How Service Learning is Integrated with Transportation Curriculum to Support Career and Education Development

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Abstract

The Transportation, Logistics and Cargo Security (TLCS) Program at Anne Arundel Community College (AACC) was created to provide new students and incumbent workers with a broad understanding of the transportation industry. The success of the program has led to continued educational offerings for students interested in industry credentials. The program focuses on professional education and ties these concepts to current workforce needs, career awareness, and career preparation through many methods. Delivered content provides career opportunities through professionally created program videos, classroom content, guest speakers, and local field trips.

Students learn industry skills and knowledge through the participation in service learning and engaged learning projects. Service-learning, which provides applied learning experiences by linking community service, curriculum, and reflection are effective educational tools used in the TLCS Program. Active and engaged learning activities are also used to provide students hands on experiences to tie classroom material to workforce activities. TLCS program students apply supply chain and transportation concepts though participating in specialized activities. This example of utilizing active learning activities supports growth in industry education and career knowledge.
INTRODUCTION

Within the educational arena, there are methods and tools that can be embedded in the curriculum to further develop and support learning. One such method is to infuse industry tools and processes into the curriculum with active and engaged learning projects. This factor of including industry tools in transportation curriculum is addressed in Zhu, Xie, and Levinson’s discussion on providing training on current practices in transportation education with the integration of industry related tools in the classroom in conjunction with traditional lectures (1). Tools and experiences that can be implemented include classroom technology labs, field trips, and case study based scenarios. In this paper the concept of implementing classroom labs and business experiences with the traditional curriculum delivery will be discussed as an important factor for student development to support transportation and supply chain industry operations.

DISCUSSION

Education

Transportation is a thriving industry supporting business operations. It is an industry that exists based on individual demand and place utility. Transportation is influenced by education in industrial problem solving and decision making process. According to Professor Dale Rogers of the Center for Logistics Management at the University of Nevada Reno about higher education opportunities in the transportation industry, “Businesses today really do need educated employees…. We really need businesspeople to be involved in what we do. It's not just a good thing for them; it's a good thing for the industry as a whole” (2).

The advantage of this type of education is far reaching, not only creating knowledge opportunities for students, but supporting business development, competition, and efficiency maximization. Companies and organizations understand the benefit of industry educational opportunities and support continuing education for incumbent workers and use the gained knowledge as a means to hire new workers. It gives displaced workers, especially in economic recessionary periods, to learn a new trade to gain entry into a new career.

Program Overview at Anne Arundel Community College

Anne Arundel Community College (AACC) was awarded a $2 million dollar Community-Based Job Training Grant from the US Department of Labor (DOL) in 2006. Community colleges are mission mandated to serve not only students, but the business community at large. AACC is no exception and as such has partnered with local workforce investment boards, local and national cargo handling employers, local Job Corps centers, trade associations, state and local school systems, the Baltimore-Washington International Thurgood Marshall International Airport (BWI) and the Port of Baltimore to develop this unique program (3).

First, AACC is a comprehensive, multi-campus community college in Maryland, serving more than 50,000 credit and non-credit students annually. The program, called the
Transportation, Logistics, and Cargo Security Program (TLCS) created a credit certificate and non-credit courses in various transportation and logistics industry related disciplines in order to create a pool of trained workers. Credit courses are created to address the topics of general transportation, supply chain management, airport operations, seaport operations, freight operations, and transportation security. The credit certificate also included an opportunity for students to participate in a course-based internship, earning valuable on-the-job training in local industry environments. Non-credit courses were developed in importing and exporting, warehouse operations, transportation customer service, hazardous materials transportation, and freight related homeland security issues. (4)

The three year DOL grant funded program focused on training incumbent and displaced workers in the Maryland region. Courses were offered and developed in both traditional face-to-face formats as well as distance learning through the college’s online learning management system. Content delivered in the program includes industry issues and needs in today’s business environment and the future of the industry. Through classroom exploration and research, career and employment opportunities are explored. The program provides career preparation for entry level workers and advancement opportunities for incumbent workers.

