Community Colleges and Underappreciated Assets: Using Institutional Data to Promote Success in Online Learning

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Abstract

Adapting to the 21st century, community colleges are not adding brick and mortar to meet enrollment demands. Instead, they are expanding services through online learning, with at least 61% of all community college students taking online courses today (Pearson, 2011). As online learning is affording alternate pathways to education for students, it is facing difficulty in meeting outcome standards; attrition rates for the past decade have been found to be significantly higher for online courses than face-to-face courses (Carr, 2000; Hachey, Wladis & Conway, 2012a/b; Morris & Finnegan, 2008; Tyler-Smith, 2006). Yet, there is a lack of empirical investigation on community college online attrition, despite the fact that course and institutional management systems today are automatically collecting a wealth of data which are not being utilized but are readily available for study. This article presents a meta-review of one community college's realization of their underappreciated asset… the use of institutional data to address the dearth of evidence on factors effecting attrition in online learning.

At the turn of the 20th century, community colleges arose as a response to social activism and economic change in the U.S (Kasper, 2002). The 1930's and the great depression focused community colleges on job training programs to combat widespread unemployment. In the 1960's community colleges emerged as a low-cost degree option that could be used to transition into baccalaureate colleges and universities, offering a gateway to higher education that otherwise would have been denied to many. Seeking to stimulate the workforce and create a more literate society, community colleges have evolved over the last century to provide opportunities for students of lower socio-economic status, minorities and those students not served by traditional four-year colleges (Shannon & Smith, 2006). With the civil rights movement, the growth and importance of community colleges rose astronomically, and by the 1970s, community colleges became a dominant force in the U.S. educational system (Kasper, 2002). Regardless of the era, community colleges have always adapted to societal demands; no other segment of U.S. higher education has been as flexible and responsive.

Since the late 1960's, the community college has been the fastest growing segment of higher education, and this has never been truer now, at the dawning of the 21st century. Virtually every state is reporting enrollment surges at community colleges (Hagedorn, 2010). The American Association for Community Colleges (AACC) reports increases of 16.9% in community college enrollments from 2007 to 2009 (Mullin & Phillippe, 2009). The recent rise in high school graduation rates coincides with a time of diminished job opportunities in the U.S (Fry, 2010). With President Obama's American Graduate Initiative and an expected five million Americans earning degrees and certificates in the next decade, the growth of community college enrollments is expected to outpace increasing enrollments in all other types of higher education (Kasper, 2002). The accepted belief that higher education leads to increased social capital (Brick, 1963), and President Obama's identification of community colleges as "one of America's underappreciated assets" (Obama, 2009), makes it clear that the community colleges are going to play an increasingly larger role in post-secondary education.

Today's community colleges are comprehensive, providing a myriad of opportunities for increasingly diverse student bodies. Community colleges are the major leader in providing vocational preparation and workforce development. There is a growing trend of certificate programs (Kasper, 2002), as older and part-time students who hold full-time jobs seek out community colleges for additional training and to keep up-to-date with work-related technologies. They also serve as a primary provider of academic instruction, with half of all first-time freshmen starting at community colleges (Kasper, 2002; Ruth, Sammons, & Poulin, 2007). Community colleges have seen a rise in enrollments of degree-seeking traditionally underrepresented students: racial and ethnic minorities, immigrants and women (Kasper, 2002; Fry, 2010). Thus, today's community colleges serve the triple mission of providing remedial education and English as a second language services, occupational certification and licensure and associate degrees which can lead to transfer to senior colleges and universities. Since their inception, the overarching emphasis of community colleges is on providing access: offering open admission, affordable higher education and programs that meet the lifestyle needs of continually evolving populations of students.

