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Executive MBA students' information skills and knowledge:

Discovering the difference between work and academics

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Abstract

This study explores Executive MBA students' information seeking skills and knowledge in academic and workplace environments in order to improve on library instruction. Our research consisted of a survey and 12 qualitative interviews, sampled from two University of New Mexico EMBA cohorts. The themes that emerged included: EMBA's specific skills and knowledge of their own industry's information, difficulty in finding new information, several barriers, and lack of transferability. By discussing adult learning theory and focusing on transferability, we can help students acknowledge and transfer their information skills and knowledge between academics and work.

Executive MBA students' information skills and knowledge:

Discovering the difference between work and academics

Introduction

Information literacy is integral in the workplace. Although it is rarely acknowledged by that term outside of the information science domain, employers and employees rely heavily on information literacy skills during their work week. Defined as the recognition that one needs information to fill a gap in knowledge and the ability to find and evaluate information to meet that need, information literacy is omnipresent in the business environment. Working business professionals must use a variety of information types to meet their workplace demands and make decisions. But how do working business professionals acquire those skills? While undergraduate business degrees may prepare students for basic research, work experience and graduate school, particularly a Masters of Business Administration (MBA) degree, offer an additional path. However, working professionals who are enrolled in an Executive MBA (EMBA) program rarely focus on improving their information literacy skills and knowledge as a goal, or as an anticipated outcome from their program. The purpose of this study is to describe these Executive MBA students' information seeking skills and knowledge and their use of information in the academic realm as well as the workplace, in order to improve on library instruction. Our guiding research questions build on the work of George, Bright, Hurlbert, Linke, St. Clair & Stein (2006) and include:

- How do EMBA students find information in their professional and academic environments?
- Is there a transfer of knowledge from one environment to another?

- What learning opportunities may the library faculty provide to meet the information literacy needs of professional graduate students in these environments?

By studying the unique population of EMBA students who have extensive previous work experience, we will explore their information literacy skills and behaviors as academics and professionals, along with the barriers they encounter and the challenges they face in transferring these skills. Based on our findings, a revised information literacy instruction program, grounded in adult learning theory, will be discussed.

LITERATURE REVIEW

There are several ways to approach the facets of researching information seeking skills and knowledge in the workplace. As these skills and knowledge build from undergraduate to graduate studies, and transfer from the academic environment to the workplace, all must be considered. How adults learn and respond to instruction is also a critical aspect. This research study examines the prior literature as its starting point to guide the study of this unique population of EMBA students.

Little research has been completed on the information literacy skill of business students, especially graduate students (Simon, 2009; Sokoloff, 2012). At the undergraduate level, there are a few relevant studies. Gross and Latham (2011) and Freeman (2004) indicated undergraduate students lack quality search skills, even though they rate themselves highly, which corresponds with Dunning, Johnson, Ehrlinger and Kruger's (2003) research on people's failure to recognize their own incompetence. Undergraduates also lack understanding of the relevance of these skills. One study found that undergraduate business "[s]tudents are not aware of the transferability of their information literacy skills outside of school" (Detlor, Julien, Willson, Serenko, & Lavalley, 2011, p. 584). Additionally, Costa (2009) studied undergraduate business

students participating in a long-term internship program. During their two semester internships, Costa (2009) studied the selection of resources students used for the workplace versus academia and discovered that in both instances, students relied heavily on open web resources, although they had knowledge of the libraries' resources.

The research focusing on business graduate students demonstrate similar issues, but again, there have been only a few studies on this population. Simon (2009) pointed out that “graduate students enter professional business programs with minimal knowledge of the information resources available to them and most leave the program with only slightly more knowledge” (p. 254). Hesseldenz (2012) examined changes to the MBA curricula and suggested “it will be difficult for students to reach their full potential in the reformed systems without a solid basis in IL” (p. 293). Outside the business discipline Blummer (2009) and Washington-Hoagland and Clougherty (2002) offered comprehensive literature reviews on the information literacy approaches librarians and faculty have used to reach graduate students. Blummer (2009) discovered that many of the approaches from 1950s to the present focus “on teaching students awareness of the organization of information to facilitate research in different disciplines as well as formats” (p. 34). Washington-Hoagland and Clougherty (2002) concluded “that graduate students would benefit from contact with librarians and information literate faculty mentors” (p. 130), though they also discover a paradox that graduate students understand their need for more research support, but do not attend outside workshops. Bellard (2005) described some of the barriers librarians face trying to reach this population. She studied Masters of Social Work students (MSW) and how their personal lives (e.g. work, family) hinder their attendance of outside academic workshops. George et al. (2006) studied the information seeking behavior of masters and doctoral students from various disciplines at Carnegie Mellon University. Through

their semi-structured interviews of these students they found “a barrier to graduate students' search for information is knowledge about or access to resources” (George, et al., 2006, p. 20).

