Who Do You Know? A Study of Connectedness in Online Education and Employment

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Abstract:

This study explored the relationship of online course intensity to development of social networks and the impact of social networks on obtaining employment or employment information to develop a better understanding of the factors that lead to improved employment outcomes and information-gathering. Graduates from three ALA-accredited programs in the Southeastern US who took some of all of their classes online to earn the MLIS degree were surveyed. Findings suggest that there are differences in types of contacts (networks) used in job-finding related to online course intensity; and there are differences in the types of network contacts used to secure employment or employment information. The results point to the importance of fitting network development to program modality (online intensity); the necessity for encouraging and promoting career-related work experiences during the master's program; and the importance of providing face-to-face contact however infrequently to students enrolled in online programs.

Keywords: Library and Information Science Education | Distance Education | Employment | Social Networks

1. Introduction

Distance education is a formal instructional process in which students and instructors are separated spatially and temporally ("SACS Commission on Colleges" 2010). The instruction may be synchronous (real-time) or asynchronous (delayed), depending on the communication mechanism utilized in a course. The pervasiveness of the Internet and increased access to broadband has contributed greatly to the use of the Web as a medium to deliver online courses. An online course is a Web-based instruction method in which a large portion of the instruction occurs via the Internet. In the context of this study, an online course is defined as one that does not require any face-to-face instruction and where at least 80% of the content delivered through the Internet (Allen & Seaman, 2010).

Library and Information Sciences (LIS) programs in United States (US) offer an array of graduate degree programs and specializations designed to prepare students for careers in areas including librarianship, knowledge management, and archives. A majority of LIS programs have incorporated various distance education components in their course offerings over the years including TV, Telnet, and Web-based. Some of these programs allow their students to complete their master's degree requirements with little or no face-to-face instruction. Online programs offer convenience and choice – when, where, and how to undertake a program of study. LIS programs in the U.S. have been offering online courses since the late 1990s. Some are now fully online (Kazmer, 2007). In fact, online classes offered by a majority of American Library Association (ALA)-accredited LIS programs have little to no face-to-face instruction (Bird, Chu, & Oguz, 2011).

Studies comparing online and face-to-face course delivery methods suggest that there are no significant differences between these delivery methods in terms of student achievement (Dutton, Dutton, & Perry, 2002; A.P. Rovai, 2003). On the other hand, there is growing concern with how students are able to connect with one another. Such connections or networks are important not only for support during the program, but as a means of finding employment and building extended professional networks necessary for a successful career. Networks are also an important part of establishing life-long ties to a Master of Library and Information Science (MLIS) program where they may return as mentors for students as well as alumni who will provide support in the future. Students who took online courses often complained about a number of challenges including a sense of disconnectedness, loneliness and isolation, and the lack of bonding interaction due to geographical and temporal separation (Slagter van Tryon & Bishop, 2009). Such challenges impede students' ability to expand social networks with peers that students in traditional face-to-face settings take for granted. Students in LIS programs without a residency requirement face these challenges and tend to establish fewer social ties with their peers, which in turn limits the scope of the social networks that could further professional careers (Kazmer, 2006). Other (non-LIS) students who took traditional face-to-face classes tended to develop well-connected social networks that could be leveraged for career and employment prospects (Emler & McNamara, 1996).

Since online education has become so important for training future library and information professionals, it is vital to understand how students develop and maintain social networks while in school and after graduating. As accrediting agencies and university administrations increasingly emphasize employment outcomes following graduation, more attention to student-peer, student-faculty and student-mentor relationships and relationships built through program-organized activities is needed. These are the types of relationship-building opportunities LIS programs can enhance. To effectively do so, it is necessary to identify 1) the types of mechanisms students and graduates use to access job information; 2) the nature of the relationships that students form as a result of the medium of class instruction; 3) the means students use to build and maintain these relationships; and 4) the degree of importance of personal contacts as opposed to other methods used to access job-related information.

2. Problem Statement

The extent of social networks formed in traditional face-to-face school settings may influence students' career and employment prospects. Students who take all or nearly all of their classes online lack the opportunity to form the same number or kinds of relationships possible in face-to-face classes. Despite the rise in enrollment in online courses and popularity of online education, little research has been done to address the important role social networks play in students' future career and employment prospects. From the student's perspective, effectiveness of a distance education program can be evaluated in terms of skills gained, increased salary, and, in particular, ability to secure employment upon graduating (Kawachi, 2008).

This exploratory study aimed at developing a better understanding of the role of social connections on employment prospects. The research focused on graduates who took varying amounts of online classes from a few courses to fully online to complete their MLIS degree. Research has suggested that online students have a difficult time establishing connections with peers, which may limit the span of their social networks. Limited social networks, in turn, may negatively impact the ability to secure employment or limit earnings. Understanding such issues has potential implications for program activities and course instruction including teaching style, course design, content development, and course activities and deliverables to improve LIS students' employment prospects.

