

Transforming the Classroom Globally

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INTRODUCTION

Technology has changed how we communicate. Now we are able to change how we educate employees. As the presence of technology increases, online education can be used to continue the tradition of passing quality information on to more individuals. As educators we have a great opportunity to utilize technology to transform our educational practices to accommodate the global marketplace. The use of technology extends the walls of the classroom. Not only can training be delivered around the world, but knowledge and expertise can be brought into the classroom from virtually anywhere. This becomes more important as companies span the globe. Education for employees must change, allowing them to continue their employment regardless of where the job takes them. Online education enables students to access course information as many times and as often as necessary, giving them the ability to pause and further research or clarify any point of the material (Popov, 2009). Connectivity provides the potential to connect everyone to everything at any time (Katz, 2008). Online environments provide the opportunity to self pace the learning that would not otherwise be available in traditional classroom instructional methods.

BACKGROUND

Research indicates students retain 75% of the information presented when they are engaged and learn by doing (Flint, 2004). Technology allows us to combine online and face to face education methods establishing an optimal learning opportunity for working individuals. The Project Managers Development Program (PMDP) and the Facility Managers Development Programs (FMDP) at Arizona State University show high success in utilizing this method to train individuals around the world. One key to the success of this program is that students are put in a cohort providing an opportunity for students to interact and share knowledge and experiences with fellow classmates from different locations and backgrounds. Research shows that moving through common courses together utilizes relationships to increase learning. Students who have gone through a program as part of a cohort receive certain benefits from instruction including increases in integrating the course content (Davis, 2001). Being able to share and learn from others reinforces the material and provides a support and encouragement system. “Students benefit from peer teaching – explanation, comments, and instruction from their course-mates” (Duderstadt, Atkins & Howling, 2002). These groups are encouraged to collaborate and share experiences and lessons learned.

TRAINING PROGRAMS

The PMDP and FMDP programs are a blended learning experience that combines both on-line and residency training for the students. The activities that are part of the overall program are specifically designed to increase the retention of the information presented. On-line lectures provide the basic course knowledge. Virtual conferences allow the students to discuss the material as well as provide information about a specific topic. Finally the residency face-to face is designed to have the students apply the course material in a real-life scenario.

The PMDP covers the major concepts in the design, construction and renovation of advanced technology facilities (see Table 1), the type of facilities have additional complexities due to the various cleanliness and certification requirements. These complexities require Project Managers to have a higher skill set than required for general purpose construction. The PMDP focuses on developing the skill set Project Managers need to excel in this fast-paced, dynamic environment.

Table 1: PMDP Sample Course Topics

Design 1 Session	Design 2 Session	Construction 1	Construction 2
Facility Programing	Gasses & Chemicals	Project Organization	Process Tool Hook-up
Structures	Ultra Pure Water	Project Scheduling	Commission & Start-up
Environmental Sys (HVAC)	Electrical Systems	Cost Estimating	Cleanroom Certification

The FMDP is focused at Facility Managers of an advanced technology facility. While most Facility Managers have extensive experience operating various general purpose facilities, the complexities surrounding the operations and maintenance of a high technology facility presents unique challenges, an order of magnitude different from general purpose buildings. This course brings key Facility Managers, currently located worldwide, together in a common place to learn and improve unique skills needed for the operations and maintenance of a high-tech facility. A sample of the topics of the FMDP can be seen in Table 2.

Table 2: FMDP Sample Course Topics

Advanced Technology Facility Systems	Facilities Project Management
Electrical & Life Safety	Building Permitting
Decommissioning	Finance
Waste Systems	Facilities Operations & Maintenance

Students begin the programs with 30 weeks of online coursework where they learn the core knowledge concerning the industry. Students are assigned to teams that meet virtually each week to review and discuss the current lesson. Students are also responsible for completing a study guide each week which emphasizes the key points of the topic they should remember. A learning segment is a combination of 5 – 6 topics breaking the overall program into smaller sections. At the end of each session students are assigned a reading which they report to the entire group in a web conference call. The report consists of a high level summary of the article as well as how it can be applied to their current position. This adds additional topics, information, and/ or research that is not covered in the curriculum modules. It also encourages the students to think how the information they are receiving can integrate into their positions. These report-out sessions also connect the students before they arrive at the face to face.

The FMDP and PMDP programs culminate with a week-long face- to-face workshop which reviews and clarifies topical information from the online program, but more importantly, provides students with a hands-on experience to implement their recently acquired knowledge through practical, real-life application of scenarios that are common to facility and/or project managers. Students work on a case study which includes current issues that is given to them. They work in teams to address the issues and determine a solution to present at that end of the week to a “Board of Directors”. The teams receive feedback from the “Board, and the entire class is able to see the variety of solutions that are possible.

CONCLUSION

The PMDP and FMDP programs are providing a platform for the next generation of education available through technologies that are currently available. This enables a world-wide audience to participate in learning experiences that will enhance the knowledge base of project and facility managers. These unique programs allow a variety of educational techniques to be utilized to encourage learning and retention. Oftentimes it is easy to sit through training and listen to the lectures, but learning how to implement that information is typically not part of most training programs. Mentoring students as they work through the scenarios and case studies, where they must utilize all of the information they have previously received helps them to connect all the ‘dots’.

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