level (grades 6-12). Lastly, participants were also asked to indicate the range of years in which they were born. Only 0.9% (n=2) were

born in or before 1945 (the Silent Generation) while those born 1946-1964 (the Baby Boomers) comprised 28.1% (n=62). The teachers born 1965-1980 (Generation X) comprised 46.6% (n=103) of participants and 24.4% (n=54) were born 1981 or later (the Millennials).

Information-Seeking Habits for General Purposes

The first research question was to inquire about the information sources that in-service teachers use for seeking information. To that end, survey participants were asked about their information-seeking habits in general, without stating a specific purpose for the information. Using a seven-point Likert scale with the answers being daily, 2-3 times a week, once a week, 2-3 times a month, once a month, less than once a month, and never, participants were asked to tell how frequently they used the following types of information: entertainment/popular, government publications, news information, professional/trade publications, scholarly/research journals, and social media/online discussions. Survey results showed that news information was the most frequently used with 91.7% of the 206 teachers who responded indicating that they used it at least once a month. The other choices in order of frequency of use being at least once a month or more often were: entertainment/popular (79.3% of 203 responses), social media (68.3% of 205 responses), professional/trade publications (68% of 203 responses), government publications (52.8% of 199 responses), and finally scholarly/research journals (50% of 204 responses). At least half of the respondents for each answer indicated using the selected type of information at least once a month. (See Table 1).

Using the same seven-point Likert scales, survey participants were asked to report how frequently they used selected information formats without stating a specific purpose for the information. Answer selections included almanacs, audio (podcasts, radio, etc.), blogs, books, databases, dictionaries, encyclopedias, newspapers, periodicals (magazines/journals), social networking sites, video, websites, and wikis. The results showed that the most frequently used information formats (used at least once a month or more frequently) were websites (98% of 207 respondents), books (97% of 204 respondents), and video (89.3% of 205 respondents). Other formats used by at least 80% of respondents at least once a month were newspapers (84.4% of 206 respondents), periodicals (81.3% of 203 respondents) and dictionaries (81% of 201 respondents). The formats used least frequently were wikis and almanacs. Wikis were used at least once a month by 32.3% of 204 respondents and 51.5% of respondents reported never

using them. Almanacs were used even less frequently with only 3.9% of the 200 respondents using them at least once a month and 69.2% reporting that they never used them. (See Table 2).

Table 1: Frequencies of Using Selected Types of Information

Type of information	Number of respondents	Daily	2–3 times a week	Once a week	2–3 times a month	Once a month	Less than once a month	Never
News information	n = 206	41.3%	19.9%	13.6%	7.8%	9.2%	4.9%	3.4%
Entertainment/ popular	n = 203	30%	21.2%	12.8%	10.8%	4.4%	11.8%	8.9%
Social media/ online discussions	n = 205	24.9%	18%	8.8%	10.7%	5.9%	10.7%	21%
Professional/ trade publications	n = 203	3.9%	12.8%	15.8%	16.7%	18.7%	14.8%	17.2%
Government publications	n = 199	4%	11.1%	10.1%	14.1%	13.6%	26.1%	21.1%
Scholarly/ research journals	n = 204	2%	6.9%	9.8%	13.7%	17.6%	22.1%	27.9%

Table 2: Frequencies of Using Selected Information Formats

Information formats	Number of respondents	Daily	2–3 times a week	Once a week	2–3 times a month	Once a month	Less than once a month	Never
Websites	n = 207	67.6%	16.4%	5.8%	6.3%	1.9%	1.4%	0.5%
Books	n = 204	65.2%	15.7%	6.9%	4.4%	4.9%	1.5%	1.5%
Social networking sites	n = 206	40.8%	15%	6.8%	6.8%	1.5%	4.4%	24%
Newspapers	n = 206	31.1%	20.9%	14.6%	9.7%	8.3%	8.3%	7.3%
Video	n = 205	14.6%	31.2%	19%	17.1%	7.3%	7.8%	2.9%
Dictionaries	n = 201	15.4%	24.9%	15.4%	15.4%	10%	9%	10%
Audio (podcasts, radio, etc.)	n = 205	32.2%	16.1%	3.4%	11.7%	4.9%	16.1%	15.6%
Databases	n = 199	14.6%	16.1%	18.6%	12.6%	9.5%	14.1%	14.6%
Periodicals (magazines, journals)	n = 203	11.3%	21.7%	14.8%	20.7%	12.8%	10.8%	7.9%
Blogs	n = 202	11.4%	13.9%	9.9%	7.4%	7.9%	16.8%	32.7%
Encyclopedias	n = 203	2.5%	10.3%	6.4%	14.3%	12.3%	21.2%	33%
Wikis	n = 204	3.4%	8.8%	7.8%	5.9%	6.4%	16.2%	51.5%
Almanacs	n = 200	0%	3.8%	0%	0%	0%	26.9%	69.2%