3. Literature Review

A review of the literature on barriers that hinder students' abilities to establish and sustain social networks, the role of social networks in occupational attainment, and characteristics of the current LIS workforce formed the basis for the research questions presented below. LIS programs rely largely on distance education - more specifically online education - to train future library and information professionals. The students graduating from online programs as well as those who took a high proportion of online courses often complain about the lack of networking opportunities and the sense of isolation - such challenges can put graduates at a disadvantage as they embark on their professional careers. The role social networks play is of key importance in understanding how individuals access employment-related information and how this information influences employment prospects.

3.1 Connectedness in Distance Education

Although the concept of distance education may be seen as a relatively new form of delivering instruction, the origins of distance education can be traced back 3000 years to China (Barron, 1996). A correspondence study program, designed to increase rural populations' access to higher education, developed at Pennsylvania State University in 1892 marked the beginning of distance education in the US (Banas & Emory, 1998). Today, a large majority of LIS programs have incorporated distance education modalities into their course offerings including TV, Telnet, video conferencing, and blended formats (Barron, 2002).

Online education alone is growing at a much faster pace than total college enrollments in the US. Over 600,000 graduate students took at least one online course in fall 2008. This represents about 14% of all students who took at least one online course in postsecondary degree-granting institutions in the US (Allen & Seaman, 2009). In LIS programs, online course offerings have also been steadily increasing. Approximately 76% of all distance LIS courses (n=2,039) during the 2009-2010 academic year were delivered online, up from 35% (n=994) in the 2000-2001 academic year (Daniel & Saye, 2002; Wallace & Naidoo, 2010). The rationale for program delivery of online courses in LIS is to enable increased access to professional qualifications, remove geographical barriers, and offer independent and more diverse life-style oriented courses and learning opportunities (Mellon & Kester, 2004; Small & Paling, 2002; Wilde & Epperson, 2006). While taking online courses helps reduce commuting time, alleviates class conflict issues with work, and allows the student flexibility in studying (Bunn, 2004; Luppicini, 2007), it may also present a number of challenges for the student. The sense of disconnectedness, loneliness, alienation, and isolation, and the lack of interaction due to geographical and temporal separation from the institution, its services, and their peers and instructors are often cited as major challenges (Slagter van Tryon & Bishop, 2009). Despite the challenges, however, in some cases the lack of initial bonding experience or face-to-face interaction did not prevent students forming a classroom community that promoted connectedness and an effective learning atmosphere (Rovai, 2003).

Three main strategies that are frequently used to enhance social connectedness in online courses include increasing student interactions, providing comprehensive technical support, and assuring persistent follow-up (Slagter van Tryon & Bishop, 2009). Interaction is enhanced by building strong classroom communities. Such communities support students by promoting a sense of connectedness, that is, feelings of "cohesion, spirit, trust, and interdependence" (Rovai, 2002, p.206). Even the provision of limited face-to-face interaction with peers and instructors (e.g., attending an orientation program) can increase a student's sense of community and help maintain and sustain connections during the program (Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000; Kazmer, 2007). These students are more likely to overcome isolation and stress via much needed informational, social, and emotional support as they progress through the program. Additional limited interaction among individual students and cohort groups may also be provided by alumni to help those in rural or other areas distant from the home campus overcome isolation (Glomb, Midenhall, Mason, & Salzberg, 2009). The use of regional mentors may help reduce the students' sense of isolation while improving their graduation rate.

3.2 Social Networks and Occupational Attainment

A job search process consists of internal and external exploration of the appropriateness of job opportunities (Steffy, Shaw, & Noe, 1989). Internal exploration refers to an individual's self-assessment of personal characteristics, academic preparation, or other qualifications for the position, while external exploration involves procurement of job-related information from

various sources (e.g., personal contacts, job announcements). For purposes of this research, the focus was on external exploration. In general, an individual may use market, network or hierarchical methods as part of external exploration (Granovetter, 1995; Huang & Western, 2011). Market methods involve responding to employment opportunities through formal means such as attending career fairs, responding to job advertisements or announcements, using career services or employment agencies, or direct application to employers. Network methods refer to the use of personal contacts as a means of accessing information about a job opportunity or acquiring employment. Hierarchical methods refer to job assignments or transfers within an organization or larger governing entity.

In his seminal work, *Getting a Job: A Study of Contact and Careers,* Granovetter (1974) studied how individuals find jobs and the role their personal contacts played in the process. There were three major findings in Granovetter's (1995) study. First, most of the jobs were found through networks (personal contacts); second, jobs found through these networks resulted in higher wages and increased job satisfaction relative to those found through other mechanisms; and third, personal contacts classified as weak ties (acquaintances) as opposed to strong ties (family or close friends) were especially critical in accessing job-related information. Fifty-six percent of jobs found were obtained using networks. The network mechanism can provide non-redundant, highly useful information about job opportunities when it contains individuals with whom the job-seeker has weak ties. Weak ties link individuals to information available in other close-knit networks, acting as a bridge (Granovetter 1995). Such information is less likely to be available within a network of strong ties and can be crucial for social mobility.