This barrier is particularly important for executive business students because of their information rich discipline and time limitations. In addition, they discovered that students use a variety of both library and open online tools , print materials, and rely on people (e.g. professors, advisers, librarians) and that “searching is influenced by convenience, speed and ease of access” (p. 20).

Information literacy in the workplace is studied frequently, (Bruce & Hughes, 2010; O’Sullivan, 2002; Crawford & Irving, 2009; Cheuk, 2000; Cheuk, 2008), however, much of it is completed outside of the United States. Lloyd and Somerville’s (2006) research focused on a fire department in New South Wales, Australia and found that information literacy in the workplace is diverse and complex. O’Farrill (2010), a professor of management, studied how information literacy and knowledge management correspond in the workplace by interviewing tele-nurses at a Scottish institute. He concluded “that many aspects of IL are contextual and that frameworks for development as well as evaluation of IL should be related to performance in situated practices” (p. 727). As part of the Project on Information Literacy, Head (2012) has conducted one of the few studies in the United States. She interviewed recent graduates about their information skills in the workplace, and interviewed their employers about their ability to solve information problems. She found the newly-hired graduates had proficient computer and search skills, but they lacked low-tech research skills and patience and persistence when solving information problems in the workplace. Lloyd (2010) explained that compared to education settings, "workplaces and workplace interests are incredibly diverse, complex and messy...information literacy may not follow the systematic research-based process that is advocated by the higher education setting” (p. 71). Similar to O’Farrill, Lloyd (2010) included

the environment as an aspect of information literacy, but also found social interactions to be important aspect of becoming information literate.

In the business world, the need for information literacy skills and knowledge are directly or indirectly mentioned. Drucker stated in an interview “[management] have to take responsibility for information because it is your main tool. But most don't know how to use it. Few are information literate” (Harris, 1993, p. 120). Nearly 20 years after Drucker’s statement, many business executives still complain that recent graduates lack creativity and critical thinking skills. In *Rethinking the MBA* (Datar, Garvin, & Cullun, 2010), the authors discussed how MBA students have difficulty with ambiguous research topics, and according to one executive, “[MBAs] need to learn how to collect information...” (p. 97). While Feldman (2004) estimated knowledge workers spend 15-35 percent of their time searching for information, and searchers are only successful 50 percent of the time, it is evident that more work is needed to prepare these students. Even with Drucker’s statement, Sokoloff (2012) points out, “with information literacy barely on the radar of academic business faculty, it is unsurprising that workplace information literacy coverage in business, trade, and professional literature is expressed in terms of desirable soft skills among employees” (p. 5). In addition, Sokoloff (2012) found that information literacy was often framed by employers in the context of other soft-skills, such as communication and presentation, implying that it is not considered a core competency. By acknowledging these differences in framing and discussion of IL, academic librarians may better understand the business world so librarians may better prepare students when they need to find, use and evaluate information at work.

Methodology

Our exploratory two-pronged research approach consisted of both a survey and qualitative semi-structured interviews to investigate the EMBA students' information seeking skills and behavior. This dual approach afforded an opportunity to not only provide a baseline on the students' skills and knowledge, but also provided an in-depth understanding of their knowledge and the barriers they encounter. Qualitative research was chosen for its strong ability to provide a rich description of how people experience information literacy and to better understand its complex reality. For the first phase of the research, a survey was administered at the end of the spring 2012 semester. The survey was comprised of a combination of closed-format questions to gauge students' access to information sources and level of skill, and open-format questions to dive deeper into their knowledge and the barriers they face. Once the survey results were analyzed, the findings were used to compose semi-structured interview questions (see Appendix A). The semi-structured interviews used a critical incident technique and were completed either in-person or via telephone, with all participants receiving follow-up questions via email during the spring 2013 semester. Interviews were conducted until saturation was reached. The interviews were coded using an inductive coding method with the assistance of the software program, ATLAS.ti. The emergent themes were used to examine instructional approaches and potential outcomes.

