

Using Emerging Technologies to Serve the Underserved

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Abstract

Community colleges in America developed out of a need to fill the gap between high school or technical education and university-level study. The two-year postsecondary experience which is typically offered at locations that are “community friendly” has attracted persons of color and those with more conservative economic means in ever-increasing numbers. Historically, these marginalized populations have experienced educational inequalities in larger numbers than other groups. As statistics show increasing enrollments from members of these groups, community colleges must provide and improve services that appropriately address both student need and societal demand. Students who are able to successfully obtain transfer to four-year institutions or go on to gain employment contribute to the continued viability of the institution. As budgetary decisions at the state and federal level drive up costs, community college leaders struggle to keep their institutions competitive in the global market, which requires course and program development that includes emerging technologies. To that end, leaders must strategically plan how to support staff and instructors in leveraging technology to help students—in particular those students who are typically considered underserved—learn in a rapidly changing educational environment.

Community Colleges: Prepared for Change?

Community colleges were first developed in the early part of the twentieth century but incorporated job training programs around the time of the Great Depression (Phillipe, 2000). “The institutions, part liberal arts colleges, part occupational training grounds, with more than a dash of remedial education and a pinch of educational-equivalency-diploma preparation thrown in, are widely misunderstood” (Evelyn, 2004). These colleges are as eclectic as the communities they exist in. Starting out as junior colleges, community colleges now offer technical and specialty programs, corporate training, pre-college education (such as Adult Basic Skills programs), state-supported “To Work” programs, certifications, associate and baccalaureate degree programs, and community-oriented programming (Callan, 1997).

Community colleges have been the gateway to higher education for the nontraditional student. Studies have determined that community college students differ from students who attend four-year colleges and universities in a number of ways: two-year students are often older; tend to come from low-income families; are more often non-white; and are more often female (Horn & Griffith, 2006). Hispanics are categorized as the most underrepresented group at colleges and universities; Lane (2001) reported that Hispanic persons interested in higher education often choose community colleges because of accessibility (p.28) and that these two-

year institutions are in position to help close the achievement gap that currently exists for these students (p. 30).

Students of color continue to enroll in college and often find themselves unprepared for college-level academics (McBay, 2003) due in part to differences in K-12 experiences. McBay (2003) suggests that students of color are less likely to take calculus, physics, or other so-called rigorous classes (p. 78) that are considered core courses for many college majors and that students who are educated in 'high-poverty and high-minority' districts are more likely to encounter teachers who are not as well prepared to provide the foundational instruction necessary for the early college success.

It is important that community colleges be prepared to educate students from varied backgrounds; administrators, staff, and faculty members must constantly be mindful of the fact that those in the category of 'community college students' are "not a homogeneous group..." (Lane, 2001, p. 30). Further, Hanson (2006) suggests that community college leaders must be challenged

...to provide...students with an education of the same nature and character that one finds at the top levels of our postsecondary network. To offer community college students anything less is to partake in a subtle but socially consequential form of bigotry. Unfortunately, when we limit the scope of our efforts simply to produce learning, we deny our students the broad education for citizenship that takes place at the upper levels of the postsecondary hierarchy (p. 136).

One way that community colleges have been successful in creating students who are prepared for society and citizenship has been through adult education. However, adult education at the community college level must move beyond job training if these two-year institutions are going to serve increasing numbers of so-called minority students and students of color; by way of example, the research done by Huang and Cervero (1992) found that "participation in adult education does not help blacks as well as whites in terms of occupational attainment" (p.3).

Many in higher education argue "that affirmative action policies are justified because they ensure the creation of racially ethnic and diverse student bodies essential to providing the best possible educational environments for students, white and minority alike" (Gurin, Dey, Hurtado, and Gurin, 2002, p. 332). It is true that since *Brown v. Board of Education*, access for non-white students has improved at all levels of education; however, there are still educational inequalities that must be addressed that go beyond access. As colleges and universities develop or improve their open door policies (usually in the form of diversity statements that affirm students will not be denied access because of race, ethnicity, sex, orientation, or physical ability), administrators must be careful not to become overcomologists (Robinson-Neal, 2006) by assuming that access equals equality.

It is clear that the focus on diversity and affirmative action has revolved around access to higher education. While this is important, it is imperative that we not limit the discussion to only access. Instead, we have to broaden our scope of research on diversity to include interactions of students and faculty, the

development of curricula, and degree completion. We must move our understanding of diversity and affirmative action beyond access. Once diversity is present we need to implement programs and policies that maximize the benefits inherent in cross-racial interaction both within and outside the classroom (Manuel, 1997, para. 12).