The Rise of Online Learning at Community Colleges

There has been a dramatic shift in higher education in the last decade, based both on technological advancements and consumer demand (Sutton & Nora, 2008). Today's students, often dubbed the "Net Generation", are entering college as experienced computer and Internet users (Nora & Plazas Snyder, 2008). They come with increased expectations of access to digital resources and technology-based education. Responding to societal changes, community colleges have continued to demonstrate their flexibility by striving to meet student's shifting educational, training and lifestyle needs in new ways. The explosion of online learning in higher education, particularly at community colleges, reflects this adaptability.

Online learning has become a core method of instruction at most colleges and universities (Downes, 2005); the majority of chief academic officers state that online learning is a critical part of their institution's long term strategy (Allen & Seaman, 2010). In particular, community colleges have adopted online learning, with 97% providing online course offerings by 2007 (Parsad & Lewis, 2008) and online certificate and degree programs on the rise. This is not surprising, given the community college goal of providing access to the non-traditional student; online courses allow community colleges to offer a wider range of programs to a greater proportion of students. The National Center for Educational Statistics (NCES) cites that the main reason for offering online courses are to provide access for students who might not otherwise be able to attend college because of geographic, family or work-related issues and the desire to meet student demand for flexible scheduling (Parsad & Lewis, 2008).

Moreover, students are responding to the availability of online learning opportunities at community colleges. Nearly 2/3 of all community college students are now taking at least one online course (Pearson, 2011) and the growth rate for online enrollments far exceeds the growth in the overall higher education population. Online enrollments grew by one million students from 2009 to 2010 alone, and this trend is expected to keep growing (Allen & Seaman, 2010). It is clear that students and institutions alike are embracing this instructional method.

Adapting to the 21st century, community colleges are not adding brick and mortar to meet enrollment demands. Given the current economic downturn and constraints on resources, including physical space, online learning is gaining momentum by providing community colleges with a relatively low cost and convenient method of expanding; the costs associated with the technological infrastructure needed to support online education continue to decline annually (Boston & Ice, 2011). Unlike in the last century when a mature community college was one in which 90-95% of the student body lived within a distance of 25 miles or less (Cohen and Brawer, 1996), community colleges are no longer defined by geographic parameters but instead have established greater reach through online learning. This is only likely to increase, as community colleges, with the majority share of online enrollments, are on the verge of a major growth surge (Ruth, Sammons, & Poulin, 2007).

The Positives and Pitfalls of Online Learning

Today, technology is a factor effecting change at community colleges. As community colleges embrace online learning, it is creating new academic opportunities. Faculty members increasingly employ the Internet to create collaborative learning environments and to accommodate the learning styles of more varied student populations (Sutton & Nora, 2008);

online learning can support the unique needs of students from underrepresented and marginalized cultures by promoting a social process that can allow students and faculty to rise above cultural barriers (Langier, 2003). Moreover, the research indicates that students at risk of degree non-completion because of work and family commitments, along with students with low mobility, show a significantly greater preference for online courses (Pontes, Hasit, Pontes, Lewis & Siefring, 2010; Skopek & Schuhmann, 2008). Community college students often have competing demands for their time and attention, needing to balance their scholarship with work, family and other non-academic social demands (Hagedorn, 2010).   For the community college student, school is just one part of life and online learning can provide a flexibility that reduces obstacles to enrollment. In addition, research has shown that distance education attracts a larger proportion of first generation students than do traditional university settings (Athabasca University, 2006).

At the same time online learning is affording alternate pathways to education for community college students, it is facing difficulty in meeting outcome standards. Because the effectiveness of online learning programs is linked to student success as measured by attrition rates (Abel, 2005; Moody, 2004; Willging & Johnson, 2004), a growing worry at community colleges is a lack of student persistence in online courses. This distress arises from the fact that attrition rates for the past decade have been found to be higher for online courses than traditional courses; many students are not succeeding in completing courses in the online environment (Carr, 2000; Hachey et al., 2012b; Wladis, Hachey & Conway, 2012; Morris & Finnegan, 2008; Tyler-Smith, 2006). Attrition rates in online courses range nationally from 30 to 40% (Tyler-Smith, 2006), with attrition in online learning programs often being 7-20 percentage points higher than traditional on-campus programs (Hachey et al., 2012b; Angelino, Williams & Natvig, 2007). Patterson & McFadden (2009) found that online students were significantly more likely to drop out than campus-based students.