Sample and Demographics

Both the survey and interviews were completed using a population of EMBA students studying at the University of New Mexico's (UNM) Anderson School of Management. UNM's EMBA program is an intensive, two-year course of study designed specifically for professionals

with solid work experience. Applicants are required to have a bachelor's degree from an accredited university and at least five years of meaningful work experience, preferably in a managerial or supervisory role (Anderson School of Management, n.d.). The group-work intensive coursework focusing on practical application of management theory, leadership, and the global nature of business today is completed in a cohort style, with each cohort consisting of approximately 50 students. Our study sampled students from two cohorts with a variety of disciplines, industries, positions, and work experience. In both phases, our purposeful sample populations represented a broad cross-section of these categories. A demographic snapshot of the students interviewed (phase 2) is in Figure 1. Currently, the library research instruction component for this EMBA program includes two in-person lecture sessions, a variety of LibGuides, and reference consultations.

Phase 1 - EMBA Survey

To collect baseline information on the EMBA's information seeking skills and behaviors, a survey was administered at the end of the spring 2012 semester. The survey was comprised of a combination of open and closed-format questions to assess students' access to information sources, use, search skills, perceived value of sources, and potential barriers. The questions were developed after the targeted EMBA cohort had two library instruction sessions and the business librarian collected anecdotal information via reference consultations with individual students. The written survey was administered in person by the EMBA teaching faculty to reduce any potential bias of being associated with the library. To further limit potential bias, the survey questions were neutrally worded, without reference to libraries or librarians. A total of 26 out of 48 questionnaires were returned, which represents 54% of the 2013 EMBA cohort. Since the sample size was small and could not be considered statistically significant, the results were

only used to help formulate the in-depth interview questions to be researched in phase 2 of the study. However, the survey led to some interesting responses and conclusions. Overall, the student responses suggested a very low level of information awareness. Students had trouble identifying whether the information resources they used at work were internal company-created information or external sources (15% of students) and also were unable to state whether found information came from a free or fee-based resources (over 30 %). However, almost 50% of students rated their information skills as 'good or very good'. One area where the students showed higher information awareness related to knowledge and use of search tools and databases. Two open ended questions probing these skills and knowledge led to a list of 22 specific resources actively used at their workplaces, including business/industry specific resources, free search engines, and many medical databases. The medical professionals in this cohort especially showed wide knowledge of their industries' tools. For academic use, fewer resources were listed, but responses included UNM Library and free search engines (including Google Scholar). Another interesting finding was that the students rated the importance of information seeking higher for academic use (4.48 on a 5 point Likert scale where 5 = 'most important') as opposed to workplace (4.2). So while students viewed academic information seeking as more important, they were unable to identify as many academic resources to use. When asked where they acquired their search skills, students responded that they acquired their skills from both school and work, from trial and error, from informal and formal instruction, or a combination of all methods. Lastly, the survey explored the information barriers that EMBA students face both academically and professionally. When it came to the barriers to finding information for academics, the students' top responses showed they are unaware of database structure and/or content. Additionally, they stated time and information overload (e.g.

too many results, unclear relevancy) were also barriers. On the professional side, the main barriers stated were lack of access to quality information, specifically related to subscription costs and search techniques and skills. The overlapping barriers of time and information overload were also cited.

Though not statistically significant, the survey results suggest that EMBA students understand the need for obtaining quality information seeking skills, but struggle with the vocabulary, knowledge and resources needed. Their candid responses helped formulate the interview questions used in phase 2 of the study.

Phase 2 - EMBA Interviews

The data collection for the interview portion of our research began in the fall semester of 2012. After receiving an IRB exemption, EMBA students from the 2013 and 2014 cohorts were recruited via in-class announcements and individually at the program's sponsored lunches. Once a student expressed interest and willingness, students were contacted individually to make arrangements. The interviews were scheduled from November 2012 through February 2013 and twelve interviews in total were completed. Each interview lasted between thirty and ninety minutes and used a semi-structured questioning technique. While the interviews followed a prescribed question order (see Appendix A), additional questions or clarifications were added based on the students' responses. Both the in-person and phone interviews were conducted by the authors and recorded using Audacity software on a university laptop. The audio recording were transcribed to text documents and then erased to protect the students' confidentiality. After all the interviews were complete, three follow-up questions were emailed to all participants (11 of 12 responded). The transcriptions were loaded into ATLAS.ti for data coding and analysis.

