
AC 2012-3398: INDUSTRY BASED LEADERSHIP DEVELOPMENT

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Robert Wayne Ford spent his first 37 years working in numerous trades, but always managed to move into leadership positions after a short period of time. After his father's death in 1997, Ford ended his career on the road and accepted a supervisory position with a local manufacturer in Arkansas. In 1999, Ford was given an opportunity through the NAFTA agreement to get a degree from the local two-year college. During his endeavors at NPCC, he was inducted into Phi Theta Kappa and received the George O. Bierkoe Distinguished Member Award for his contributions to the Garland County Foster Parent Association. In May of 2002, Ford received his A.A. degree from National Park Community College and he was offered a scholarship to complete his undergraduate studies at Texas A&M University in Commerce, Texas. Ford participated in the honors program on the TAMU-C campus and was the first from his department in 12 years to be pinned on stage at graduation. Because of his dedication to the college the president offered him one-year in state tuition towards a graduate degree and he completed all 36 hours of graduate studies in 12 months with a 4.0 GPA.

Industry Engaged Leadership Development: Building a Future Workforce through Competency.

Abstract

Participating in industrial arts programs since the fifth grade played a major role in the author's decision to work in the construction industry. Working in various fields of construction, the author learned various techniques and procedures involving team building and leadership skills from competent mentors that had a history of proven success at getting projects completed on time and within budget. Recently, the author's approach to leadership development was partially revealed in an article published in *Techniques Magazine*, entitled, "Industry Engaged Leadership Development for Career and Technical Education Programs". This magazine is affiliated with the Association of Career and Technical Education (ACTE) and has generated new interest in the approach to construction related education programs. The article described a grant program developed specifically for adolescent learners currently enrolled in career and technical education (CTE) programs in high schools that relied on competent personnel with actual field experience to present a portion of the lesson plans associated with the program's developed curriculum.

The program's curriculum and related lesson plans were developed to fit the chapter outlines of the National Center for Construction Education and Research (NCCER) Content Learning module – Introductory Skills for the Crew Leader, written by Dr. Roger Liska, Clemson University. Although this module was originally developed for adult learners, the content was appropriate and fit the needs for the related research and study that the author wanted to test. The main purpose of this study was to determine if competent construction field experience and job titles benefited the leadership and critical thinking skills for this particular target group of building trades students ranging in age from 15 – 18 interested in construction careers. This study wanted to examine the learning outcomes associated with a competent approach to learning instead of the usual qualified approach.

Utilizing a proven textbook with related chapter questions and combining it with the field knowledge of the facilitator and guest speakers, the program was a complete success. All 20 participants passed the Occupational Safety and Health Administration 10 Hour Safety Course and received the related certification card. In addition, 18 students also passed the comprehensive NCCER module exam qualifying them for NCCER certification of which 12 took advantage of and received the formal certification. Student evaluations were positive and very helpful in determining the proposed levels of training that will be offered in the future.

This paper will discuss the processes involved in developing the necessary lesson plans and industry engaged activities that created the learning environment of this study. Results are easily replicable by describing the details involved in choosing specific speakers to present specific instruction, and then explaining to the learners how the day's activities related to the written text at the end of each day.

Introduction

This paper was written to outline the development and implementation of a training and research program that included high school students, Western Carolina University (WCU), and several representatives of the construction industry. In 2008, the author of this research noted concerns in both the educational and industry administrators about the future of Career and Technical Education (CTE) Programs that are currently implemented in some high schools around the country. The National Center for Construction Education and Research (NCCER) was initially contacted and a symposium was scheduled to allow the concerned Education and Construction Industry representatives an opportunity to discuss the future of the career and technical programs currently offered in the area. Ed Prevatt¹⁴, Senior Manager, Workforce Development, NCCER said, “Even in these difficult economic times there is a critical workforce shortage of trained craft professionals. As contractors demand more entry skills and more return from the students they train, it is essential to have a bridge between the construction industry and secondary and post-secondary institutions. Exposure to industry subject matter experts when possible is a vital component in providing awareness to the talent we need in our industry.”

After a period of time researching various training approaches the author realized that there was a need for what some call a “Community School” where the public schools joins forces with higher education, local community partners, and parents to provide supplemental training to adolescents that would enhance the economic growth of the community. The growing disengagement of many students, especially in our middle and high schools, is a clear sign that we must find ways to make learning relevant to students' lives, and using the community as a learning tool is one way to bring about such reengagement. As the Coalition for Community Schools has noted, using the community as a learning resource is "particularly important because it connects the work of the community to the primary mission of the school: improving student learning. It also helps students apply what they are learning at school to their daily lives" (Blank et al¹). Equally important, this approach to learning defines students as a resource to their community and enables adults to see youth in a different, more positive light.