Granovetter's (1995) study focused on experiences of blue collar workers in the northeastern U.S. Later work conducted elsewhere, has included institutional, cultural, racial, and ethnic variables to examine the relationship of search mechanisms and tie strength (Franzen & Hangartner, 2006; Lin, 1999; Mouw, 2006) to job searches and job attainment. These studies have produced mixed results, particularly for the relationship between wage differences and the role of weak ties. Franzen and Hangartner (2006) found a negative relationship between wage levels and use of network methods. Jobs obtained using networks (whether ties were weak or strong) resulted in consistently lower earnings than market methods across a number of countries.

In some cases, however, a personal contact providing job information may play more than one role (e.g., work contact and close friend). Such relationships are classified as a multiplex. Multiplex relationships have the potential to increase the intensity of information acquired through a network (Green, Tigges, & Diaz, 1999). While use of multiplex relationships puts those with low socioeconomic status, particularly minorities, in a disadvantaged position in the job market, their use is beneficial to those with higher status (Green et al., 1999).

Ethnic and racial diversity in LIS school student population is very limited, over 80% of LIS degree seeking students are White while Blacks and Hispanics each constitute about five percent (Wallace & Naidoo, 2010). Results of a multi-city study indicated that labor outcomes could be

different for different ethnic and racial groups. Hispanics were more likely to rely on network methods with an emphasis on strong ties to secure employment compared to other groups (Falcon & Melendez, 2003; Green et al., 1999); this was true as well for studies looking at recent college graduates (Mau & Kopischke, 2001). Less assimilated ethnic groups may have been more likely to use strong-ties since ethnicity is such an important element in personal identity (Battu, Seaman, & Zenou, 2010). Of course, strong ties in a personal network are often more aware of the individual's job seeking status and qualifications. As they become aware of job openings it is also easier for strong ties to share information with the job-seeker (Marin, 2012).

Cultural norms may also influence the use of network methods as a job-search strategy. The use of network methods was high in southern European countries (over 50%) and some developing countries (over 80%) but relatively low in Scandinavian countries (20%) where strong ties were used more often than weak ties to secure employment. Nasser and Abouchedid (2006) found that recent college graduates in Lebanon relied heavily on network methods. Huang and Western (2011) found that the role of favors and influence through networks may be limited in industrialized nations where human capital (e.g., education, experience) is highly valued, hence the finding that market methods were more frequently used. Even in industrialized nations, however, strong ties may be particularly useful during economic downturns when a person's weak ties may not feel sufficiently motivated to provide assistance (Calvo-Armengol & Jackson, 2004; Granovetter, 1995, Osberg, 1993).

Position within an organization, membership in professional organizations, and socioeconomic status are also important factors. Boxman, De Graaf, & Flap (1991) found that high level administrators with large networks due to professional contacts at other companies or numerous memberships in professional organizations or clubs found new positions through networks as opposed to market mechanisms. While these researchers did not discuss the extent to which these administrators were active participants in these organizations or club, others have found that it is not membership per se but attendance and participation that increases the member's network diversity (Davis, Renzulli, & Aldrich, 2006). Campbell, Marsden, & Hurlbert, (1986) found that higher socioeconomic status was positively associated with increased network diversity.

Wage differentials in jobs procured using network as opposed to market methods were not often reported. Some studies reported a negative association between wages and the use of network methods. Franzen and Hangartner's (2006) found jobs procured using network methods resulted in lower earnings across a number of countries. Jobs found using network methods (whether strong or weak ties) yielded lower earnings than jobs found using market methods. Jobs found using network methods did not have a negative effect on earnings for Whites, however, they did have a negative effect on earnings for other racial groups (Falcon & Melendez, 2003; Green et al., 1999). Individuals with extensive networks that included contacts with higher socioeconomic status (e.g., education level, college prestige) were more likely to have higher reservation wages (minimum acceptable wages determined by the job-seeker) and to earn more than those whose networks lacked such contacts (Burt, 1997; Lin, 1999; Montgomery, 1992).

3.3 Workforce in Library and Information Science

Despite the fact that more than 20% of the current librarian workforce is over the age of sixty and 50% are over the age of fifty, (Manjarrez, Ray, & Bisher, 2010), the Bureau of Labor Statistics (BLS), expects job growth in the LIS field to grow slower than average at seven percent annually due to economic downturns and budget limitations in local governments ("Librarians," 2012). While a tight job market argues in favor of the use of personal networks (especially individuals having strong ties to the job-seeker), a large network with weak ties may also be beneficial.

