Chapter 11
Community Colleges and the Global Workforce: The Role and Impact of Community Colleges on the Pursuit of STEM Education and the Workforce

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ABSTRACT
This chapter addresses the role and impact of community colleges on the pursuit of science, technology, engineering, and mathematics (STEM) education and on the workforce. In order to understand the role of community colleges in STEM education and the related impact on the workforce, potential factors that may or may not contribute to the success of the implementation of new initiatives, programs, partnerships, and funding must be identified. In addition, the alignment needed between community colleges and workforce development programs in order to fulfill the demand of many STEM jobs across the nation must also be identified. Currently, community colleges are facing a number of challenges, and one of those is to become the main supplier of individuals with the right skills and training for the workforce to fulfill the needs of the community as well as different industries.

INTRODUCTION
The intent of this chapter is to provide an introduction to the role of community colleges and their impact on students studying in science, technology, engineering, and mathematics (STEM) majors as well as the importance of increasing student participation in STEM education in order to fulfill the demand for the country’s workforce.

Whether the goal is to increase the number of STEM professionals, [enhance the skills] of displaced workers, increase diversity in the STEM pipeline, respond to emerging employer needs for a skilled workforce—or a combination of all of these—community colleges play a vital role. (Baber, 2011, p. 5)

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Community colleges are well known for offering students open access to higher education with reasonable and affordable tuition. As a result, community colleges attract many recent high school graduates as well as nontraditional students and students from a low socioeconomic background.

At the present time, community colleges face many challenges. One of those challenges is the preparation of students with the skills and the level of competencies needed to fulfill the demands of the workforce. Therefore, community colleges must identify potential initiatives, with a clear vision of what needs to be done to fulfill the demands of the workforce, as well as identify strategies that can contribute to increasing students’ interest in STEM majors, all in an environment that is facing reduced funding. To that end, this chapter serves to ascertain some of those initiatives and strategies as well as the implications of having those in place in order to better understand how to meet the needs of our society and how to prepare this nation’s future workforce, who will not only fulfill the workforce demand in the labor market but also fill the gap in the various areas of STEM, which is a big concern in the United States.

BACKGROUND

It is important to highlight the role of community colleges and how they can function to prepare and increase the interest of students in STEM fields to fulfill the workforce demand. The community college is a growing sector of higher education with the potential to stimulate the recruitment and retention of future scientists. Hagedorn (2010) and Summers (2003) have asserted that the mission statements of community colleges typically outline three primary functions: provision of college credits and skills to enable students to transfer to 4-year institutions, adult and continuing education, and technical and vocational preparation leading to employment. Dougherty (1998, as cited in Bragg, 2001) asserted that community colleges serve many roles in higher education and have been viewed as the single largest and most essential threshold for higher education. Moreover, in their report Nettles and Millet (2008) referred to community colleges, which were established primarily in response to the demand of high school graduates to be able to continue their education at the college level, as “one of the most important innovations for higher education in the 20th century” (para. 2). Similarly, Holzer and Nightingale (2009) stated that community college certificates and degrees hold great promise as a source of skills and credentials that can provide pathways to well-paying jobs that are currently in demand. The American Association of Community Colleges, in a report on the number of degrees awarded by public 2-year institutions, indicated that more than 630,000 associate’s degrees and 425,000 certificates were earned at U.S. community colleges in 2009–2010 (Mullin, 2011).

There is no doubt that community colleges are growing every day and becoming more popular due to their versatile function. In their recent report, Katsinas, D’Amico, and Friedel (2012) stated that “community colleges serve simultaneously unemployed and underemployed workers. On a mass scale, they provide non-credit computer literacy classes to build the skills of the workforce” (p. 2). Community colleges and the workforce are well connected in a way that ensures that actions are taken and both parties are engaged in the common purpose of preparing students with the skills necessary to enter the workforce. Alssid, Goldberg, and Schneider (2011) noted that, although “most community colleges in the nation started with an academic tradition, thinking of themselves as junior colleges, North Carolina’s system started with workforce roots and has grown into the most comprehensive community college system in the nation” (p. 18). Today, higher education is facing a number of great challenges, and com-