Building Bridges with Community Colleges "Partnering for Educational Success"

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Abstract

The Arizona State University and the Maricopa Community Colleges have a history of collaboration that is acclaimed as a model across the nation. However, Arizona State University East and Maricopa Community College District together are working diligently to elevate their educational partnership to a new level beyond traditional articulation. This paper describes the innovative nature of the educational partnership that exists between the two-year and four-year institutions at the Williams Campus.

Introduction

Arizona State University (ASU) and the Maricopa County Community College District (MCCCD) have a history of collaboration that is acknowledged as a model across the nation. In addition, Arizona State University East (ASU East) and Chandler-Gilbert Community College (CGCC) are working together diligently to enhance their educational partnership to a new level beyond traditional articulation that exists between the two-year and the States' four-year institutions. The co-location of ASU East and CGCC at the Williams campus has provided numerous opportunities to bring this partnership to a new dimension. In a short five years it has moved well beyond the conventional articulation, described above. Joint curriculum development, infrastructure planning, academic scheduling and sharing institutional data have marked the uniqueness of the partnership between these two institutions. The special collaboration extends to housing and academic/student support services as well. The primary focus of this paper is to illustrate the innovative educational partnership and its benefits to the students attending ASU East, CGCC and other Maricopa Community Colleges.

Background

ASU East is a new campus of Arizona State University located in the city of Mesa, Arizona. It is at the former Williams Air Force Base in the southeast part of the Phoenix Metropolitan area; now known as the Williams Campus. The Williams Air Force Base conversion to a college campus has opened numerous opportunities to develop a unique partnership between two-year and four-year institutions. ASU and Maricopa Community Colleges both received substantial

portions of the Williams facilities because of base closure. The wide range of high quality facilities that were made available made it possible to create a peerless coterie.

ASU East opened for business on August 26, 1996. It was designed as a student-centered campus that welcomes and interacts with the community. This new campus is destined to help Arizona State University meet the needs of some 36,000 new university students projected for Maricopa County over the next 15-20 years. ASU East is expected to be ready to serve 15,000 to 20,000 students by that time. Educational excellence at ASU East is defined by the value added to students' intellectual capabilities and skills [2]. Over the next five years, ASU East will focus on developing an array of high quality programs that respond to student demand and societal need for college graduates with particular knowledge and skills. As a corollary, the East campus will follow ABOR policy and emphasize programs that do not duplicate fields that are being well served by the other campuses of the State's Universities. In partnership with ASU East, Chandler-Gilbert Community College (CGCC) will develop and implement a general education core that will strengthen general academic skills and provide a liberal arts and sciences foundation for all programs.

New Partnership in Baccalaureate Education

ASU East and CGCC have combined the proven strengths of each institution in an innovative, ***New Partnership in Baccalaureate Education,*** at the Williams Campus. The new partnership takes community college and university articulation to a new level, integrating the strengths of the two institutions and creating fully, a new option in baccalaureate education for students from Arizona and around the world.

ASU relocated the School of Agribusiness and the School of Technology, their programs, labs, courses, faculty, staff and students to the new site. CGCC initially designated the Williams campus as a satellite campus to offer its aviation and semiconductor manufacturing programs. However, rather than merely working side-by-side, ASU East and CGCC have converted the simple fact of co-location into a zestful reality of co-operation through the innovative ***New Partnership in Baccalaureate Education.*** Thus, the new partnership formalizes what students have been doing informally for years, combining community college and university courses to complete their bachelor's degrees.

Traditional Partnership

Achieving well-articulated transfer between Community Colleges and Universities is a complex matter. Much of the complexity arises because of the *different kinds of transfer students:*

- Some students want to transfer a few courses, while others want to transfer complete associate degree programs.

- Some students know exactly what they want to major in and where, while others either change their minds frequently or delay choosing university or major until they have had sometime to explore.

- There are still other students with ***different kinds of majors*** requiring very different kinds of lower division preparation.

Thus, no single transfer tool will completely serve the needs of all students. Arizona is often cited as a national leader in transfer articulation for its many faceted efforts to ensure that community college students can move smoothly into different kinds of university programs. For over fifteen years, discipline-specific ***Transfer Articulation Task Forces (TATFs),*** composed of faculty representatives in the same discipline from all of the community colleges and universities, have been meeting face-to-face annually to develop, maintain, and improve various articulation tools [1]. The essential articulation tools are:

- ***Course Applicability System (CAS):*** The *CAS* provides a clear and secure transfer pathway into the major, for the students who have chosen their major and university. They show exactly what course transfers from a particular community college to specific university's required courses and/or major requirement.