Marshall et al. (2010) conducted a comprehensive study focusing on employment experiences of LIS alumni graduated between 2000 and 2009 from a majority of ALA-accredited LIS programs in the United States. Most of the graduates maintained communication with their peers as a way to stay in touch with their respective LIS programs. Despite ongoing tight labor markets, 70% of the respondents found employment within the first three months of graduation, with 80% working at libraries. LIS professionals were overwhelmingly satisfied with their jobs (over 87%). While the ALA- recommended starting salary for professional librarians was $41,680 four years ago, (ALA, 2008) the current average salary was $60,734 (ALA-APA, 2012), Results from Marshall et al. (2010) indicated that graduates who worked in a library setting earned an average of $47,877. However, those who worked in a non-library setting earned significantly more. These broad findings were used as to benchmark results in the current study.

4. Procedures

In this exploratory study investigating the role of social ties for employment prospects, the research focused on graduates of LIS programs who took varying percentages of online classes to meet MLIS program degree requirements. The following research questions guided the study:

1. What are the employment characteristics of graduates?
2. How do students utilize their social networks to attain (or improve) their career goals and secure employment?

4.1 Participants and Program Residency

Alumni who graduated between spring 2006 and summer 2011 semesters from three ALA-accredited LIS programs in the Southeastern US were invited to participate in the study. These programs were purposely selected to include a range of online and face-to-face class ratios. One program offered less than 50% of its courses online; therefore most of the graduates who participated in the study completed a majority of degree requirements in face-to-face settings. The second program offered the degree in both face–to-face and online settings with no residency requirement, therefore some graduates had little or no face-to-face interaction with peers or professors. The third program offered most of its courses online with a few blended courses optional. While fully online at this time, the program still requires new students to attend a onetime intensive weekend session. Though graduates of this program had access to limited

face-to-face interaction with their peers and professors, most of those graduating between spring 2006 and summer 2011 completed the degree requirements entirely online.

4.2 Data Collection and Analysis

An online survey questionnaire was administered to collect the data. The questionnaire consisted of two sets of multiple-response items adapted from Granovetter (1974) with additional items created to address specific aspects of the research questions. Respondents answered close-ended questions which provided a limited number of opportunities for brief explanation or expansion. Text responses were quantified and used in the statistical analysis of results.

The first set of questions focused on demographics in order establish a link to previous research (e.g., Haythornthwaite et al., 2000; Kazmer, 2006, 2007; Marshall et al., 2010) and to compare results of this study to past research (Marshall et al., 2010). The researchers also investigated the potential relationship between demographic variables and varying degrees of online classes taken. The second set of questions focused on graduates' employment status and job-search activities.

Two programs provided a list of names and current email addresses for their students who graduated between spring 2006 and summer 2011 semesters (n=469). The third program allowed access to a listserv used to communicate with graduates (n=533). An invitation to respond to an online survey was sent to each of the email addresses provided and also to the listserv. To increase the response rate, an IPad2 tablet computer was offered to one randomly selected respondent. Two hundred nineteen responses were usable yielding a 21% response rate.

Responses to close-ended questions were analyzed using tests relevant for examining relationships among both scalar and categorical variables including non-parametric tests (e.g., chi-square, Kruskal-Wallis, and Mann-Whitney U tests). Additionally a binary logistic regression model was used to estimate variables related to graduates' decisions. Statistical analyses were performed using SPSS software. The more detailed responses provided to open-ended questions (generally explanations for or expansions on *other* responses) were categorized using content analysis.

5. Results

The results are divided into six areas. Within each area, online class intensity refers to the percentage of classes taken in online format. Total number of responses to certain questions did not add up to 219 due to occasional permitted nonresponse.

5.1 Demographic and Basic Employment Profile

Table 1 summarizes demographics, and basic employment information. Most respondents (79.7%) were female and half (49.5%) were in the 25-35 age group. The highest degree obtained for 90% was the Master's. Ninety percent of the respondents were employed during their MLIS program, most (70.6%) working in a library, and many of these in a professional or administrative capacity.

Table 1. Demographic and Employment Information

	Number	Percent of Total
Age (n=218)		
Under 35	117	53.7
35 - 44	44	20.2
Over 44	57	26.1
Gender (n=217)		
Male	44	20.3
Female	173	79.7
Education Level (n=217)		
Master's	202	93.1
Specialist	5	2.3
Doctorate / Post-doctorate	10	4.6
Current Employment Status (n=219)		
Employed	203	92.7
Unemployed	16	7.3
Job Procurement Method (n=201)		
Market	126	62.7
Hierarchy	19	9.4
Network	56	27.9
Employment Status [during MLIS] (n=219)		
Employed	196	89.5
Unemployed	23	10.5
Mobility (Job Change) [post MLIS] (n=209)		
Retained same job	108	49.3
Changed job	111	50.7
Number of Jobs Changed After Graduation (n=111)		
One	75	67.6
Two or more	36	32.4
Current Annual Earnings (n=208)		
Below $30,000	59	28.4
$30,000 - $39,999	59	28.4
$40,000 - $49,999	55	26.4