Lastly, without referring a specific purpose for the information or to type of information, participants indicated whether they preferred print or online format. Of the 204 who responded to this question, 67.3% (n=138) preferred online format and 32.7% (n=67) preferred print format. When the question of format preference was analyzed via cross tabulation with the age ranges, the results failed to reveal any statistically significant relationship. In general, the majority of respondents of each generation preferred online format. However, the results showed that the younger the generation, the higher the percentage of respondents that preferred online format: the Silent Generation (50%), Baby Boomers (65%), Generation X (65.6%), and Millennials (73.5%).

Information-Seeking Habits for Professional Use
Survey participants were asked to indicate how frequently they used specific information sources, both text-based and interpersonal contacts, when they were seeking information for use in their professional practice. As part of that inquiry, the teachers were also asked to select form a list of seven choices to indicate the purpose(s) for which they seek information for professional use. Of the 206 participants who responded to the multiple-response question, 90% (n=186) selected class exercises or projects, 84% (n=173) selected lesson planning, 66% (n=135) selected assessment tools/test preparations, 53% (n=110) selected news affecting the profession, 51% (n=106) selected action research on classroom practices, 39% (n=81) selected classroom management, and finally 16% (n=32) selected information for a research paper. (See Figure 1).

To answer the survey questions concerning the frequencies of their use of information sources for professional use, participating teachers responded using the same seven-point Likert scale that was used to answer questions about their information-seeking habits for general purposes. The survey questions listed sixteen information sources, eight text-based sources and eight categories of persons from whom participants may have sought information via interpersonal contact. The text-based sources listed were: websites, materials or documents from professional development workshops/inservice, professional journals, online library databases, publications of the State Department of Education, publications of the United States Department of Education, ERIC (Education Resources Information Center), and college textbooks. The eight categories of persons listed as information sources were: teachers in one's department, supervisors/administrators, teachers in other departments, the department chair/team leader, school librarian(s), teachers at other schools, reading coach(es), and district supervisors or administrators. Reading coaches are instructional support personnel who support literacy in schools by working with students who are struggling with reading and by supporting classroom teachers with professional development related to literacy education.

The results indicated that the information sources most frequently used by survey participants were websites, teachers in the department, professional development/inservice materials, supervisor(s)/administrator(s), teachers in other departments, and department chair/team leader. Over 70% of participants who responded to the questions for each of these sources indicated that they

Figure 1: Purpose for Seeking Information
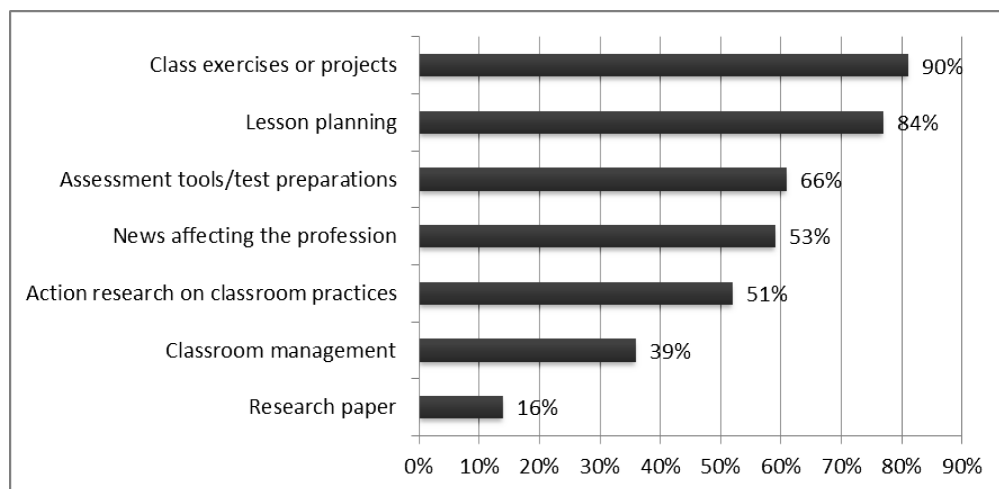
sought information from these sources at least once a month. Less frequently used sources were school librarian(s), professional journals, teachers at other schools, online library databases, publications of the State Department of Education, and reading coaches. Of the teachers who responded to the questions for these sources, 55% to 70% of participants reported using these sources at least once a month. The least frequently used sources were district supervisor(s)/administrator(s), publications of the U.S. Department of Education, ERIC, and college textbooks. Less than 40% of teachers who answered the questions indicated using these sources at least once a month and a third or more of teachers reported never using them when they sought professional information. (See Table 3).