The interviews inquired about several important information literacy concepts. Based off the results from the student survey, a critical incident approach was used to more deeply explore the students' skills and knowledge. Flanagan (1954) defines a critical incident as "any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the persons performing the act" (p. 327). Andersson and Nilsson (1965) have proven that "this method is both reliable and valid" (p. 402), and Radford (1996; 2006) has shown the method is also useful in the library world. After answering a couple of demographic questions to provide context on work and management experience, two critical incident questions were asked. Participants were asked to describe the last time they found information for work (to solve a problem, make a decision, or complete a project). Information incidents that required using both internal workplace information and external information were explored to expose any differences in processes or knowledge. Additional questions addressing types of information used, ideal search tools, and instruction and learning methods and preferences were also asked. The interviews closed by inquiring about information and skills transfer between their academic and workplace environments. By focusing on the information literacy concepts (finding, evaluating, and using information), emerging themes were discovered.

Limitations

This research is exploratory, which is a limitation. We interviewed 12 EMBA students from one university, so no generalization of these results is made. The Critical Incident Technique has limitations since all the data are self-reported, in this case by students/working professional, and as such, are subjective accounts of their perspectives.

Findings

The findings from the interviews confirmed some of the insights from the survey and created a more precise picture of our sample populations' skills and knowledge. The findings were also valuable to examine how the library may provide instruction that will meet professional students' academic and workplace information literacy needs and construct knowledge that we may use to create unique instructional opportunities. After coding was completed, the results indicated several emerging themes. These themes include: specific skills and knowledge of their own industry's information, difficulty in finding new information outside their industry, several barriers to finding information, lack of transferability and a strong disconnect between academic and workplace information literacy. Findings concerning students' instruction and learning methods and preferences are also included. The following sections summarize the findings.

Specific Skills and Knowledge of their Industry's Information

One of the findings that demonstrated students' skills and knowledge was that the students expressed a proficiency in finding their needed information from their own industries. The critical information incidents described by the participants required a variety of information types such as financial information, medical data, policies, specifications and internal operating procedures. Both internal and external information sources were heavily used. Multiple participants communicated that they were comfortable with the use of familiar resources and were able to effectively gauge the quality of these resources based on their previous experiences with them. On using a known (external) medical resource, one student stated "It is a more filtered database to search from, so I do not have worry about coming across some one's blog or

a manufacturer's advertisement. I know it's all journals, all research, it's all legitimate sources, I do not have to do my own mental filtering" (P1). Another student stated: "I think my familiarity is much better with the health care type [than business info] information - you deal with clinical trials and the primary information that deal with that" (P9). Especially evident in those with a medical specialty, their academic training and background created knowledge and understanding of quality, e.g. peer reviewed and primary information. Other trusted sources described by the students included documents produced by relevant professional associations, industry standard handbooks, government regulations and information, and other professionals in their fields. The reliance and heavy use of internal information was also repeatedly stated. After describing his company's internal knowledge management system and library, a participant stated "there are a lot of [information] systems build into my environment already" (P8). Students' ability to find and their inherent understanding that company-produced information was acceptable and did not require evaluation may lead to the lack of information skills and transferability.

Difficulty in Finding New Information Outside their Industry

Several difficulties in finding new information were described. When not able to return to known, quality sources, students expressed a much more onerous information environment. Lack of knowledge, skills and ability to evaluate information were all indicated. To start, the infrequency of having to find new information contributed to the lack of knowledge and remembrance of which information source to use. When discussing finding new information for a work project, one participant stated "I might need data twice a month, but it is a real labor" (P5). Another stated "I feel a lot of trepidation when doing research for this program. I just don't do it" (P3) when asked about researching new information outside of their industry. Outdated or underutilized skills were also acknowledged. Due to the level of work

experience required for admittance in the EMBA program, students were often returning to a new, electronic academic environment. One student summed it up by stating “In my undergrad, we would have to go to the stacks if we wanted to do research. This was 1995-96, so there were some things online, but it is much different than it is now” (P4). Lastly, the students’ reliance on Google was identified as a major component in their difficulty in finding information to satisfy a new need. Every student interviewed mentioned their use of Google at some point in their interviews. Frequently starting with “a quick Google search” (P7) or the “first step was actually Google” (P9), students professed their heavy use of Google due to its integration into their browser's toolbars and its familiarity. However, even though it was a preferred starting point, searching using open web tools has its own information difficulties. Students acknowledged that they often do not find the right information, or are unable to judge its quality. The majority of students also expressed that it would be uncommon to go past the first couple of pages of search results, even when unsure of their search skills. Participant P3 stated “I ... see what I can find first, because I generally do not know the right questions to ask.” In addition, once information is found, evaluating its quality remains an issue. She continued by saying: “my biggest concern is often [the quality of] the information I gather, I know enough not to trust wiki, but I do not always know” (P3). Without having the knowledge, skills or tools needed to find new information, students’ frustration is understandable.