**Learning Activities**

Service learning is a classroom tool used to combine in-person learning experiences in community service with curriculum development. According to Prentice, Robinson & McPhee, service learning is defined as “civic engagement, which is then integrally connected to a specific content area within a variety of courses across disciplines” (5). Service learning creates a higher level of learning in the classroom environment to build upon mastery of core concepts. The National Service Learning Clearinghouse defines service learning as “a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities” (6). The instructional goal for service learning for an instructor is to promote the learning concepts with real experiences, which is tied to supporting the local environment to help the student in fostering meaningful knowledge.

Collins discusses the focus of service learning in the higher education environment. There is a trend within community colleges to provide service learning activities as a means to promote civic engagement or volunteerism in community-sensitive institutions. Collins continues on to say “integrated service learning based on its strategic plan which focuses on innovative teaching, active learning, partnerships, and bettering the local community” (5). Collins further discusses the benefits of service learning for the student. Some reports show that “students who participate in service learning experiences in their first year are retained at a much higher rate than their peers who do not participate” (5). She explains that students benefit by connecting with personal experiences, having a greater knowledge of social responsibility, personal enrichment, better grades, and higher knowledge retention (5). All of these learned attributes are derived from the experiences learned inside and outside the classroom that are connected to the curriculum delivery. By adding these extended learning components into traditional content delivery, the student is better prepared for the work environment (5).

The Sarbanes Center for Public and Community Service at Anne Arundel Community College provides the foundation and structure for instructional staff to incorporate service
Kipp Snow

learning with curriculum delivery. At AACC, the Sarbanes Center was conceived and implemented to institutionally focus on engaged learning across the campus and curriculum. The Sarbanes Center also partners with a number of organizations to provide service learning opportunities for students in both formal and informal models. “Service-learning combines academic studies with community volunteer service, enhancing student learning through a hands-on service experience that meets a community need. Through reflection assignments, students demonstrate their understanding of course objectives” (7).

One organization the Sarbanes Center partners with for service learning is SERRV International. SERRV is a “nonprofit organization with a mission to eradicate poverty wherever it resides by providing opportunity and support to artisans and farmers worldwide” (8). The Sarbanes Center has created the Global Giving Market (GGM), an opportunity for students to market, manage, and sell alternative gifts as a classroom activity. “The Global Giving Market is an annual shopping event combining both a fair trade market and an alternative gift market to help those in need in developing countries” (7). The transportation and supply chain courses as part of the Transportation, Logistics, and Cargo Security Program at AACC participate in the GGM with the project’s logistical operations.

Global Giving Market

To further provide students with appropriate learning activities, the TLCS Program created a mobile laboratory consisting of an Enterprise Resource Planning (ERP) system, a barcode reader, barcode label generator, Radio Frequency Identification (RFID) scanner and reader to provide the hands-on experience needed for working in the industry. The transportation and supply chain management courses participated in the GGM by proving support with inventory management and reporting, sales transactions, and product barcoding using the mobile lab in classroom and at the GGM event. Students participated in the GGM by collecting data from products purchased from SERRV, entering pertinent data in the mobile lab, counting and entering in inventory information during the receiving process at AACC, handling point-of-sale transactions during the market event, and generating inventory analysis reports for final sale evaluation.

Individual market activities were created similarly to real world examples, where students were tasked to handle situations similar to a traditional business environment. Inventory was stored in a secure environment behind a locked door. Students are assigned to positions during the inventory count to best manage the transactions. For example, students were assigned positions of operations director, stockroom manager, IT manager, inventory counters, and data entry specialists. The instructor acted as the company CEO. Students operate in a simulated traditional business environment where direction was given to management and line employees to count inventory, transact the data entry tasks, deal with damage products, and missing inventory. The value with this classroom environment is the ability to temporarily suspend the transaction to collaborate and generate a solution, linking a results-driven process to the classroom curriculum.

During the actual GGM event, students participated by interfacing with the customers while operating the ERP system, completing sales and customer service transactions. Students were faced with real time problems with temporary technology delays and process inefficiencies. They were able to adjust and adapt to a number of issues that were presented in order to best
support customer initiatives. Prior to the event, a discussion was held as to how to operate the ERP system and how to manage customer service activities. After the event, students discussed and analyzed potential best practices and ways to improve deficiencies in the process for the next event.