Table 3: Frequencies of Accessing Resources When Seeking Information for Professional Practice

Resources	Number of respondents	Daily	2–3 times a week	Once a week	2–3 times a month	Once a month	Less than once a month	Never
Websites	$n = 202$	55.9%	24.3%	8.4%	5.9%	3%	1.5%	1%
Teacher(s) in your department	$n = 200$	38%	22.5%	13.5%	12%	3%	7%	4%
Professional development workshops/Inservice	$n = 202$	8.4%	16.8%	12.4%	26.2%	14.9%	18.8%	2.5%
Supervisor(s)/ Administrator(s)	$n = 194$	5.7%	7.7%	19.1%	21.1%	11.9%	18%	16.5%
Teacher(s) outside your department	$n = 197$	10.2%	16.2%	16.8%	15.2%	15.2%	15.7%	10.7%
Dept. chair/ Grade level leader	$n = 203$	17.7%	20.2%	15.3%	8.9%	11.3%	13.8%	12.8%
School librarian(s)	$n = 199$	5.5%	14.1%	16.1%	20.6%	13.6%	17.1%	13.1%
Professional journals/ magazines	$n = 199$	5%	10.1%	7.5%	20.1%	20.1%	17.6%	19.3%
Teacher(s) at other schools	$n = 194$	4.1%	7.2%	11.9%	21.1%	16%	26.3%	13.4%
Online library databases	$n = 194$	4.6%	13.4%	11.3%	19.1%	10.8%	19.6%	21.1%
State dept. of education	$n = 199$	4.5%	8%	11.1%	14.6%	20.1%	27.1%	14.6%
Reading coach(es)	$n = 201$	5.5%	10%	14.4%	14.9%	11.9%	14.4%	28.9%
District supervisor(s)/ Administrator(s)	$n = 197$	2%	7.6%	4.1%	10.7%	11.7%	27.9%	33%
U.S. Dept. of Education	$n = 198$	2%	3%	5.6%	7.6%	11.1%	34.8%	35.9%
ERIC	$n = 206$	1.5%	1.9%	2.9%	12.6%	8.3%	36.9%	35.9%
College textbooks	$n = 197$	2.5%	6.1%	2%	6.1%	7.1%	22.3%	53.8%

Participation in Library Instruction on Using Databases

To investigate whether a relationship could be found between the participants having participated in information literacy instruction by a librarian and the information sources they used for professional purposes, the survey included questions relating to prior participation in library instruction. The teachers were asked if they had ever attended an instructional session conducted by a librarian where they were presented with information on how to search for articles using an online database. Of the 201 participants who responded, 55.2% (n=111) reported having attended a library instruction session and 44.8% (n=90) indicated that they had not.

A separate multiple-response question asked the teachers who had participated in library instruction to indicate the location(s) where the instruction had taken place. The locations listed were the college or university library where the bachelor's degree was earned, the college or university library where a graduate degree was earned, a school library, a public library, or a continuing education workshop. Of the 120 teachers that responded to the question and who reported participating in library instruction at one of the listed locations, 43% (n=52) had participated in library instruction at an academic library at least once as either an undergraduate or a graduate student. Results also showed that 33.3% (n=40) attended library instruction as an undergraduate student and 12.5% (n=15) indicated they had attended a session as an undergraduate student, but not as a graduate student. Concerning library instruction participation as graduate students, 28.3% (n=34) of teachers who responded to the question reported having attended a session with 10% (n=12) indicating having done so only as a graduate student and not as an undergraduate student. Lastly 20.8% (n=25) of respondents reported that they had participated in library instruction both as an undergraduate student and as a graduate student.