Information Barriers

Separate - but closely related to the items identified as difficulties, barriers to finding information were heavily discussed. The identified information barriers included lack of access, lack of time and unsophisticated internal information systems. As previously stated, medical professionals expressed and demonstrated higher information literacy skills. One barrier that

was particularly related to them was the lack of access to quality, full-text information. Often, the information that was needed and found was inaccessible because of paywalls or other restricted access issues. When searching for information in the medical sciences, P1 would try to use open source full text journals or only just the abstracts of other articles stating “the ability to have access to more of the journal is better. Sometimes they do not give a lot of information in just the abstract.” Building on that sentiment, P2 stated “I did not know how to access it and I had no way of accessing it since I was not a student”. Lack of time to engage in research in both the academic and workplace environments was also frequently addressed. When speaking about doing research as a corporate employee, P2 stated “the reality of life was the only time you could invest to search was after hours. You couldn’t do it during business hours. So you had to make a personal choice, to use personal time to search after hours or on weekends to do that research”. P4 had similar feelings about academic research, saying “I think part of the problem, at least for me, is that I do not have concentrated amounts of time to dive into a problem”. P5 simply summed it up by stating “I don’t have that kind of time.” One barrier that was found contained an interesting contrast to the participants’ previously stated skills. While students stated that they heavily used and relied upon the information tools and resources provided in their workplaces, the systems provided were often portrayed as rudimentary and clunky. Knowledge management systems, either internally developed or commercial, were poorly organized with no standard terminology and limited search ability. Concerning a corporate information tool, it was simply stated it is “not technologically advanced enough. It was a slog to research” (P2). These barriers were cited similarly between workplace and academic information needs.

Knowledge and Skills Transferability

One of the more interesting findings relate to the students' transfer - or more specifically - their low awareness of and lack of transfer of knowledge and skills between their academic and workplace environments. Although increased knowledge and augmented skills resulting from instruction (addressed in detail in the next section) were found, students see a vast difference between academic and workplace information and therefore, students perceived a low transfer between these environments. While there is no true consensus on the definition of 'transfer' in education and information literacy, in this context it is considered to be the use of past learning in the learning of something new and the application of learning to both similar and new situations (Haskell, 2004). To begin, students acknowledged the differences between their academic and workplace information needs and behaviors. P12 summed it up by stating "I would say research we have done as students is pretty different from my work experience" and P1 stated that due to the differences, she tried to be more open-minded when searching for academics. In the interviews where students did not directly express ideas on transfer, it was evident that little or no connection was made between the two environments. Some students expressed while they understood that the resources they used and learned in their education were valuable, they saw little use for them in their work. When asked about this, P12 stated. "It [business databases/sources] did not really translate from one environment to the other" and that the only thing that translated between work and EMBA was being creative with keywords. Another student expressed that the workplace information need was usually so targeted that the academic resources taught were not going to meet her specific needs. Alternatively, some students did express that their gained academic knowledge of search tools, techniques, and content would be valuable and used in their professional work. The

increased awareness of the expansive information environment was the one area identified for potential transfer. One participant (P4) discussed his knowledge of known sources from listservs and the standard industry publications, but he did not know about the subscription databases that were useful to this field. However, after being exposed to these databases in a library instruction session, he began to use them to write professional reports. Another student, who stated she typically avoids searching for information, learned sources for future research. She stated, “The materials and resources we used over the last year and half or so has opened up my eyes to what is out there. What I can use. Different sources (e.g. Harvard Business Review) and methods for finding information, so yeah. That has been beneficial” (P3). Other students were more dramatic in discussing their awareness and potential transfer stating “I had no concept of that sort of research... It was very helpful for me to realize that not only was the information out there, but it was so concisely organized” (P6) and “I was amazed how much information is out there. I thought it would be hard. I mean when you consider my experience before [the librarian] showed me what the library system had, my experience was essentially Google and Yahoo search engines and their level of detail was very weak. But the amount of information I was able to pull using the library’s search functions was pretty amazing. Amazing how deep people will go into a topic” (P6). While a clear transfer was not always evident, it is possible that the increased knowledge of information sources, including depth and breadth, as well as a new way to approach information will transfer once the EMBA program is completed.

Instruction and Learning Methods and Preferences

The last questions asked related to the students’ desired instruction methods and learning preferences. Questions on this were specifically asked to explore opportunities to increase knowledge, remove barriers and promote transferability for the students. Several themes

emerged, including preferences for hands-on/trial & error learning and ad hoc/context-sensitive help, either individually or expert-led. Preference for a variety of instruction modalities, including video guides, online tutorials and modular learning systems were expressed. Also noted was the preference for fully intuitive, or no training needed tools.