This study not only provided a positive learning environment for the targeted students in high school building trades programs that are interested in construction careers, it also allowed three WCU construction and business management students an opportunity to apply their own management style to a live target group. Western Carolina University, where this study was conducted has implemented a Quality Enhancement Program (QEP) that challenges the faculty to develop intentional learning activities for their students. There are five objectives related to the QEP goal they are: 1) practice civic engagement, 2) clarify purpose and values, 3) integrate information from a variety of contexts, 4) solve complex problems, and 5) communicate effectively. This program integrated information from a variety of contexts to solve complex problems while communicating effectively, a perfect fit to the related study environment. A similar program called PROSPER, (**PRO**moting School-community- university **Partnerships** to **Enhance Resilience**) has had exceptional results as well. A key reason for advocating for partnerships among schools, universities, and communities is that they can build upon previously developed public education infrastructures for the provision of training, technical assistance, and other resources used to enhance capacity for sustained implementation of evidence-based programs. (Spoth et al⁵)

The author intentionally placed additional roles and responsibilities on the three WCU students and tested their creative abilities throughout the week by implementing specific changes to the schedule and team competition activities to observe their reactions. According to the initial CTE target group and the participating industry group's evaluations these students performed exactly the way the author intended.

Planning

Because of past field experience and expertise in construction processes, the author's approach to construction education may vary from those without actual field experience. The author should be considered a subject matter expert on "workplace basics" a term defined as having the ability to manage resources, holding the proper communication and interpersonal skills, teamwork, problem solving, and acquiring and retaining a job. (Hollenbeck²) Instead of approaching the learners as students, the author considers them members of a construction team and the course is the project to be completed. Throughout the author's professional construction career it was necessary to first evaluate the crew members or workers assigned to a particular project to determine what activities they were best suited to complete. After each member was evaluated and assigned a task, the team would then set out to accomplish the goals and objectives to successfully complete the project. This approach to instruction in the classroom has been proven effective time after time, and is reflected in positive student and peer evaluations since it has been implemented. This approach requires the instructor to be able to solicit help. The author defines getting help from outside sources, "utilizing resources", and considers it a strong tool for qualified educators to turn to if and when they need to increase their classroom competency levels on a particular subject.

During the author's graduate studies in training and development several controls were identified that should be addressed to secure a positive learning environment. They are: the environment itself, an instructor's pedagogy process, the instructor's competency in the subject matter, the learner's willingness to learn, appropriate learning materials, and the measuring tools to identify the impact the instruction method had on the learners. In a landmark report by the Secretary of Education's Commission on Achieving Necessary Skills (SCANS, 1991³) they provided a common language for business and education by outlining the basic workplace skills needed by all students. Since then, there have been numerous studies and publications on the importance of these skills. (Zinser⁶) In a follow up publication SCANS suggested that the skills should be integrated into all the core curricula, as opposed to creating a separate employability course. (SCANS, 1993⁴) These components of learning are addressed in the initial curriculum and schedule developed for this research program. The author believes that if a supplemental programs such as this one were offered across the country to cover the shortfalls in leadership skills it would benefit everyone involved, most importantly, students.

To secure the author's understanding of the current problems CTE programs are facing, the author spent one year immersed in the CTE community. The course of action the author traveled included attending a craft instructor's certification with 43 CTE instructors, speaking at two regional CTE administrator symposiums on the topic, obtaining a NCCER Master Trainer certification, participating in four NCDOT/ABC Construction Career Day events

for CTE students and publishing an article about the author's intentions in Techniques Magazine, a journal related to the Association of Career and Technical Education (ACTE).

Development

The first contact during the development process was to the WCU Distance Learning Program, one of several campus departments that gladly assisted the author in implementing the program. The department agreed to perform all the administrative duties of the program, which removed a lot of responsibility from the author's itinerary. They were responsible for recruitment and promotional activities, the application process, providing resident assistants, monitoring the program web-site and other administrative duties related to a summer program held here WCU. This resource is present on most campuses and is willing to assist instructors in individual projects, although there is a fee, it is well worth paying.

The other WCU campus departments solicited were the Counseling Center, Career Services, Facilities Management Department, the Service Learning Center, and the Construction Management Department. The Counseling Center provided a subject matter expert to discuss workplace ethics, sexual harassment, cultural diversity, and discrimination. The Career Services Director presented information about career paths, employee and employer roles and responsibilities, and other aspects involved in choosing a career path. The Facilities Management Department provided a mechanical engineer to discuss facility operations and the related hierarchy or chain of command that most facilities have in place. The Service Learning Program Director discussed the benefits of sharing one's abilities and experience to improve or support those less fortunate on campus and in the surrounding community. The construction management department allowed the author to implement the program as well as furnished the instructor for the 10 hr. OSHA Safety program. The last element the WCU campus had to offer was the controlled environment that is necessary to enhance the learning environment. Both target groups were placed in unfamiliar environments, the CTE students were away from home, family and friends and the campus counselors had only practiced their management styles with limited roles and responsibilities in prior assignments.

The remaining scheduled program activities not conducted by the author were filled by industry partners. Time was carefully taken to solicit and secure specific subject matter experts to fill the slots associated with the learning materials. The educator implementing the program must carefully evaluate who they want to include in their study because if the person is not competent in the subject matter the whole process can be contaminated with doubt if one student determines that misleading information had been presented. The author scripted each speaker to keep them on target with the goals and objectives of the lesson plan. If an educator does not feel comfortable in this process, the author realizes that some educators did not participate in educational course work that benefits curriculum development during their individual degree programs, there are several professional and educational organizations that can help, most of the time at no cost to the educator. Most successful construction companies or professional organizations have some type of workforce development program with specialized trainers that are willing and able to help identify any subject matter expert needs in the study. Most universities offer faculty workshop for such situations but the educator must admit the shortfall before improvements can be made successfully.