Some current research suggests that online coursework may hinder student progression through college (Jaggers & Xu, 2010; Jaggers, 2011; Xu & Jaggers, 2011). It is not the learning outcomes that are the issue; many studies and meta-analyses suggest no strong positive or negative effect on learning outcomes in terms of exams or course grades (Bowen & Lack, 2012, Bowen et al., 2012; Xu & Jaggers, 2011). A meta-analysis of over 200 studies (Bernard, 2004) found no significant difference between student learning online versus face-to-face, suggesting that online courses may provide students with access without compromising instruction quality. Instead, what seems to be impeding college progression for online students is the higher rates of withdrawal for courses taken online versus face-to-face. This problem is particularly serious for community colleges, as they have higher enrollment in online courses than in all other types of higher education institutions combined, at the same time that they enroll the students with the least academic preparation and lowest graduation rates (Cejda, 2010; NCES 2003). Thus, high online attrition is likely to increasingly impact the degree completion rate of first-generation college students, low-income students, female students and students of color who make up the majority of the community college student body (Anderson, 2006; Huang, 2000).

Online Enrollment Policies and the Lack of Research on Online Student Retention

Accountability has become a major consideration; in recent years, higher education has faced

increased pressure to boost student persistence and retention due to internal issues (higher institutional costs associated with managing student drop-out) and external pressure demanded by federal policy makers and educational leaders (Ziskin, Hossler & Kim, 2009). This is not a new issue, as for over 200 years, student retention has been a focus of higher education (Boston & Ice, 2011). Coinciding with the explosion in community college enrollment in the 1970's, Tinto developed an influential model of student departure (the Student Integration Model) for traditional face-to-face students (Tinto, 1975, 1986, 1993) that has been widely tested and validated for non-traditional students attending two-year institutions (Nora, 1987; Nora, Attinasi & Matonak, 1990; Nora & Rendon, 1990; Kraemer, 1993). Later research on face-to-face students brought forth the Student Departure Model (Bean & Metzner, 1985; Metzner & Bean, 1987) and the Student Adjustment Model (Nora & Cabrera, 1996). However, existing models of persistence and retention may not be applicable to the online learning environment because they focus on social integration, a process inherently different for online students in comparison to traditional face-to-face students.

Despite the plethora of intervention practices currently in use at colleges across the U.S. which are aimed at reducing online attrition, no empirically validated model for online retention currently exists. Retention models for this mode of instructional delivery have not yet been fully developed and empirically validated; the few models of distance learner retention that have been proposed are not widely tested and exclude important factors (Kember, 1989; Kember, 1995, Ruth, Sammons & Poulin, 2007). The model of student attrition that is perhaps most relevant to online students was proposed by Rovai (Rovai, 2003), who synthesized Tinto's and Bean & Metzner's models with research on the skills and needs of distance education students. This model includes student characteristics, student skills, and external factors as the major input variables that lead to internal factors that affect student persistence. Rovai's model takes into account research on online learners specifically and grounds the model in what is already known about face-to-face persistence. However, this model is almost a decade old, has not been widely empirically tested and does not address internal and external factors that might affect community college students specifically.

Even as reasons for higher online attrition are poorly understood, many colleges recommend online courses only to students who they feel are prepared to succeed in those courses (Liu, Gomez, Khan & Yen 2007; Millward, 2008). This can take the form of policies that restrict access to online courses, for example by restricting online registration to students with a particular G.P.A., which can be problematic for two reasons: it can disproportionately prevent minorities, who have lower G.P.A.'s on average, from enrolling online (Conway, Wladis & Hachey, 2011); and it may not be any more effective in predicting online course outcomes than face-to-face course outcomes (Hachey et al., 2012b). And, restricting access to online courses, either by not offering certain classes online or by barring certain students from taking them, may also restrict access to higher education, which is in direct opposition to community colleges' overarching mission of "open access" (Hachey et al., 2012b). There is evidence that problems with course availability can decrease the likelihood of college persistence and degree completion for face-to-face community college students (Zhai & Monzon, 2001). So it seems reasonable to hypothesize that restricting access to online courses would correlate with lower rates of college persistence, particularly for students who either cannot or prefer not to take a face-to-face course.

