League Project Highlight

San Diego City College STEM Culture of Success

A key innovation at San Diego City College—an Hispanic Serving Institution—for increasing diversity and inclusion in science, technology, engineering, and math (STEM) is the implementation of an explicit learning culture of success, with a common language of success. The concept of culture is universal; everyone has a personal definition and understanding of culture, typically related to an ethnic or group culture. Culture defines us and is often characterized by a set of shared attitudes, values, goals, and practices. Culture also applies to success in college: success in higher education, especially in STEM, requires application of a learning culture.

The importance of a STEM culture is an essential lesson in the San Diego City College Math, Engineering, Science Achievement (MESA) Program, an academic support program for students in STEM majors. The students served typically lack the social and cultural capital that is necessary for success in college. Traditional interventions, such as academic advising, study skill training, and tutoring, while of proven success, only partially address the social and cultural capital needs of disadvantaged students. The STEM Culture of Success approach provides a dynamic vehicle for instilling an internal locus of control (i.e., accepting responsibility) and promoting resiliency in students. In a STEM culture, students are taught accountability and a purpose for the learning. Furthermore, a culture approach facilitates impactful student engagement, high expectations for student achievement, validation of

students, and an increased sense of belonging. In an attempt to fully address student needs, a STEM Culture of Success approach was piloted in 2011-2012 in the MESA Program. MESA promises students a transformational experience. MESA students are trained in a STEM culture and a shared set of attitudes, values, and practices that foster their success. The STEM Culture of Success sets a framework from which all MESA strategies are implemented. MESA students own the STEM culture; they take it wherever they go to create their own success. Furthermore, based on the STEM Culture of Success, San Diego City College has offered an academy for STEM success since summer 2011. More than a bridge program focused on college success skills, the STEM Academy introduces science, technology, engineering, and math students to the San Diego City College STEM Culture of Success and teaches them what every freshman STEM major must know to succeed. The three-day academy includes eight training sessions on elements in the STEM Culture of Success and the foundation for learning, and each day concludes with presentations by industry professionals (serving as role models) to expose students to STEM careers. Day 1 is an introduction to the STEM culture, foundation for learning, and college readiness. Day 2 provides training on learning strategies and learning styles. Day 3 focuses on student strengths using StrengthsQuest, time management, and campus exploration.

Background

As identified in Faculty Guidebook: A Comprehensive Tool for Improving Faculty Performance (2007), creating a culture of success requires a shift in pedagogical approaches and the creation of a climate for learning that empowers students and holds them accountable for their performance. The necessary conditions for successfully implementing a culture of success include:

1. Setting clear and high expectations.
2. Establishing a community of learners through authentic dialogue.
3. Focusing on performance, not on performers.
4. Developing rich and robust resources for learning.
5. Using effective mentoring and peer coaching.
6. Providing strong leadership.
7. Constructing knowledge through collaboration.
8. Engaging students through key learning activities.
9. Embracing the potential and humanity of each student.
10. Helping non-believers to embrace performance improvement.

The STEM Culture of Success also requires the mindful use of positive language to encourage personal and academic growth.

Training in the STEM Culture of Success is the first step in initiating students into the MESA Program. Standardized STEM culture training is provided to all MESA students to ensure a high level of cultural understanding, enhance the quality and effectiveness of MESA activities, and contribute to high student achievement. The training addresses why culture is important, the definition of culture and its connection to a STEM Culture of Success, the values and beliefs consistent with a culture of success, a description of the STEM cultural experience and elements, and examples of how successful STEM students benefitted from the STEM culture.

High expectations for student achievement are a core value in the STEM Culture of Success. MESA students know that student potential is not questioned in the STEM culture; instead, students are taught that all students have great potential and are expected to set their goals to reach their potential. Student success in STEM is predicated on a student's commitment to achieving personal goals and the strength of a student's foundation for learning.

The cornerstone of the STEM Culture of Success is the Foundation for Learning. Student success begins with a strong foundation for learning. Every student has a foundation for learning, but not every student has a strong foundation. MESA students are trained on the Foundation for Learning so that they are cognizant of what they need in their personal foundation in order to be successful learners, including:

- an awareness of what is needed for college readiness and success;
- an understanding and use of successful approaches, strategies, plans, and personal strengths; and
- support and tools for success, including learning styles, lecture videos, and online resources.

Finally, more than developing scholars, the STEM Culture of Success develops leaders. MESA students are trained on a collection of three books that are essential for leadership development.

1. *Leading Change* (Kotter, 1996) identifies eight steps for leading change.
2. *The Culture of Collaboration* (Rosen, 2009) identifies 10 elements for effective collaboration.
3. *Crucial Conversations* (Patterson, Grenny, McMillan, Switzler & Covey, 2002) identifies strategies for engaging in productive dialogue.

STEM culture resources and tools have been disseminated throughout San Diego City College in STEM and non-STEM areas. For more information about the STEM culture, MESA Program, and STEM Academy contact Rafael Alvarez,

MESA Program Director, at ralvarez@sdccd.edu or 619.388.3156.

Click here to learn more about the STEM Culture of Success and MESA Program.

Click here to learn more about the STEM Academy.

Resources

Beyerlein, S. W., Holmes, C., & Apple, D. K. (2007). *Faculty Guidebook: A Comprehensive Tool for Improving Faculty Performance*. Lisle, IL: Pacific Crest Software, Inc.

Kotter, J.P. (1996). *Leading Change*. Boston: Harvard Business Review Press.

Patterson, K., Grenny, J., McMillan, R., Switzler, A., & Covey, S. R. (2002). *Crucial Conversations: Tools for Talking When Stakes Are High*. New York: McGraw-Hill.

Rosen, E. (2009). *The Culture of Collaboration*. San Francisco: Red Ape Publishing.