$50,000 - $59,999	19	9.1
Above $60,000	16	7.7

Following graduation, half the respondents found new positions. Many (67.6%) remained in their first postgraduate position, the rest changed jobs two or more times. At the time of the research, 90% were employed. A majority (62.7%) found employment using market methods, whereas 27.6% percent used network methods. Less than ten percent used hierarchical methods. More than half (56.8%) of the respondents earned less than $40,000 annually, which was less than the ALA-recommended annual salary for entry-level professional librarians (ALA, 2008). Over 62% of the respondents were either satisfied or very satisfied with their jobs and most graduates (73%) were members of at least one professional organization (n=219). When asked to provide additional information, the most frequently mentioned organizational memberships were in ALA, statewide ALA-related associations, or specific library associations by type, (e.g. public library, special library).

5.2 Earnings Characteristics

The types and sources of information utilized may significantly influence whether graduates find employment, the type of employment they find, and the salaries attached to that employment. Although network methods appear to have led to increased (self-reported annual) earnings as shown in Table 2, a bivariate analysis of job procurement method (market versus network)[1] and annual earnings[2] revealed no significant association, nor was a significant association found between job procurement method and annual earnings for those who changed jobs upon graduating. This finding suggests that job procurement method (market vs. network) was not associated with employment outcomes in terms of earnings.

Table 2. Job Procurement Methods by Annual Earnings (n=182)

Job Procurement Method	Current Annual Salary			Total
	Less than $40,000	$40,000 - $50,000	Above $50,000	
Market	57.1% (72)	27.8% (35)	15.1% (19)	100.0% (126)
Network	53.6% (30)	21.4% (12)	25.0% (14)	100.0% (56)

Results also showed that earnings for those who found new employment after graduation were significantly higher than for those who stayed in their existing jobs (x^2=5.114, d.f. =2, $p<0.1$). No statistically significant difference was detected between market and network methods in earnings of those who changed jobs after graduation.

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[1] Respondents who used hierarchy methods were excluded from the analysis because of small sample size.
[2] Annual Salary categories were combined for statistical analysis purposes.

Graduates who found new employment after graduation appeared relied mostly on market methods to find their first employment while network methods were chosen mostly by those who went on to find new employment yet again. No significant association was found between number of jobs changed after graduation and different job procurement methods.

Table 3. Job Procurement Methods by Mobility [post MLIS] (n=111)

Job Procurement Method	Mobility		Total
	First Job	Second Job or more	
Market	70.4% (57)	29.6% (24)	100.0% (81)
Network	60.0% (18)	40.0% (12)	100.0% (30)

Job satisfaction, measured using a scale from 1-7, where 1 was very dissatisfied and 7 was very satisfied, was high for the majority of respondents ($\bar{x}$ = 5.4, SD = 1.7). The Mann-Whitney U test was used to compare job satisfaction levels between jobs found using market and network methods. No statistically significant difference was found in terms of job satisfaction on the basis of job procurement methods. However, a statistically significant difference was detected in job satisfaction levels between those who did and those who did not change jobs (U=3800, $p < 0.01$). Those who changed jobs after graduation were more satisfied with their current jobs and earned more than those who retained their jobs after graduation ($p <0.01$).

No statistically significant association was found between job procurement methods and age groups. However, a statistically significant difference was detected between mobility and age (x^2=13.030, d.f. =2, $p<0.01$). As summarized in Table 4, those who were older were less likely to change jobs after graduation compared to those who were younger than 35.

Table 4. Mobility by Age (n=209)

Mobility	Age			Total
	Under 35	35 - 44	Over 44	
Retained Same Job	40.8% (42)	21.4% (22)	37.9% (39)	100.0% (103)
Change Job	62.3% (66)	20.8% (22)	17.0% (18)	100.0% (106)

Of those who remained in the same position (n=75), about 11% were administrators or managers, 23% were professionals (e.g., librarians, archivists, or school media specialists), 24% were paraprofessionals (or part-time workers) in a library, and 33% did not work in libraries.

5.3 Educational Experience

As shown in Table 5, over 70% of the respondents took the majority of their classes online while just fewer than 30% took one half or less of their classes online. On average, it took 26.8 months (SD = 8.74) for respondents to earn the degree, based on the dates reported by respondents for their enrollment in and graduation from the program. There was no statistically significant difference for time to degree completion among groups of students who took varying percentages of online classes.