The student benefit with the activity is the actual hands on experience in using ERP systems in the classroom. The experience proves invaluable when the student is put into entry level positions to operate in the ERP environment and already have the understanding of these financial systems. The hands-on experience allow the students to quickly adapt to the technology system and reduce the learning curve time needed to operate in the specific environment. One study suggests that the integration of ERP systems in the classroom provide an effective learning tool for the business environment. “The effective use of ERP systems by many organizations to integrate their business processes suggests that a demonstration of ERP application software can be a good experience for students to gain an understanding of key business processes and the practice of cross-functional integration” (8). The goal here for curriculum development and delivery is to provide real examples as to how current business models operate. This practice provides present-day business concepts and practical knowledge the student can take directly to the job site.

Active and Engaged Learning

Another tool used in curriculum delivery in conjunction with service learning is active and engaged learning activities. These activities are centered on the student learning classroom concepts outside the normal classroom environment:

“Engaged Learning is the active, hands-on application of classroom theories and concepts in real world situations. Also referred to as experiential learning or applied learning, engaged learning provides opportunities for students to interact with the community in mutually beneficial activities that expand the student's awareness of issues and understanding of course content” (7).

This concept takes the student on a higher level of learning within Bloom’s Taxonomy or other learning models. Methods used in the TLCS program include internships, team projects, and field trip opportunities to show first hand examples of curriculum concepts in the business environment and community.

SERRV Warehouse field trip

In conjunction with the GGM, the TLCS program partnered with SERRV to visit their warehouse and distribution operations in New Windsor, Maryland. Students were provided a tour of the organization’s receiving and order fulfillment warehouse operating. Management provided an overview of the day-to-day operations while explaining warehouse processes, customer support, and warehouse layout. Each student was then teamed up with a SERRV employee to pick, pack, and ships the AACC order that was to be used for the Global Giving Market. Students shadowed the employee, where the picking process was explained. Students used the pick tickets to pull and count items for the order. Once the order was filled, students participated in the shipment packing process to understand the proper handling of products to minimize damage and shipping costs. The students then walked the packed boxes through the shipping
process to load the boxes on the outbound truck. This practical knowledge allowed the students to understand warehouse operational concepts discussed in the classroom, tying the course objectives to real experiences and measurable course outcomes.

**Internships**

Students have the opportunity to participate in an internship to complete their certificate or degree in transportation or supply chain management at AACC. The internship opportunity is a course based solution requiring the student to complete 90 hours of industry work during a semester while completing 15 hours of face-to-face course work. The course work is designed to support the work initiatives on the job site, tying the work structure definitions and concepts to a real work environment. The internship instructor oversees the work completed on site with site visits and requires the student to journal their work experiences. This is achievable by building and fostering industry relationships to support student involved learning. “While most schools with supply chain management programs strongly encourage, if not require, their students to participate in at least one internship, many schools manage their students' field research through formal organizations that pull companies and students together” (2).

The internship process at AACC includes a student interview by program and internship administration. Even though a number of internship opportunities are available each semester, the student is responsible for securing the internship based on inquiries and interviews. This allows the student to find the best cater the opportunity on their career and academic goals. Because the transportation and supply chain industry is characteristically vast in opportunities, there are many opportunities available, including options in the different modes of transportation, systems planning, logistical operations, management, and supply chain applications. Students have participated in project management based maritime projects, passenger bus travel management, freight forwarding operations, and exporting operations. In each case, the student ends the internship with work experience that can be captured on a resume, contacts in the industry to support future networking, and a work experience reflection that can be used to review for future work opportunities.