Another widespread technique used to filter out students identified as "at-risk" in the online environment is the use of mandatory online readiness surveys (Kerr, Rynearson & Kerr, 2006; Kaur & Abas, 2004).   Currently, online readiness surveys range from tests of basic computer software proficiency (Northwest Arkansas Community College) to more comprehensive assessments which include questions on lifestyle, goals and learning styles (University of Georgia); and can range from five-minute quizzes (Borough of Manhattan Community College) to modules of several hours (San Antonio College). However, such instruments have not been widely tested for validity and reliability (Dray, Lowenthal, Miszkiewicz, Ruiz-Primo & Marczynski, 2011; Hall, 2008; 2009; Maki & Maki, 2003; Pillary, Irving & Tones, 2007).   Furthermore, such surveys may discourage students from registering for online courses, and no studies have been conducted to see if the students who choose not to register after taking such a survey are in fact those students at highest risk of failure in the online environment.   There is research to suggest that self-confidence rather than actual performance on a task determines an individual's perception of his or her performance, and that students who expect perfectionism may be the most self-critical and under-estimate their abilities (Ehrlinger & Dunning, 2003; Hewitt & Flett, 1991).   Recent research has also shown a link between perfectionism and computer anxiety (King, Bond & Blandford, 2002).   Thus, students discouraged by the results of an online readiness survey may not necessarily be those students with the lowest survey score.   Currently, there is no consensus yet on the best method of evaluating student readiness for online learning and the usefulness of online readiness surveys in predicting online course outcomes remains unclear.

Overall, there is a huge gap in empirical scrutiny on the connection between online learning and outcome indicators such as grade performance re-enrollment, persistence and course completion (Nora & Plazas Snyder, 2008).   In particular, community colleges lack awareness of student characteristics and enrollment patterns for online courses (Frankola, 2001; Maxwell et al., 2003).   Although there is extensive research on retention related to traditional on-campus programs, there is comparatively little that focuses specifically on online programs…despite data that report consistent student retention problems in online courses.   This is problematic, as currently online learning administrators at community colleges across the country are making policy decision about online course offerings and enrollment requirements without clear evidence-based information.   Therefore, there is a pressing need for research focused on determining how the online environment itself affects access and persistence, and investigating what types of retention initiative policies and screen procedures might maximize access while minimizing attrition, especially given the current exponential growth of online learning in higher education (Aragon 7 Johnson, 2008; Ziskin, Hossler & Kim, 2009).

Institutional data… tapping into unappreciated assets

Despite the lack of empirical information currently available, community colleges have a built-in capacity to address the dearth of evidence on factors effecting attrition in online learning.   Ziskin, Hossler & Kim (2009) contend that two important capabilities of institutions to support student success are their ability to model factors that are barriers to persistence and to identify programs and policies that are likely to enhance student persistence within the specific institutional context.   Course and institutional management systems today collect a wealth of

data on student characteristics, enrollment patterns and course outcomes that are not being utilized but are readily available for faculty and administrators to study. Because of this, it is vital that community college online learning programs start to carefully analyze internal data to make thoughtful program improvement and to disseminate knowledge to the field of online learning in higher education (Raymond & Blomeyer, 2007).