When asked how they best learn research and search tools and what instruction methods they prefer, many of the students stated they learn best by just using the tools. Students stated “I learn best when I am doing” (P4) and “hands on, absolutely hands on” (P9). Another student stated that she would have retained more of an instruction session if she had “been driving and doing” (P3). With respect to assistance in learning these new tools, many of the participants mentioned they would want context-sensitive or point-of-need help. Examples of these included interactive online help or discussion boards, LibGuides, or short video demonstrations on how to perform certain tasks. 4M summed it up by stating “I don’t tend to want to learn a whole program, rather than to focus on this one thing that I need to do.” Another student elaborated on why this type of help was needed: “The [in-class] sessions are very information dense. I’m able to follow them in class, but it seems like I only retain a fraction of what was presented. It might be helpful if you had a video demonstration on the EMBA website or on Youtube” (P6). Beyond just video demonstrations, a few students discussed their desire for an online tutorial or modular learning system. A student stated why he needed more than just in-class instructional sessions, “[resources/search tools] kind of falls by the wayside. When you hear it that first week of class, you have so many other things going on, you kind of forget where that is” (P9). Another student added, “What about creating an online site that contains a decision tree type of format to guide the researcher?” (P5). Some students did mention the need for expert assistance, either in-class or via other instructional methods. “A resource, a human resource expert for me is critical. I need

an instructor or subject matter expert-led resource to say have you ever considered utilizing ABC and D” (P2). Another student stated, “I can stumble around but it is not that efficient. I like to have some mentoring. How about that? I like to have a mentor relationship instead of formal training” (P11). Several additional ideas on improving instruction included using small work groups (P4), applicable examples in instruction (P7), and adding a more experiential aspect to the lessons (P11). Lastly, the desire for more intuitive search tools was stated. P8 stated that tools “should be intuitive and there shouldn’t be any training needed” and P6 confirmed that “an ideal tool is one you do not have to learn”. A combination of improved-upon tools, resources and instruction methods was desired.

Discussion

As described above, our findings indicate that the EMBA students have a wide range of skills and knowledge when it comes to finding information in both the academic and workplace environments. While they possess many positive skills and attributes, our findings show that the wide variation between students’ knowledge and skills is especially prevalent among disciplines, job functions, and experience. All participants expressed using a wide variety of information for both work and school, and relied heavily on both their past educational and work experiences to make sense of their information environment.

Acknowledging and identifying students’ experiences, particularly with respect to finding information, is the first step toward creating instruction that incorporates the students’ experiences. Students expressed that they use information frequently in the workplace and for academics, although they did not always have the appropriate vocabulary or the awareness of it. Different types of information, including policies, data and procedures were not always easily identified by the students as “information”. Seemingly, without exposure to the conceptual side

of information literacy, students are not making the connection on what information can be. This may have also contributed to their low awareness level of different types of information, including whether the information was internal or external, free or fee-based, or where the information originated. The diverse and complex types and sources of information needed and used in the workplace also may have added to this confusion. As workplace information needs do not follow typical academic research, which tends to focus on peer-review journal articles and subscription databases, students were not previously exposed to the various types and sources of information needed to make decisions and complete projects in the workplace. The different types of workplace information needed are also closely tied to the actual finding of this information. Repeatedly, students expressed that ease and speed of finding information was paramount, as time-constraints and access were cited as major barriers. Often due to the limited amount of time to find information, students used the easiest source on hand - often Google - and considered the results on the first or second pages only before deciding that the information was acceptable or just not available. This quick and superficial research also impacts the students' information evaluation techniques. By only trying a couple of different searches, and viewing only the first few pages of results, students were trying to pick the "best" information from a very limited pool. Often, without having high quality results, effective evaluation was not possible, since little to none of the information found met their needs or the standards for quality information. These barriers, knowledge and skills are consistent with previous research (George et al., 2006). Since barriers and lack of knowledge and skills are identified, library instructors can begin to build knowledge and learning opportunities.

Building on the EMBA students' existing knowledge and experience is a constructive way to increase their overall information literacy. While new or unknown information needs

were a struggle, the findings indicated that participants did have stronger skills when finding and using information in their known work environments. They were able to return to known sources to meet new information needs, and were also able to express the quality of known sources based on previous successful use. Sources such as professional industry association documentation and internal corporate information were known to be acceptable resources and returned to frequently since their origin and author's credentials were inherently trusted. This demonstrated that the baseline skills for evaluation of information are present, but need to be acknowledged and applied to new situations. Helping students recognize both the understanding of conceptual IL and that they already loosely possess its framework - even if they do not have the vocabulary to express it - may be possible by using authentic workplace examples. Their dual roles as academics and professionals can open the discussion of these stated desired traits and move toward transferability.