Many participants did indicate that they had attended library instruction at the other locations listed. The most frequent location was a school library with 58.3% (n=70) selecting that response. Concerning the other locations, 30% (n=36) reported attending a session at a continuing education workshop and 9% (n=11) reported attending a session at a public library. (See Table 4).

Library Instruction and Information-Seeking Habits

In order to investigate if any statistically significant relationship could be found between participation in information literacy instruction by a librarian and the information-seeking habit participating teachers used for professional purposes, survey results were also analyzed using a Pearson Chi-Square test. The analysis failed to show a statistically significant relationship between participation in library instruction and twelve of the sixteen information resources habitually used for professional information. The four resources to which library instruction did show a statistically significant relationship were the school librarian(s) (p=0.002), ERIC (p=0.029), online library databases (p=0.041) and publications of the State Department of Education (p=0.045). (See Table 5).

For additional analysis, Pearson Chi-Square tests were also used to cross tabulate the sixteen information-seeking habits with the teachers' age ranges and with their years of professional experience to see if there were any statistically significant relationships between the habits and age or experience, the results failed to reveal any significant relationships.

Table 4: Location of library instruction session(s)

Location of Library Instruction Session(s)	Number of respondents per answer Total number of respondents to question *n*=120
Academic library	52 (43%)
Academic library (undergraduate)	40 (33.3%)
Academic library (graduate)	34 (28.3%)
Academic library (both undergraduate and graduate)	25 (20.8%)
Academic library (undergraduate only)	15 (12.5%)
Academic library (graduate only)	12 (10%)
School library	70 (58.3%)
Continuing education workshop	36 (30%)
Public library	11 (9%)

Table 5: Participation in a library instruction session on using online databases

Information-seeking habits/Resources	Pearson X^2 Value	df	p
School librarian	20.732	6	0.002
ERIC	14.041	6	0.029
Online library databases	13.127	6	0.041
State Dept. of Education	12.856	6	0.045
U.S. Dept. of Education	10.902	6	0.091
Websites	10.166	6	0.118
Dept. chair/Grade level leader	9.001	6	0.174
Reading coach(es)	8.187	6	0.225
Professional journals/ magazines	7.956	6	0.241
Supervisor(s)/ Administrator(s)	7.936	6	0.243
Teacher(s) in your department	7.138	6	0.308
College textbooks	6.914	6	0.329
Teacher(s) outside your department	6.576	6	0.362
Professional development workshops/Inservice	4.908	6	0.556
District supervisor(s)/Administrator(s)	4.208	6	0.649
Teacher(s) at other schools	2.640	6	0.852

DISCUSSION AND IMPLICATIONS

The survey results collected in this study provide a variety of data concerning the information-seeking habits of in-service teachers, both for general or unspecified purposes and also for the specific purpose of obtaining information related to the practice of their profession. In regard to the habits reported for seeking information in general, the data results do not indicate any habits that are atypical or notably remarkable. The data show high usage frequencies for news information and entertainment or popular culture information along with the less frequent usage of government publications and scholarly research journals. Similarly they indicate the teachers' frequent use of websites and books and their infrequent use of wikis and almanacs as information sources. Lastly the data show two thirds of participating teachers report a preference for online information over information in print.

In regard to the teachers' information-seeking habits when searching for information related to their professional practice, the results indicate that the teachers most frequently seek information for instructional design (lesson plans, exercises, or assessment tools) which reflects the bulk of their work load and represents what would likely represent their most common information needs. It is noteworthy, however, that over 50% of the participants also indicated that they do seek information for action research. Although the survey results do not provide any information as to a specific nature of the action research, the percentage of participants who are conducting action research does indicate that a significant number of teachers are possibly seeking research-based information for their professional needs.

The survey questions for which the teachers report how often they use the sixteen selected information sources for professional practice provide data that appear similar to those collected by Landrum, Cook, Tankersley and Fitzgerald (2007). Among the eight most frequently used sources, five of the sources are persons from whom participants seek information via interpersonal contact and three sources are text-based sources. For the eight less frequently used sources, the numbers are the inverse. The indicated preference is for interpersonal contact

over documents or other textual resources. Further study is needed to investigate the factors related to this preference.