**Other Program Activities**

With the many business partners that support the Transportation Program at AACC, there are opportunities for field trips to showcase real operations to students. The FedEx operation at BWI airport has hosted a number of such field trips for the program. A typical field trip includes a tour of the operational facilities and offices, the domestic ramp, international ramp, and inside of a cargo plane. While being escorted by security certified FedEx employees and management, an overview is provided as to how the operation works including package sorting, technology tools, and day-to-day processes. The students are given an overview how barcoding technology is used to efficiently move freight through the FedEx network and how packages are routed and packed in specialized shipping containers for air freight operations. The tour also included a walk-through of an empty cargo plane to show how containers are loaded into the cargo plane for daily transport to the Memphis hub.

In the classroom environment, team projects and presentations are included as learning activities. These activities are designed to mimic real business settings where employees interact in work teams or are required to present material in a formal or informal manner. In order to
successfully master the activity, the student must be able to understand the concept, work in the
structured environment, and present the material effectively with an audience. Assessments for
the activities center on the student’s ability to understand and interpret the data, use effective
business communication skills, and learn how to work with different people to find solutions.

Case studies are also used to promote critical thinking within the classroom. One
element of an effective case study was delivered after operational management module in a
supply chain management introductory course. The students were required to answer questions
related to supply chain management concepts on a case about a bakery. The students were
placed into teams and one student was identified as the company owner for the exercise.
Scenarios were written and placed in sealed envelopes to be opened at specified times during the
activity. Each scenario presented a problem or issue to be solved or addressed, based on the
previously identified scenario. The activity required the student to tie concepts learned in the
course to a business model. Students were able to collaborate to come up with the best solution
to meet customer demands and operational requirements while the identified company owner
facilitated the discussion. All answers were recorded on the case paperwork provided with the
activity and was submitted for a grade to the instructor at the end of the activity. The instructor
provided a summary and discussion after the activity to discuss the responses provided and how
it relates to the business environment and curriculum concepts.

IMPLICATIONS

Upon the conclusion of the Community-Based Job Training Grant in December 2010,
AACC awarded 38 certificates to students who successfully completed the Transportation,
Logistics and Cargo Security Certificate. With the understanding of the need for credentialed
workers in the transportation and supply chain industries, AACC committed to maintaining the
TLCS program after the conclusion of the Department of Labor grant funding. In response to
this, the TLCS program created two more degrees that students can earn to support their career
goals. The degrees include a certificate in Logistics and Supply Chain Management and an
Associate of Applied Science degree in Business Management with a Logistics and Supply
Chain option. AACC has articulation agreements with several four-year institutions that allow
students who earn the A.A.S. degree to transfer their earned credits and continue working on
their bachelor’s degree. Students currently enrolled in the program continue to take courses for
credential completion under the college’s existing admissions process.

Curriculum expansion is expected in the future. With AACC’s success in the
Entrepreneurial Studies Institute offering credentials for students interested in starting their own
business, a course is being created to support logistical operations centered around small
businesses entitled “Entrepreneurship: Small Business Operations and Logistics” to be available
in the Fall 2012 semester. Other courses in procurement, warehouse and distribution operations,
and importing and exporting are slated for development to complete the industry needs for
knowledge.

Program Awards

The Transportation, Logistics, and Cargo Security program has received a number of
rewards since its conception. These academic oriented associations review curriculum programs
for excellence related to content, delivery, and workforce development. The program won the
Maryland Distance Learning Association (MDLA) 2010 Program of the Year award focusing on excellence in curriculum delivery in the online environment, the Maryland Economic Development Association (MEDA) Economic Development Project of the Year focusing on curriculum based programs supporting economic development in the region, and the National Council for Continuing Education and Training (NCCET) 2010 Mid-Atlantic Region Exemplary Program focusing on excellence in workforce training and education.

CONCLUSION

Many successes have resulted from the formation of the Transportation, Logistics, and Cargo Security Program at AACC. With the assistance of industry leaders, knowledgeable faculty, and program supporters, the TLCS program has created and delivered quality solutions for today’s workforce. The workforce participants are better prepared for transportation and supply chain industry responsibilities and career growth with the infusion of engaged learning, active learning, and service learning activities in the classroom. These activities are designed to promote higher levels of learning to support content mastery, providing the students with the necessary knowledge and understanding to support transportation industry growth and sustainability.
References