Implications for academic libraries and EMBA programs are inherent from the findings discussed above. It is obvious from the students' comments on learning and instruction that library instruction needs to be modified and supplemented to meet their learning needs. Active learning instruction (Prince, 2004), that includes hands-on activities, and more importantly activities with quality, contextual examples are desired by students. Working with EMBA faculty to ensure in-class time for active learning is necessary. In addition, creation of online instruction modules so students may learn and use the tools at their point-of-need should be completed. Ideally, this modified instruction would not only help the students find information for course assignments, but help them learn tools and sources more efficiently for transfer to the workplace. Our findings correspond with Lloyd (2011) that transferability is difficult, but critical to information literacy instruction. Students and professionals need to understand the

array of various content databases and information sources, as well as the in-depth content of these individual sources. The combination of selecting the proper database or source for an information gap and then using the search interface efficiently is crucial. Meeting individually or with small student groups, it is possible to go into more detail on these subjects and increase learning and retention. In the response to the questions on learning and instruction, the students described their preference for both mediated and unmediated instruction. Different types of instruction modules and media, including video guides, online tutorials and decision trees, were also addressed. Having a collection of these various types also meets their need for ad hoc, time-independent instruction.

Recommendations

Coupling EMBA students' experiences and needs may point to the need to use adult learning theory, specifically andragogy, for an integrated in-person and online instruction approach. Andragogy is "the art and science of helping adults learn" compared to pedagogy, which targets pre-adults (Knowles, 1980, p.43). While andragogy is not the only adult-learning theory and has been modified over time by Knowles and others, it is a useful theory to help approach revising EMBA library instruction. Knowles' assumptions of andragogy, as stated by McClusky, Illeris, and Jarivis (2007, p.83), includes:

- "As a person matures, his or her self-concept moves from that of a dependent personality toward one of a self-directing human being.
- An adult accumulates a growing reservoir of experience, which is a rich resource for learning.

- The readiness of an adult to learn is closely related to the developmental tasks of his or her social role.
- There is a change in time perspective as people mature—from future application of knowledge to immediacy of application. Thus, an adult is more problem-centered than subject-centered in learning.
- The most potent motivations are internal rather than external.
- Adults need to know why they need to learn something.”

Cooke (2010, p.216) explains that “[i]nstruction or teaching librarians are typically not andragogical in their teaching styles..., but as adult learners continue to pervade college and university campuses in great numbers, libraries and their instructors must get up to speed and be ready, willing, and able to instruct this distinct population of learners.” Since the EMBA students are adult learners, andragogy is an appropriate theory to apply to meet their needs. In addition, the responses from the EMBA students connect to Knowles assumptions. Students’ comments included the concept of self-directed learning, their past experiences, need for immediacy and problem-centered instruction, and understanding why learning something is important.

Using this understanding of andragogy as a guide and building on previous research, an integrated instructional approach that will meet the needs of the EMBA students can be developed. This approach builds on the students’ experiences in academics and work, helps them transfer their knowledge and skills between the environments, and meets their stated preferences on learning and instruction. The approach includes a variety of learning

opportunities and modules, including both in-person and online components, with mediated, unmediated and media-rich options.

The first aspect of this approach is the creation and delivery of online workshops and tutorials based on Simon's (2009) business information literacy instruction. The decade long instruction collaboration was based on faculty and employer input and provided three subject workshops for new graduate business students, one of which was on the library (Simon 2009). The library workshop taught by Simon, started as a one-day, in-person workshop, but later moved completely online. The online workshop covered company and industry content and included an assessment. Students had six weeks to complete the tutorials and an assignment to research companies or industries (Simon 2009). Using this approach, Simon found that students unprepared for business research, were able to "learn how to access and incorporate into their classroom work the basic business resources" (2009, p. 260). This approach receives both positive feedback from faculty and demonstrated learning through increased post-test scores. While content can be formulated to meet individual program and library requirements, the self-paced and hands-on learning increases business information literacy and creates a strong foundation for adult-learner students.