Table 5. Online Class Intensity by Time to Degree Completion (n=219)

Online Class Intensity	Percentage	Time to Degree ($\bar{x}$)
Very Low Online (Less than 25%)	14.1% (31)	26.3
Low Online (25% - 49%)	15.5% (34)	27.5
Moderate Online (50% - 74%)	4.6% (10)	26.1
High Online (75% - 99%)	36.1% (79)	26.7
Fully Online (100%)	29.7% (65)	26.9

Since almost half of the graduates found new employment after graduation (n=111), online class intensity data from these respondents was used to test whether there was an association between online intensity levels and job procurement methods. To ensure expected frequencies were not less than five in data cells, observations in the *Very Low Online* and *Low Online* categories and those in the *Moderate Online* and *High Online* categories were combined. Although the use of market methods was more frequent among those with high online class intensity, the result was not statistically significant (see Table 6). It should be noted that a majority (68%) of this sample consisted of students with high online class intensity.

Table 6. Job Procurement Method by Online Class Intensity (n=111)

Job Procurement Method	Online Class Intensity			Total
	Low Online	Moderate-High Online	Fully Online	
Market	27.2% (22)	44.4% (36)	28.4% (23)	100.0% (81)
Network	43.3% (13)	33.3% (10)	23.3% (7)	100.0% (30)

While the average time to degree completion in the LIS program was about 26 months, those who changed jobs after earning the degree graduated four months earlier ($\bar{x}$=24.8) than those who retained their jobs ($\bar{x}$=28.8). A statistically significant difference was found (U=4604.5, $p<$ 0.05) in time to degree completion between of those who retained their jobs after earning the

degree and those who went on to find new employment. A statistically significant association (x^2=8.164, d.f. =2, $p<0.05$) was identified between graduates' age and their time to degree completion (see Table 7). Those under 35 (a) graduated on average three to four months earlier than those who were 35 or older (b).

Table 7. Age by Time to Degree Completion (n=209)

Age	N	Mean	Std. Deviation	Mean Rank
Under 35[a]	108	25.7	8.3	94.59
35 – 44[b]	44	29.3	7.8	124.42
Over 44[b]	57	28.1	9.8	109.73

5.4 Professional Development

Analysis of responses to an open-ended question about graduates' membership in professional/alumni associations and roles that respondents had in these associations indicated that more respondents joined ALA than any other. Association membership tracked traditionally recognized specialty areas: academic, public, school, and special libraries, with some academic/faculty-oriented organizations (ALISE, ASIS&T), archivist and information technology associations following. An increase in the number of memberships held in professional associations did not correspond with a higher number of jobs procured via network methods. The Mann Whitney U test yielded no significant difference in number of memberships in professional/alumni associations (U=3291, p=0.460) between market and network as job procurement methods.

There was a significant association between online class intensity and membership in professional/alumni associations (x^2=6.998, d.f. =2, $p<0.05$). As shown in Table 8, graduates who took mostly online classes or completed the degree in a fully online format did not join professional/alumni associations as frequently as those who took classes mostly in face-to-face format did ($p<0.05$). No statistically significant relationship was found between earnings and membership in professional associations.

Table 8. Online Class Intensity by Professional/Alumni Association Membership (n=219)

Online Class Intensity	Professional Association Membership		Total
	No	Yes	
Low Online	15.4% (10)	84.6% (55)	100% (65)
Moderate-High Online	29.2% (26)	70.8% (63)	100% (89)
Fully Online	35.4% (23)	64.6% (42)	100% (65)

A binary logistics model was used to estimate variables that may influence the respondent's decision to join a professional/alumni association. Binary logistic regression is an appropriate statistical technique for a dichotomous dependent variable (Tabachnick & Fidell, 2006). The dependent variable in the study was professional/alumni association membership, while the independent variables were age, earnings, gender, online class intensity and time to degree in the school. The overall model was statistically significant (model $x^2 = 9.771$, $p<0.05$) and fit the data at a statistically acceptable level. The table below designates the logistic regression coefficient, standard error, Wald test, p-value and odds ratio for each of the predictors. The Wald test was used to test the statistical significance of each coefficient (β) in the model; associated with p-values for hypothesis tests of whether regression coefficients not equal to 0. The binary logistic model revealed that only one estimated coefficient, online class intensity, was statistically significant at 0.05 criterion of statistical significance. The odds ratio of online class intensity was less than 1 which suggests that any increase in online class intensity led to a decrease in respondents' participation in professional/alumni associations.

Table 9. Results of Binary Logistics Regression on Participation in Professional/Alumni Associations (n=219)

Variables	β	$SE\ \beta$	Wald's χ^2	p	Odds ratio (e^β)
Age	.185	.176	1.107	.293	1.203
Earnings	.151	.108	1.964	.161	1.163
Online Class Intensity	-.265	.124	4.613	.032*	.767
Time to Degree	-.007	.020	.136	.712	.993
Constant	1.194	.849	1.979	.159	3.301

Refers to significance at 5% level

Results suggest that online class intensity was useful in predicting respondents' participation in professional organizations and/or alumni associations as a member or in any capacity. The odds ratio associated with online class intensity was 0.767. Hence when online class intensity is raised by one level (e.g., from low online to moderate-high), the likelihood of joining a professional or alumni association decreases by 23.3%.