- **Course Applicability System:** The CAS also shows exactly how each community college course will transfer to the three different universities within the State of Arizona. Online publication of CEG is accessible for the students, community colleges and universities at *http://az.transfer.org/cas.*

Consequently, the articulation tools are mainly useful to students who want to transfer a few courses or who have chosen a university and a major before starting at the community college. ASU East has initiated a new statewide Technology TATF group to address issues related to the ***Technology Programs*** throughout the state. The technology articulation group has met annually since its inception in 1996 to address the issues related to the statewide technology course and program offerings. Over 65% of upper division students at ASU East have some community college credits that apply to their baccalaureate degree programs. In any given semester, over 2000 undergraduate students are simultaneously enrolled in courses at ASU and at local community colleges. A long standing agreement has set sixty-four credit hours as the maximum number that a student can transfer to Arizona State University from community college course work.

While maintaining separate identities, ASU East and CGCC are simulating a single institution for students. Faculties from both institutions are acting jointly to ensure that all course work is of the highest quality and effective in providing the essential academic foundation and advanced knowledge and skill. CGCC offers general education and major prerequisite courses at the Williams Campus that have direct ASU East equivalents. The courses can be aggregated to meet directly ASU requirements. Cooperative advising is being used to ensure that students maximize their course selection to meet requirements efficiently.

The partnership between CGCC and ASU East has also drawn on conventional kinds of program articulation. An efficient 2 + 2 articulation between CGCC's Associate of Arts degree in semiconductor manufacturing was developed with ASU East's BS in electronics engineering technology program. The two program faculties designed four courses together that would prepare students for immediate employment and yet transfer into the BS degree program.

Bachelor of Applied Sciences (BAS) Degree

The innovative partnership between ASU East and CGCC has evolved quickly and the positive experience has been sufficient to cause ASU East to break new ground by creating a new degree. Arizona has a large and successful community college system that produces an enormous number of occupational degrees. Such Degrees have long been classified as "terminal degrees." CGCC and all of it's sister institutions offer Associate of Applied Sciences (AAS) degrees that have had no direct path to a baccalaureate degree. On December 5, 1997 Arizona Board of Regents granted permission to ASU East to offer a multidisciplinary ***Bachelor of Applied Sciences (BAS) degree,*** starting from fall semester, 1998.

The BAS degree program is a flexible degree plan designed specifically to serve additional educational needs of students who have earned the Associate of Applied Science (AAS) degree. The primary admission requirement for BAS program is completion of an AAS degree at a regionally accredited institution. Students with AAS degrees will receive ***sixty hours*** of credit as a ***block transfer*** toward the university's 120-hour minimum degree requirement. BAS students must then complete a ***sixty-hour*** program offered by ASU East [3]. BAS program goal is to provide students with management, leadership, critical thinking and communication skills along with significant work in an area of specialization that will broaden their career horizons, promote life-long learning and enrich their lives.

Sharing Resources such as Laboratories

According to a study conducted by Cyberstates Research, Arizona ranks number three in the nation in semiconductor manufacturing employment, with 35,000 jobs. To meet these demands, semiconductor companies nationally and locally has launched an ad campaign to attract student into programs that prepare them for the future workforce. Local semiconductor companies have sought to collaborate with the higher education institutions, such as their neighboring universities and community colleges, to implement this workforce initiative. The College of Technology and Applied Sciences (CTAS) at ASU East is leading the way by developing a state-of-the-art teaching factory in response to this huge workforce need locally and nationally. A one-of-a-kind Microelectronics Teaching Factory (MTF) is being developed and used in partnership with Intel, Motorola and other local partners in semiconductor industry. The facility will provide a unique learning environment for the students from ASU East, ASU Main and Maricopa Community Colleges who represent the future semiconductor workforce. As well, Intel, Motorola and other local industrial and educational partners will use this facility for education and training purposes. To accommodate the state-of-the-art teaching factory, approximately six million dollars was appropriated by the State Legislature to reconfigure an existing Williams Campus building. Intel and Motorola are providing equipment and intellectual support respectively, with the help of our other industry partners. The design and construction phase of the MTF has been completed and the tools/equipment installation is being finalized and readied for student use during the spring semester of 2002. The teaching factory will be utilized to teach semiconductor-processing and related classes to ASU East, four community colleges within the Maricopa Community College District and students from other institutions on demand. It will also be used as a training facility for industry employees.

One dilemma facing programs in technology is the expense of building and maintaining realistic lab facilities. Even in states with generous education resources, costs are making it ever harder to maintain Semiconductor Manufacturing Technology (SMT) programs and lab capability on multiple campuses. Arizona is typical in this regard. Three of the state's community colleges have well regarded SMT programs, but full-scale demonstration labs have been unaffordable. The absence of realistic lab training opens a steadily widening gap between the basic science and engineering taught in the academic world and the complex, expensive, and interactive technology used in the industry. Chandler Gilbert Community College and Mesa Community College will teach the laboratory portion of their Associate of Applied Science Degree in the MTF beginning in spring semester of 2002.