What can be learned … analyzing data at one community college (a meta-review)

The Institution
The community college profiled in this article is part of a multi-campus university located in the largest urban area in the United States. Qualifying as a large institution (according to Allen & Seaman, 2010), the college enrolls over 23,500 students in associate degree programs and an additional 10,000 students in continuing education programs. The College is classified as both a Minority Serving Institution and a Hispanic Serving Institution, with over 80% of the student body belonging to historically underrepresented populations.   Students come from over 150 countries and 90% of entering students need remediation in mathematics, reading or writing. To fulfill the College's specific mission to "extend higher educational opportunity to a diversified urban population…" the faculty originated an online learning program in the spring of 2001. Growing from six online classes in that first semester, the College began offering a fully online associate degree in liberal arts by 2008 and today provides approximately 135 online courses in over a dozen career and liberal arts disciplines.

Task Force Findings
In 2009, the College administration convened a task force to evaluate the College's online program in order to make recommendations for improvement and expansion. This was motivated by enrollment demands exceeding physical space and the administration's recognition of online program growth rates at the College falling below national norms. Perhaps most importantly, the task force was convened because the grassroots, faculty-driven online program had been in place for eight years without a systematic evaluation. Early on, the task force determined that a "one size fits all" approach to best practice in online learning might be counterproductive to promoting student success (Finnegan, Morris & Lee, 2008). So, they adopted a four-prong, internal/external approach to investigating the state of the College's online program. As part of an external review, task force members conducted a thorough review of the literature on online education and gathered data on common online program operations and administration policies through clinical interviews conducted with administrators of well-known/large online programs at peer institutions across the nation.   Internally, data collection via surveys and focus groups was conducted with online faculty and students on the key issues identified in the literature/interviews and comparative analyses were completed on online course enrollment and attrition data that had been gathered by the College's Office of Institutional Research since the program's inception.

From this three-month investigation, the task force was able to ascertain several significant barriers to growth of the online program at the College. In particular, they found that class size was related to faculty and student satisfaction with online learning at the College. These findings provide additional support to the literature that suggests that an optimal online class size varies between 15-20 students (Colwell & Jenks, 2004) and the research that has suggested that faculty

spend more time on online course preparation (McKenzie, Mims, Bennett & Waugh, 2000). Another major finding from this initial review was related to faculty development; the task force found that, in conjunction with the literature (McKenzie, Mims, Bennett & Waugh, 2000), faculty at the College felt they received insufficient training, particularly related to technological advances. In addition, the task force identified a main problem in organizational operations that needed to be resolved (a lack of centralization in the college's computing infrastructure had engendered significant downtime, slow response rates to help queries and created confusion for students and faculty). This finding lends support to organizational models (Muilenburg & Berge, 2005) that cite technical issues as a barrier to online learning.

Based on the evaluation of online learning conducted by the task force and armed with specific recommendations for program improvement, the College submitted a proposal to the U.S. Department of Education and was awarded a multi-million dollar Title V grant. The grant, along with the creation of a centralized E-learning center, has revitalized the online learning program at the College, spawning additional smaller grant awards and a major increase in online course development at the College from 2010 to 2012.

Using Community College Institutional Data for Empirical Research
As an outgrowth of the administration-led task force initiative, faculty from the College's Business, Education and Mathematics departments have joined together to form a collaborative research team to conduct a quantitative investigation of community college online retention and success. Utilizing over a decade's worth of automatically gathered institutional data for all online students and for comparable face-to-face students at the College, several empirical studies have commenced. It is particularly noteworthy that the size and diversity of the datasets used in this research makes resulting findings widely applicable to online learning at community colleges across the U.S. [Note: Large institutions like the College (those with greater than 15,000 total enrollments) comprise 14% of all institutions with online offerings and educate nearly two-thirds (64%) of all online students (Allen & Seaman, 2010). Additionally, as 82% of all U.S. community college students attend institutions in or on the fringe of mid- and large-sized cities (U.S. Department of Education, 2003), research based at the College should be relevant to the vast majority of community college students in the nation. Furthermore, the large numbers of minorities, low-income students, and first generation college students that comprise the College's student population make it a critical location for assessing the effect of online course offerings and policies on the access and persistence of traditionally underrepresented groups in higher education. Since college-age Blacks, Hispanics and Asians are projected to increase between 48-200% over the next 50 years (National Science Board, 2008), better understanding of factors affecting college enrollment and completion rates for these groups is essential, especially given the lower rates of college enrollment and persistence which have been documented for blacks and Hispanics in the U.S. (Center for Institutional Data Exchange and Analysis, 2001; U.S. Department of Commerce, 2011).]