There has been discussion about the ‘digital divide’, the disparity between whites and non-whites and their use of technology (Wright, n.d.), as well as how technology can be detrimental to the educational success of students when not used properly (Attewell, 2001). It is important that those in higher education clearly recognize that technology by itself will not improve access for students who, by nature of their backgrounds, are considered members of marginalized populations; rather, improving the *quality* of access available through the leveraging of technology (Malveaux, 1996) should be a focus for higher education leaders who want to create a more equitable institutional environment for students and employees alike.

The Cost of Leveraging Equality through Technology

Technology has impacted the classroom since the term ‘education’ was developed. Historians typically refer to the 19th century as the era that heralded the introduction of new technologies (Spencer, 1999), especially in the areas of production, distribution, and for the institutions that educated skilled workers. Modern technology-based education can be traced to the 1930s, when sound films were introduced; researchers studying the medium suggest that such films in some cases helped improve instructor’s abilities, contributed to reduced educational time for students, and helped fill the gap when the instructor pool was limited (p. 24). Later experiments involving closed-circuit television and audio recordings for educational purposes (pp. 25-27) helped pave the way for other modes of delivery such as video courses and other distance learning opportunities.

There is competition in the world of technology: more than ever, colleges and universities are exploring how technology impacts educational offerings. If community colleges have marketed themselves as “...convenient places for students to acquire labor market skills” (Hanson, 2006, p. 130), how can they remain competitive as the labor market, technology and its use in multiple sectors (education, business, and personal areas), and the make-up of the student body changes?

Romano (2003) suggests that from a government perspective, community colleges do not represent significant cost savings over four-year institutions because the subsidy to the two-year institution is comparable. He states that “[a]side from capital costs, the average state would save no money by shifting students to the 2-year college” (pp. 11-12). Because less of their government funding is spent on capital expenses, community colleges can put those dollars toward other areas in an effort to keep student tuition costs down (p. 9) and maintain a level of affordability that tends to attract less economically-advantaged populations. However, community colleges cannot afford to sacrifice quality in order to maintain low costs (p. 6). If community colleges are to remain competitive in the education marketplace while also remaining known for open access to diverse peoples, there must be a commitment to technology across

curricula, technology training for faculty and staff, and a strong technology infrastructure that will support all types of 21st century learners:

In both life and work, people need flexibility and the attitudes and skills of lifelong learning to cope with technological change. Both education and training are needed: a trained person has the skills with which to use, create, and adapt technology and an educated person has the commitment and point of view that give meaning to the practice of those skills (Kerka, 1994, p. 4).

Technology can be used to leverage equity at two levels:

1. Institutional-level: Community colleges typically do not offer a residential experience; as fuel costs fluctuate, distance learning options may become more attractive for some students. Institutions that invest in their technology infrastructure (e.g., servers; institutional web pages and portals; on-site and portable hardware and software) will attract such students. A number of institutions factor technology expenses into the student cost; for example Seton Hall University (New Jersey) provides a new laptop computer to every full-time freshman upon entry. Every two years students trade their laptops for an upgraded one; the laptop becomes the student's property at graduation. The institution's web page states that

Understanding how to use technology—efficiently and effectively—makes [the student] a more marketable, technologically savvy leader...[the] laptop will improve [the student's] life and help [him or her] get things done fast...what really sets Seton Hall apart from other colleges and universities is how technology—and [the] laptop—are integrated with the curriculum...(Seton Hall, n.d.).

Institutions that are willing to provide technology to their students, rather than assuming all students have access to technology, create a more equitable learning environment.

2. Instructor-level: It is important that instructors be aware of and avoid stereotyping and bias in the classroom; they must also be prepared with strong teaching methods in order to reach their students, who come with varied skill sets and backgrounds. Community college leaders will find it increasingly necessary to encourage instructors to develop a cadre of “traditional brick and mortar” classes, distance or online courses, and blended learning opportunities (Dziuban, Hartman, & Moskal, 2004) to attract both “traditional” learners (i.e., those who prefer the in-class interaction) as well as learners who prefer technology-based instruction.