A key component in the utilization of the MTF by ASU East and its community college partners is the need for a comprehensive and robust curriculum. A curriculum development team with faculty representatives from the community colleges and ASU East has been formed to develop and pilot the curriculum materials and resources that will be used in the MTF. Each community college will co-develop their curriculum and teach the laboratory portion of their course in the MTF, beginning in the fall of 2002. The curriculum materials will be developed using a hybrid model. The hybrid model consist of, materials e- delivered via the web with a practical application requirement at the MTF. Each module will focus on selected process areas within the Teaching Factory and will correspond with a community college or ASU East course offered in degree or certificate programs.

A major challenge confronting the community college faculty as they seek to utilize the MTF is the lack of experience and knowledge of semiconductor manufacturing and related technology. Professional development for the faculty is crucial to the long-term success of the joint use partnership. There is a big difference between teaching classroom courses and performing practical demonstrations with real tools. To help manage the transition ASU East will make available to the community college faculty a broad range of faculty development activities. Faculty development venues such as short courses, web-based information, and mentoring from many sources (mostly in industry) will be offered routinely.

Challenges

The partnership described in this paper did not evolve without encounters with challenges. Bureaucratic hurdles, perception and prejudiced attitude problems have been present from the beginning. ***Am I an ASU East student? Or If my son or daughter is an ASU student why I am taking community college courses?*** These are questions commonly raised by students, parents and faculty. ASU East has created an information booklet that covered the common questions and concerns expressed by students and parents. It addresses these issues and many others that represent day-to-day concerns. Another major challenge was the need to keep co-enrolled student's tuition and fees at a level not to exceed that of a similarly situated ASU student. A creative mechanism was put in place, which assures that an ASU East co-enrolled student will not pay more than the full time ASU tuition and fees. Campus evolution is a long-term process. ASU East and its community college partners will work together continually, to craft creative solutions to the issues that arise.

Dissemination of the Model

We at ASU East believe that our successes in partnering with our community colleges statewide can serve as a national model for other universities and community colleges throughout the country. Many universities currently offering traditional B.S. Degrees in the technology disciplines may have standing articulation agreements with their regional community colleges. The uniqueness of this partnership is the block transfer of the AAS Degree into our BAS Degree from accredited programs from colleges across the nation.

The ASU East administration and faculty are committed to the partnership model and are actively engaged in disseminating the model nationally. The partnership model has been presented at variety of venues and activities that include: presentations at education and industry conferences, hosting of national and international benchmark visitations, grants that have dissemination component as a condition of funding, research publications, transferable educational models promoted by our industry advisory boards to their corporate network and outreach functions internally and externally.

Summary

The new Partnership in Baccalaureate Education at the Williams Campus offers an innovative and powerful model for the development of new campuses across the nation to meet the growing need for more comprehensive postsecondary programs. The key word here is ***partnership***. Because of this ***partnership*** these institutions are able to serve their students efficiently and economically to fulfill their desire of obtaining industry validated hands-on experience or a baccalaureate degree in a timely efficient manner.

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Biographical Sketch

RICHARD L. NEWMAN

Richard L. Newman joined Arizona State University East (ASUE) in August of 2001 and currently serves as Director of Training Operations for the Microelectronics Teaching Factory. In this position Mr. Newman is responsible for the identification, development and delivery of education and training for the semiconductor manufacturing industry. Prior to joining Arizona State University, Richard served twenty years as a faculty member and administrator within the Division of Technology and Applied Sciences at Arizona Western College and the University of Arizona. He most recently held the position of Associate Director at the Maricopa Advanced Technology Education Center (MATEC). MATEC is a national center of excellence funded by the National Science Foundation (NSF) that focuses on workforce development for the semiconductor manufacturing industry.

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Lakshmi Munukutla received her Ph.D. degree in Solid State Physics from Ohio University, Athens, Ohio and M.Sc and B.Sc degrees from Andhra University, India. L.V. Munukutla developed an interest in semiconductor device processing technology and characterization while she was working at Motorola Inc. She has been active in research and published several journal articles. She holds an Associate Dean position in the College of Technology and Applied Sciences at Arizona State University East.

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John Robertson is a professor in the Department of Electronic and Computer Technology at ASU's East campus in Mesa, Arizona. From 1993 to 2001, he held a number of senior R & D positions in Motorola's Semiconductor Products Sector. His earlier academic experience was as Lothian Professor of Microelectronics in Edinburgh University, UK where he managed a national research center and developed continuing interests in process control and the global economics of semiconductor technology.