The research so far has revealed several findings for community college administrators to consider regarding online programming:

- Online courses have significantly higher attrition than face-to-face courses. In addition, students who register for online courses tend to have higher G.P.A.'s

than those students who register for the same course face-to-face, and it is students in the middle G.P.A. group (2.0-3.5) who seem to be at the highest risk of dropping out online compared to face-to-face (Hachey et al., 2012b). This finding suggests that G.P.A. restrictions for online enrollment may not be effective in reducing online attrition and moreover, that interventions may be best served if they target students with G.P.A.'s in the middle range (2.0 to 3.5).

- Prior online experience is a significant predictor of future online success, with students who have never taken a course online much more likely to withdraw or fail than students who have had successful prior online course experiences, and students who have failed or dropped out of even one online course doing significantly worse in future online courses than students with no prior online experience; this effect persists even when G.P.A. is controlled (Hachey et al., 2012a; Hachey, Wladis & Conway, n.d.). These results suggests that initiatives targeting at-risk students should focus on students with no prior online experience and G.P.A.'s at the lower end of the spectrum and on students (regardless of G.P.A.) who have had a prior unsuccessful experience in an online course. The results also suggest that community colleges should develop e-advising programs that identify and provide focused support for students taking their first online course.

- Students in elective and distributional requirement courses seem to have a significantly higher jump in attrition when they move to the online environment than students in major requirement courses. This interaction is particularly significant for lower level courses (Wladis, Conway & Hachey, n.d.). These findings suggest that support initiatives should target online courses that are typically taken as electives and distributional requirements, especially if they are lower level courses.

- Non-white minorities enroll in online courses at lower rates than their white peers, and Black and Hispanic Students have lower G.P.A.'s both in face-to-face and online courses (Conway et al., 2011), a trend also found in online STEM courses (Conway, Wladis & Hachey, n.d.). This finding suggests that greater recruitment efforts for online courses are needed for minority groups and further, that Black and Hispanic students need additional support in order to be successful in college, regardless of the instructional medium.

- STEM courses seem to be much more likely to have a significant rise in attrition when they move from the face-to-face to online environment, particularly if they are elective or distributional requirements rather than major requirements (Wladis et al., 2012; Wladis, Hachey & Conway, In Press). This finding suggests that extra support services should be specifically targeted to students taking online STEM courses, particularly if taken as an elective or distributional requirement.

- Fewer men seem to enroll in online STEM courses than face-to-face STEM courses, and the gap between success rates for Black and Hispanic men and other groups seems to decrease when moving STEM courses from the face-to-face to online environment (Conway et al., n.d.). This research suggests that increased effort is needed in recruiting men and non-White ethnicities into online courses if we are to achieve completely representative participation in the online environment for all groups.

The empirical studies, based on readily available institutional data, are providing important insights into policies and patterns occurring in community college online learning and, further, are allowing for data-driven policies and more targeted support services to be initiated at the College itself.

Conclusion

With the current unprecedented demand for higher education in the U.S., it may well be as President Obama stated that community colleges are underappreciated assets. But perhaps more importantly, as community colleges continue to evolve to meet changing societal needs, the real unappreciated and un-tapped asset is the institutional data they possess. As detailed in this article, analyses conducted on institutional data at only one community college have spawned multiple findings that have important implications both for the institution itself and for general knowledge in the field of higher education. If community colleges are going to continue to adapt to the times with expanded online learning programs, then it behooves them to look internally to find data-driven pathways to improvement in online learning. Policies and resource allocations supported by such research will improve the chances of reaching the ultimate goal-- optimizing student success.

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