5.5 Network Methods and Tie Strength in Job Procurement

Twenty seven percent of the respondents (n=30) out of those who found new employment after graduation (n=111) used network methods. Graduates relied mostly on their contacts at work (24%), personal friends (20%), family members (15%), peers from the MLIS program (13%), and other types of contacts to procure information about employment opportunities that led to employment. Respondents were allowed to choose multiple types of contacts in order to determine the extent of multiplex relationships and to assess any association with employment outcomes in terms of earnings. Since the total number of responses (n=24) to this contact type

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question was less than 30, no significance test was performed. However, half of the respondents identified more than one type of relationship to their contacts.

Tie strength (weak vs. strong) was identified based on the contact's relationship with the respondent. Contacts described as peers from graduate school, peers at work, professors, or mentors were classified as weak ties whereas family members, friends of the family, and personal friends were classified as strong ties. Though no significance test was performed, about 54% of respondents (n=13) used weak ties to procure employment information while 46% used strong ties (n=11). No significant differences were observed in earnings.

Just as they were helpful for finding information about employment opportunities, personal contacts were also very important for providing recommendations (both written and oral). Regardless of job procurement method (market vs. network) used, a majority of graduates (80%) enlisted the help of a personal contact for employment purposes (x^2=3.514, d.f. =1, p < 0.1). For about 90% of the graduates (n=38) who found employment using network methods, personal contacts not only provided information about the employment opportunity but also provided a recommendation to the employer by writing a letter or contacting the employer on behalf of the graduate.

6. Discussion

While some (e.g., Granovetter, 1995; Nasser & Abouchedid, 2006) have argued that younger individuals in the early stages of their careers tend to use network methods to find jobs, others (Boxman, De Graaf, & Flap, 1991; Try, 2005) disagreed. Reliance of LIS graduates on market methods contrasted with the latter as well as findings from Franzen & Hangartner (2006). Although half of the respondents were 35 and under and a large majority of respondents (80%) were recent graduates (between 2009 and 2011), market methods were the choice of the majority. Furthermore, use of market methods was dominant (76%) among LIS graduates who found new employment after graduation: this contrasted with Granovetter (1995). The different findings may have stemmed from the use of different types of populations. The educational level of respondents in this study was much higher than those in Granovetter's sample. The current findings are more similar to those of Huang and Western (2011) who found that highly educated professionals were more likely to use market methods.

One of Granovetter's controversial findings was that jobs procured using network methods generally pay more than jobs found using other methods (1995). This finding was not consistently supported by other studies. Results from the current research showed that job procurement method (market vs. network) used by LIS graduates did not result in significant differences in earnings. This finding was consistent with Franzen & Hangartner, (2006); Lin, (1999); and Mouw, (2006). Graduates who earned higher salaries were more likely to be employed in administrative positions and may have had more extensive networks which provided them with access to higher paying jobs as Burt (1997) and Lin (1999) suggested. Additionally, since some respondents held administrative jobs while enrolled, they may have had more experience, also commanding a higher salary.

Granovetter (1995) found that individuals who obtained jobs using network methods were more satisfied with their jobs. However, the results of the current study showed no significant difference in job satisfaction between those using different job procurement methods. Job satisfaction was generally high among LIS graduates in this study just as it was in Marshall et al. (2010). However, there was a significant difference in job satisfaction between those who found new employment after graduation and those who retained their current positions. This difference in satisfaction may have been the result of increased earnings, since those who changed jobs earned significantly more than those who did not. This finding is consistent with past research (Liu, Thomas, & Zhang, 2010) that identified a positive relationship between increased earnings and higher job satisfaction. Those who changed jobs after graduation leveraged their human capital to improve their earnings as suggested by Huang and Western (2011).

Results showed that regardless of varying degrees of online class intensity, graduates completed degree requirements in a little over two years. Age and mobility were important factors associated with graduates' time to degree completion. Although a large majority of respondents were employed (full-time or part-time) when they were enrolled in the LIS program, some may have had professional level or satisfactory positions they intended to keep. As reported earlier, these respondents were relatively older (over 35) than their peers. Since the questionnaire did not include questions about family commitments, age may have been serving as a proxy for the presence of children, elderly parents, or similar commitments lessening mobility, particularly in a tight job market. As well, this may have been responsible for the longer time to complete the degree. High job satisfaction, established career paths, and promotion expectations within the organization may also have been factors. On the other hand, those who were younger (under 35) may have been less constrained by such commitments allowing them to graduate sooner and find new employment that paid significantly more than that of their peers who did not change jobs after graduation. In some cases those with internships or assistantships may have had no choice but to leave the position.

The results did not yield any significant association between different job procurement methods and online class intensity levels. Though Emler and MacNamara (1996) and Kazmer (2006) alluded to the importance of face-to-face interaction and its role in establishing ties which could support students' professional careers after graduation, results of this study did not provide evidence from the job procurement perspective. However, this does not mean that graduates did not share information with their peers from school as information procured from peers may not have resulted in new employment for the respondent. Additionally, further research is needed to revisit the relationship between online class intensity and job procurement methods since the sample size for those who found new employment after graduation in this study was somewhat limited (n=111), and a majority of respondents had high online class intensity.