The second aspect is a collection of learning objects that the students can use in their point of need and in an a la carte fashion. These learning objects are designed for quick access, and are part of a toolbox that EMBA students could refer to during the entirety of their program. An example of these toolbox items could include a guide on a specific subject, a one-page electronic decision-tree to help students choose appropriate resources, a two-minute video guide explaining its use, and an activity based on a real-world business information need for the student to complete in order to gain familiarity and demonstrate understanding. Ideally, these

items could be pulled or modified from the full online tutorials, but could be used in a stand-alone fashion. As the students' time to find and evaluate information is limited, these unmediated resources respect their constraints, and allows them to work at their own pace and at their point of need.

Classroom instruction is still an important component of this approach and will be used in combination with the above items. Classroom instruction meets the stated need for expert-led, in-person guidance. This allows for mentoring time, and gives the students an opportunity to ask questions and receive feedback. To make the most of this time, collaboration with EMBA faculty is key. Using examples and activities based on course assignments allows instruction faculty to contribute their expertise and experience and demonstrates the activities' importance and application. Pulling in students' previous experiences and even their current workplace information needs into instruction and in-class work-time also creates an authentic environment and fits squarely with adult learning theory.

Finally, guided assessment and reflection will promote transfer of knowledge and skills between the EMBA students' information environments. This should be completed mid-program or later, as students need the opportunity to complete the tutorials, be involved with classroom sessions, engage with the learning objects during an authentic point of need, and allow time for their own reflection. The reflection component will build on their experiences and will use a problem-centered information need from their own work. By asking to students to create their own information scenario and reflect on how skills and knowledge can be used, increased retention and awareness of transferability may be possible. This reflection may also provide valuable feedback to librarians and EMBA faculty in order for us to make the necessary adjustments to need the students' needs.

Conclusion

Information literacy is an integral part of business, even though it is infrequently stated in those terms. The working professional students we interviewed showed they use a wide range of search tools and resources, but their workplace information needs are very different from the academic environment. The themes that emerged in our research included: EMBA students' specific skills and knowledge of their own industry's information, difficulty in finding new information outside their industry, several barriers to finding information, lack of transferability and a strong disconnect between academic and workplace information literacy. By discovering these students' information needs for academics and work we may be able to create improved instructional programs for these adult learners. Additional research on how to apply adult learning theory in information literacy programs for EMBA and other professional graduate programs to increase transferability is needed. Furthermore, more research is needed to better understand these professional students so librarians can provide more relevant instruction. By applying adult learning theory and focusing on transferability, we can help students acknowledge and transfer their information skills and knowledge between academics and work.

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Figure 1

Demographic	Content
Age range	30 to 60 years old
Gender	Seven males; five females
Work Experience	An average of 18 years work experience; An average of five years in current position
Industries	High technology, Higher education, Medical/Health care, Utilities, Telecommunications, and Non-profits
Positions held	Director, Associate director, Manager, Dean, Engineer, Consultant

Demographic snapshot of EMBA student interviewees

Appendix A
EMBA Information Literacy Interview Questions
Todd Quinn & Lora Leligdon hold questionnaire copyright

1. Please describe your current position and work experience
 - 1a. (If not stated, ask) how would you characterize your position?
 - 1b. What is your length of time in position/career?
2. What types of information do you use in the workplace and this position?
3. (Critical incident A: External data*) – Please describe the last time you had to find information to make a decision, solve a problem or complete a project at work.
4. (Critical incident B: Internal company data*) – Please describe the last time you had to find information to make a decision, solve a problem or complete a project at work.
 - 3a & 4a. What did you do next?
Why did you choose that source?
How did you learn how to do this?
How long did it take?
What search terms were used?
How many search results pages (in Google or other tool) deep did you use?
 - 3b & 4b. Why did you choose this information?
How did you know this was quality information for your information need?
 - 3c & 4c. How did you use it?
5. Think about the ideal tool for finding external information. Please describe it
 - 5a. What source(s) does this ideal tool lead you too?
6. Please describe the ideal way for you to learn a new tool.
7. Can you describe if (and how) has your work experience helped you to find information in the EMBA program?
8. Can you describe if (and how) has the EMBA program helped you to find information for work?

Follow up Email questions

9. What do you hope to gain professionally with the MBA degree?
10. Based on your experience in the EMBA program, your work experience, and how you prefer to learn research tools...
- 10a. Think about the formal library instruction session(s) you have received, would you change how they are currently delivered? Please explain your answer.
- 10b. Which method(s) do you prefer for the delivery of this content?

*If in Critical Incident A, an internal information need is described, Critical Incident B will inquire about an external information need (or vice versa). Then use the same follow-up questions.