Six of the sixteen information sources may be considered to be library-related sources in that they are accessible in libraries and/or via library services and they are often sources presented in library instruction on information literacy skills. The six library-related sources are professional journals/magazines, online library databases, ERIC, publications of the U.S. Department of Education, publications of the State Department of Education, and the school librarian(s). Five of these sources, the exception being the school librarian(s), are text-based resources that are often effective sources for finding evidence-based research information. The teachers' familiarity or unfamiliarity with information sources that provide research information is an important point for consideration due to the fact that teacher education programs endeavor to prepare graduates that are skilled in locating evidence-based research and using what they learn from it in their pedagogy, an ability that NCATE (2008) includes as a target skill for teacher candidates (p. 17).

Concerning the six library-related sources, these information sources typically require information literacy skills in order best to facilitate searching, locating, accessing, and using the information they provide. The findings of this study also show that four of the information sources (school librarians, ERIC, online library databases, and the State Department of Education) were the only information-seeking habits that showed a statistically significant relationship to whether or not the teachers had ever participated in a library instruction session.

Although the data collected does not indicate a cause for these relationships, nor does it indicate that an increase in library instruction would result in higher frequencies of usage for the information-seeking habits related to searching and using evidence-based research information, the significance of the relationships may indicate that an increase in library instruction experiences in teacher education programs could be beneficial to students by improving their awareness of these resources and the information literacy skills that would facilitate and develop their information-seeking habits as teachers.

The survey results show that 55.2% of the respondents report having participated in library instruction at least once. Yet only 23.4% of the 222 survey participants indicate they have had library instruction in an academic library at least once, either as an undergraduate or as a graduate. The percentage of teachers who report having had library instruction as undergraduates is 11% of the total population of survey participants. Identifying factors that contribute to the low percentages for participation in library instruction is beyond the scope of this study and requires further investigation, especially in relation to the finding of Duke and Ward (2009) and the question of collaboration between education faculty and academic librarians. When considering the various standards for information literacy and especially the NCATE standards for teacher preparation, the low percentages for library instruction in information literacy are unsatisfactory and demonstrate the need for greater awareness of information literacy training via library instruction and the need for teacher education programs to increase the opportunities for teacher candidates to participate in this training.

An important point for additional consideration is that the survey data only provide the percentages of teachers who participated in library instruction in an academic library at least once, regardless of the context of the instructional session. The data do not indicate if the library instruction sessions are part of a teacher education program. A number of universities and colleges have developed library instruction programs in information literacy that provide the undergraduate students to information literacy training via their core curriculum courses (ex. English composition courses). Whether or not teachers have participated in library instruction as part of their pre-service teacher education program is a question for further study. It is probable that the percentage of current in-service teachers who have received information literacy training in specific educational information resources via library instruction in their undergraduate programs is smaller than the percentage reported in this study.

LIMITATIONS AND RECOMMENDATIONS

Due to the process required to disseminate the survey for this study to in-service teachers via their school district professional development coordinators, typical survey sampling techniques were not used. The dissemination of surveys and informed consent notices as well as any reminders to potential participants was dependent upon the actions of each district coordinator. This necessary procedure may have limited the number of responses. The nature of the anonymous online survey tool may also have been a limitation as a number of participants decided not to finish the survey or failed to answer some of the questions.

This research project was an initial study and the findings do show that further research in this area is needed and would be beneficial to both teacher education programs and library instruction programs in information literacy. Considering the findings of this study, however, it may be recommended that school districts in collaboration with academic libraries and college or university teacher education programs evaluate current professional inservice programs in information literacy for in-service teachers to find areas where improvement or expansion of inservice opportunities would be beneficial to teachers' professional growth.

Another recommendation drawn from this study is for college or university teacher education programs to develop or increase collaboration with the library instruction program at their institutions in order to plan, implement, and assess multiple opportunities for teacher education students to participate in library instruction for information literacy training specifically for information resources in the field of education. The common objective of the various information literacy standards and the NCATE standards is to prepare teacher candidates who can not only teach their future students how to find and use information, but who also can model the same skills in both their professional and personal use of information.

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