Boxman et al. (1991) found that membership in professional associations can be particularly helpful for securing new employment using network methods for those who are in administrative positions. Davis et al. (2006) also suggested that participation and being active in professional

organizations are important in increasing one's network diversity and, in turn, this may increase the use of network methods. However, no statistically significant association was found between membership in professional/alumni associations and job procurement methods used. Graduates may have been reluctant to play active roles in professional associations if they had limited interaction with long-standing members who had benefited from networks fostered by association membership. New graduates were not making use of peer networks either. It may be due to the fact that it takes time for peers to move into the types of roles that can be of use to the job searcher. The time period chosen for purposes of recollection clarity may not have been long enough to allow upward mobility.

Although the sample consisted mostly of graduates with high online class intensity, the relationship of online class intensity and membership in professional associations was significant. Since earnings were not a factor, graduates who took mostly online classes may have felt less connected to the field or did not see value in joining in professional associations (since many already worked in libraries) or, absent the professional academic culture, were not aware of the benefit of joining the association while in school. Graduates who used their personal networks to find employment relied more often on their work contacts than peers from the MLIS program. Although most graduates' online class intensity was high, nearly all had limited face-to-face to interaction with their peers as part of weekend-long meetings or hybrid classes. It appears that these interactions were not long or intentional enough to promote a sense of community among students that could provide emotional and professional support for them during their education and after graduation. This finding appears to support Kazmer's (2007) finding that students graduated from programs without residency requirement are less likely connect with their colleagues for networking and support.

The tie-strength characteristics of these contacts showed that graduates relied more on their weak ties as Granovetter (1995) suggested, however, the finding was inconclusive due to the small sample size of respondents who found new employment after graduation using network methods. Most students were already employed, and a large number of those in libraries, which allowed them to garner work contacts and tap peers or personal contacts to supplement their social networks. It was the high use of work contacts that resulted in the overall importance of weak ties. Personal contacts were also frequently used for providing oral or written recommendation for graduates. This finding was also consistent with Granovetter (1995).

7. Conclusion and Future Research

This exploratory study aimed at developing a better understanding of the role of social connections on employment prospects. The research focused on graduates who took varying amounts of online classes (online class intensity ranging from 25% to 100%) to complete their MLIS degree program. Previous studies have suggested that students in online education programs have a difficult time establishing connections with peers, which may limit the span of their social networks. Limited social networks, in turn, may negatively impact the ability to secure employment or may limit earnings. The findings suggest that peer relationships developed

in school was less effective in securing employment than work contacts and personal friends. Regardless of online class intensity, work contacts were cited more than any other type of personal contact as source of employment information. Since 90% of the respondents were employed during their MLIS program and most of them attended programs without a residency, they relied on their colleagues at work and close friends for securing employment information when network methods were used. Otherwise, market methods were predominantly used to procure employment.

A number of findings point to distinctions among subgroups of graduates. While online class intensity did not affect the length of enrollment, age was a factor, which agrees with other findings – that those who changed jobs after graduation completed their studies more quickly and those who were older (who also retained their jobs) took longer (by 3 -4 months or approximately one quarter/semester) to complete their degrees. In this case, age may be a proxy for family responsibilities or other types of commitments, a variable not included in the study.

Findings that peer contacts, mentors, and professors were less frequently used for securing employment-related information have a number of implications for educational practice. First, it makes more sense to employ scarce resources to assist students with getting work experience in situations related to their desired future employment than it is to arrange for mentoring (unless it is work related).Second, it is particularly important to be aware of the distinction between the necessity for peer contacts during the program in order to provide support and encouragement towards completion as opposed to providing work-related information. A longitudinal study may tease out long-term effects of face-to-face interactions with school peers as these peers rise to positions of authority where they can assist their fellow alumni. Third, promoting a sense of community among students is necessary not only for purposes of establishing potential future support and ongoing in-class support but also for improving graduates' connection to the field and profession. The importance of face-to-face interaction should not be minimized.

7.1 Limitations

Three LIS programs were chosen purposefully because of the different course delivery options employed; however, graduates of these programs were not representative of all LIS graduates. First, the sample was chosen from institutions in the southeastern U.S., a region with wages that are lower, on average, than the country as a whole. As well, generalizations cannot be made to all LIS students due to the sampling strategy. Second, none of the institutions were iSchools, which may also have affected the results. Graduates of iSchools may pursue very different careers necessitating very different types of social network building. Third, almost 70% of the respondents were in programs having high online class intensity; therefore the results may have been somewhat skewed. Lastly, the research did not directly examine the contact most instrumental in securing the position – only in securing information about the position.

8. References

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