Developing Institutions of Practice

As community college leaders battle to keep balanced budgets in the face of fiscal changes at the local, state, and federal level, students from what are typically considered underserved populations are enrolling in ever-increasing numbers. Tuition and fee structures are carefully examined each year to determine how government shortfalls can be met without placing costs above the students' interest and ability to pay.

While higher education officials say there is enough space to handle the [increases in enrollment of students of color], it is not clear to some whether higher education institutions are culturally and financially prepared to accommodate the influx of minorities into community colleges, and colleges and universities (Roach, 2001, p. 29).

To develop institutions of practice, that is, to build institutions that are dedicated to educating students from varied backgrounds and levels of ability to prepare them for transfer into the university-level “next generation classroom” (Carlson, 2004) or into a tech-savvy workplace, community colleges must attend to the following areas:

- Diversity education. Understanding difference goes beyond the diversity “training” or “program”, which can cause unexpected problems regarding exclusionary practice and blaming (Roper, 2004, p. 50). The teaching force in K-12 and beyond is in many ways ill-prepared for “who they will likely teach” (Cross, 2003, p. 203-204). Further, “[i]gnorance about cultural differences can result in frustration and perpetuate a cycle of failure, which is detrimental to all but most particularly to students of color” (Gordon, 2005, p. 136). Community colleges must educate their instructors regarding diversity and how to maintain equitable classrooms by understanding and addressing the inadvertent forms of racism they themselves unwittingly practice (RegionWise, 2005).
- Instructor creativity. Community colleges must have appropriate program review standards in order to deliver content that students can transfer to other colleges and universities and that is approved by the body that provides accreditation to the institution. College leaders must remember that the way educators do their job is being changed by global advances in technology (Okpala & Okpala, 1997, p. 262). Instructors who adapt currently available technologies into course curriculum are able to use frequently updated resources with their students and are able to learn more themselves (p. 264).
- Technology use. While many community colleges may not have enough available funds in the general budget to support laptop programs like the one at Seton Hall there are other ways to support students’ and instructors’ use of technology on- and off-campus such as computer-on-loan programs (Harris, 2001, para. 4). Community college leaders should encourage the safe use of the Internet and online learning environments (Kemp, 2006). Instructors who are willing to develop distance learning courses or to develop courses that can be taught in M.U.V.E.’s (Multi-User Virtual Environments) have an opportunity to create equitable atmospheres for learning¹:

¹ Second Life, a ‘resident-owned’ and built virtual environment, has sparked a mailing list for educators. There is a thread in the list regarding differential treatment in virtual environments (<https://lists.secondlife.com/pipermail/educators/2006-December/004550.html>); educational opportunities in M.U.V.E.’s can be equitable because participants create ‘avatars’, or virtual selves, which may or may not look like them. In the case of Second Life, participants can create avatars that look like robots, animals, or some other variety of non-human being. CNN.com (<http://www.cnn.com/2006/TECH/11/13/second.life.university/index.html>), USA Today.com (http://www.usatoday.com/tech/gaming/2006-10-05-second-life-class_x.htm), and others have featured articles about the impact of Second Life on education earlier in the year. There have also been discussions about

The use of the Internet and teleconferencing, for example, enables students to sign up for courses from virtually all sorts of geographical locations. Students from far-flung, hard-to-reach places can now have easy access to learning. So do students who have physical disabilities that rendered them immobile (Hew, in press, p. 356).

- The extent of equity. Equity in education means more than striving to identify and eliminate the individual and structural inequalities that are based on differences in race, ethnicity, sex, orientation, or ability that impact educational opportunity, attainment, and access; equity in education also impacts equality of opportunity in college as well as the process of transfer to four-year institutions (Dougherty & Kienzl, 2006, pp. 481-482). Community college leaders must develop robust general education and degree/transfer programs that meet or exceed the articulation requirements of their four-year partners.

Conclusion

What does the future hold for community colleges and other higher education institutions seeking to advance in the accelerating technological landscape? These institutions are now workplaces "...where students actively create, evaluate, experience, and interpret a world of information through technology" (Beudoin, et. al., 1993, p. 1). As technology continues to advance, colleges must be focused on the needs of a more diverse (in ethnicity and ability) student body; on teaching the faculty and staff to recognize and address their own biases and limitations; on training opportunities for faculty and staff who will need to have a stronger foundation in technology to provide appropriate classroom and distance education to students; and on developing and maintaining adequate financial resources to support infrastructure additions, upgrades, and upkeep.

Second Life being an equitable space for the disabled (who can interact without the limitations of their disability in the virtual world).

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