



Stacks, Serials, Search Engines, and Students' Success: First-Year Undergraduate Students' Library Use, Academic Achievement, and Retention

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ABSTRACT

Like other units within colleges and universities, academic libraries are subject to increasing internal and external pressures to demonstrate their contributions to institutional goals related to students' success. The purpose of this study was to investigate the relationships between first-year undergraduate students' use of the academic library, academic achievement, and retention. Results of ordinary least squares regressions predicting first-year students' cumulative grade point averages (GPA) and logistic regressions predicting students' first-year to second-year retention suggest that students who used academic library services and resources at least once during the academic year had higher GPA and retention on average than their peers who did not use library services. The results of two separate regressions predicting students' GPA by 10 different types of library use suggest that four library use areas were consistently and positively associated with students' GPA: database logins, book loans, electronic journal logins, and library workstation logins. The results of two separate logistic regression analyses suggest that logging into databases and using library workstations were actions consistently and positively associated with students' retention. Additional results predicted by students' use of services at least one time and by one-unit increases in the frequency of library area uses are discussed.

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During the last several decades, higher education academic units, student services, and departments have faced increasing public and private pressures to demonstrate their impact on student outcomes. Policymakers, stakeholders, and private citizens are no longer amenable to assumptions that the nature of higher education and its outcomes are axiomatic; instead, higher education institutions are increasingly pressured to become more accountable in demonstrating their value (Alexander, 2000; Bresciani, Gardner, & Hickmott, 2009). As foundational units of higher education institutions that serve students, staff, faculty, and community members, academic and research libraries are not immune to these internal and external pressures to validate their contributions to institutional missions and student success (Covey, 2002; Jacoby & O'Brien, 2005; Pritchard, 1996; Oakleaf, 2010).

Amid these pressures, however, many academic and research libraries have yet to engage in systematic assessment efforts and, among staff at libraries who have undertaken formal assessment initiatives, few have openly communicated the results of assessment (Hiller, Kyrillidou, & Self, 2006; Lewin & Passonneau, 2012). Two decades ago, the Association of College and Research Libraries and the Association of Research Libraries recognized the importance of library assessment and created strategic objectives to describe and measure the performance of research libraries and their contributions to their campuses (Association of College

and Research Libraries, 1998; Hiller et al., 2006). Around the same time period, Pritchard (1996) stressed the importance of assessment in library services by remarking that “the future vitality of libraries in academia will be dependent upon whether they can dynamically and continually prove their value to the overall educational endeavor” (p. 591).

Several public calls to action have since sought to raise the visibility and importance of library assessment (Oakleaf, 2010); yet, evidence suggests that a sizeable number of libraries experience challenges in conducting assessment (Hiller & Self, 2004). The lack of assessment further translates into lack of research investigating the benefits of academic and research libraries at their institutions; as a consequence, formal scholarship investigating academic libraries' contributions to important student outcomes, including students' academic achievement, retention, and development of critical thinking and information literacy skills, is limited and emergent to date (Markless & Streatfield, 2006; Soria, Fransen, & Nackerud, 2013; Whitmire, 1998; Wong & Webb, 2011).

This study is therefore designed to answer formal calls for scholarship to provide empirical evidence demonstrating academic libraries' contributions to institutional goals related to students' success (Oakleaf, 2010). In this article, we draw our attention to a large, public university classified by the Carnegie Foundation (2010) as having “very high research activity” to investigate whether students' use of academic libraries in several different areas is associated with their success. In particular, the purpose of this study is to examine the relationships between first-year undergraduate students' use of the

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academic library, academic achievement, and retention to the second year of study.

ACADEMIC LIBRARIES AND UNDERGRADUATE STUDENTS' SUCCESS

Several authors have described the various functions of academic libraries that are hypothesized to broadly contribute to undergraduate students' success. Some have suggested that libraries work in tandem with other vital campus services in promoting student achievement; for example, Blackburn (2010) highlighted the importance of connections between libraries and first-year orientation programs and suggested that libraries seek to embed their services across campus by developing strategic partnerships with key student support services. Grallo, Chalmers, and Baker (2012) suggested that libraries play a significant role in helping students to adjust to campus life and, ultimately, to succeed by serving as a safe place in which students may go to find answers to a variety of questions (such as where to obtain their university identification cards). Hagel, Horn, Owen, and Currie (2012) further suggested that libraries can positively increase students' retention by working in close partnership with faculty to help them facilitate the delivery of academic programs, consider the needs of diverse student groups in their design of services, ensure emerging technologies do not disadvantage groups, anticipate trigger points for withdrawal that are under their purview, and work collaboratively with other areas across campus to provide students with an integrated system of support.

In examining the relationships between institutional-level library data, retention, and graduation rates at 99 U.S. college and universities, Emmons and Wilkinson (2011) used several variables, including librarian staff wages, the number of professional librarian staff members per student, total number of volumes in the collections, volumes added to collections during the past year, number of reference questions asked, percent of students receiving library instruction, and total expenditures for collections, among other variables. The results of their analyses suggested that the ratio of professional library staff to full-time students had a significant and positive relationship with students' retention. Similarly, Mezzick's (2007) analysis suggested a significant and positive relationship between total library expenditures, total library materials expenditures, serial expenditures, and undergraduate students' persistence. More recently, Teske, Cahoy, and DiCarlo (2013) discovered that total library expenditures per student, librarians' salaries, expenditures for books and materials, new books and materials added and held, circulation transactions, and total reference transactions were positively associated with students' retention and graduation at 189 four-year colleges and universities in the Southern Regional Education Board.

Earlier studies analyzed the potential relationships between students' use of library services, academic achievement, and retention. Kramer and Kramer (1968) found a significant positive relationship between students' persistence (i.e., finishing a course) and the number of books students borrowed. Hiscock (1986) examined students' use of catalog and reference materials, in addition to the frequency with which they had asked library staff for help, and discovered that catalog use was positively correlated with students' academic performance. Mallinckrodt and Sedlacek (2009) found that studying in an undergraduate library and using the campus library for research were positively associated with students' retention. More recently, Wong and Webb (2011) discovered positive associations between the number of items that students have checked out of the library and students' grade point averages at graduation; however, the correlations were small to medium across all of the majors and colleges under review at a single institution.

Haddow and Joseph (2010) examined the number of items borrowed, the number of logins to library workstations, and the number of logins to databases, catalogs, e-reserves, and meta-search tools in relation to students' retention. Haddow (2013) found that students who were retained tended to engage in higher levels of library use. Amid those

studies, however, there are significant limitations regarding the analyses of students' library usage, academic achievement, and retention. For one, the studies are primarily descriptive in nature—no correlations were analyzed in Haddow (2013) and Haddow and Joseph's (2010) research and no controls were included in analyses. Wong and Webb's (2011) study is limited because it only examined the association between one library activity—checking out materials—and students' academic achievement. Students engage in a wider variety of interactions with their libraries and it is important to examine the differences those interactions can have on student outcomes. Additionally, none of the researchers controlled for additional variables associated with students' academic achievement (such as demographics, college experiences, pre-college academic performance, etc.). As a consequence, it is challenging to ascertain the true effect size of the relationships between students' library usage, academic achievement, and retention without full knowledge of the potential influence of other variables.

The purpose of the present paper is to expand upon the foundations of prior research and more fully examine the relationships between first-year undergraduate students' use of an academic libraries system and their success, as measured by retention to the second year and cumulative grade point average. In an effort to eliminate confounding variables that might influence our dependent measures, we examined only first-time, first-year students in the first year of their study at a large, public research institution. Studies of first-year college students are important to the field of higher education, as 75% of non-returning students will withdraw during or immediately following their first semester (Gardner, 1986; Tinto, 1993) and colleges and universities have a very small window of opportunity to establish strong connections with students; therefore, activities and interventions that can be designed to enhance first-year students' academic success and retention are valuable undertakings for higher education institutions.

Throughout their first year, many college students become socialized to college life and develop habits they can carry with them into their next several years in higher education and beyond. Along those lines, Watts (2005) suggested that campus libraries should actively seek to engage first-year students in activities intentionally designed to enhance their information skills, including learning how to access and use a variety of information resources in problem-solving capacities, making effective use of instructional technologies, and evaluating scholarship. These skills are inherently important to college students in their current academic contexts yet are also useful as students leave higher education and continue to be information consumers and producers in the workforce.

Given the need for additional research examining the benefits of students' use of academic libraries—in addition to the benefits of continued research related to first-year college students in particular—the following research questions guide this study: Controlling for demographic characteristics, precollege academic factors, and college experiences on campus, is library use associated with first-year students' GPA and retention? Is the one-time use of specific library services (e.g., checking out books, logging into the library website, etc.) associated with first-year students' GPA and retention? Is the frequency of the use of these specific library services associated with students' GPA and retention?

METHODS

SAMPLE

In fall 2011, 5,368 non-transfer first-year students were enrolled at the University of XX. Of these students, 5,162 were retained for analyses because some students did not have a reported ACT/SAT score, some withdrew during the beginning of their first semester and did not earn a grade point average, and others were outliers with regards to their library use (which we discuss below). Within this first-year student cohort, the majority of students were female, White, and in-state residents for

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