The initial plan was to break the target group into three teams of ten and select the members of each group based on age. The author picked two Construction Management students and the Distance Learning Office provided the third student, a Business major to serve as program assistants. The author held several meetings with the three assistants prior to the start of the program and they were fully aware of the author's expectations and the roles and responsibilities attached to being an assistant in this study. These students knew that the author expected them to apply their own management style to their specific group and were only to approach the author for guidance if the situation exceeded their personal abilities. This is another resource that any college campus has to offer, a pool of talented students that are willing to get involved if given direction.

Implementation

The program started with a brief overview of the scheduled activities and the expectations of the WCU campus, affiliated high school programs, the construction industry representatives, and the author. Then, the participants were given a presentation and lecture by the author that was developed by Tom Tancy, President, Tancy and Associates, on how to ask an appropriate question. The author felt it would be beneficial to the participants to implement this portion of the training first to hopefully generate more participation during the lectures scheduled throughout the week.

The 10 hr OSHA Safety Training was the first application of training the participants received. This training activity was scheduled into two days so not to overwhelm the learners. The qualified safety instructor had taken the time to related most of the safety materials to you-tube videos and it really sparked the interest of the students, even the WCU campus counselors participated to increase the participation and interest of their team members. If you have ever sit through OSHA training you should understand why the author is excited about the positive evaluations concerning the OSHA Safety training activity.

After the safety training was completed the participants started the NCCER Contren Learning Module affiliated with the text. The module called for sixteen hours of instruction to be scheduled. This module was originally developed for adult learners with some experience and knowledge of the management process related to construction projects. Specific speakers were scheduled to fill any voids the author had in the process. Because of his specific site or field experience the author knew his expertise did not include sexual harassment, discrimination, and other related topics that the Counseling Center could provide. The representative that was sent over received the best evaluations from the group. This subject matter expert had these young men role playing and having a blast learning a good foundation for any management career. The author also included the Service Learning program to identify to the participants why it is important to give back to the community when possible. The Career Services Department was scheduled to assist the participants with resume building, interview skills and other ways to sell themselves to a potential employer.

After the NCCER Contren Learning module was completed the schedule offered time for the interested industry partners to engage the participants. That slot on the schedule was considered an "open house" of sorts. The author did not schedule specific speakers or guests for this time slot and there was not an affiliated lesson plan. An open house invitation was sent out to

numerous construction industry partners and eleven attended and participated. The learners received various trinkets and handouts from the group and several companies offered entry level employment if the participants completed their trade program and graduated high school; even the three campus students were approached and made potential offers.

Like most research studies this one faced significant challenges that could not have been predicted. The first was the North Carolina Department of Public Instruction announcing that their fall semester would start two weeks early due to the number of bad weather days the previous winter. Their decision required eight students to drop out because of football practice commitments. A week before the program two students had to withdraw because of family emergencies. The initial target group of thirty was reduced to twenty male students aged fifteen to eighteen in building trades programs interested in construction careers. There was not enough time to try and fill the vacant slots considering the high schools had already dismissed for the summer. Two students had to leave mid-week during the program and were not able to complete the study. However, they did complete and receive the 10 hr OSHA Safety card. The study initially included 30 male and 30 female students but the female section was cancelled due to a lack of interest. This was a hard decision because of the dynamic line up of female executives excited about being involved in the program. The author would like to thank the National Association of Women in Construction (NAWIC)-Asheville, NC, Mittie Cannon, KBR International, Birmingham, AL, and campus administrators Dr. Beth Lofquist, Dr. Carol Burton, and Dr. Linda Stanford for their support.

The author has built hundreds of working relationships with construction workforce development trainers and other construction industry partners over the years. Construction pioneers like W.E. Bolton⁷, President – Bolton Construction and Services, and Bill Tomlinson⁸, Executive President, APAC Asheville, and Tim Emory⁹, President, Emory Electric – Asheville are fully supportive of these supplementary applications of learning because they realize that the construction industry must get involved to ensure an adequate workforce pool for their future needs. Unfortunately, many adolescent learners leave secondary education without the requisite skills to succeed in the adult working world. (Zinser⁴) Gary Bishop¹⁰, Senior Workforce Trainer, PCL Industrial Construction Co., said “Attracting youth to the industrial trades is a much needed endeavor. Attracting youth to the industrial trades with basic leadership and critical thinking skills is beyond most people’s conceptual objectives.” Bill Caldwell¹¹, President Waldrop mechanical Services, said “I agree that more industry personnel need to champion the effort to identify tomorrow’s construction workforce.” Tim Heffner¹², VP Sales/Marketing, Dave Steel Company, Inc. said “I am confident that your targeted approach to teaching students about construction trades through industry experienced individuals will not only enlighten students as to the potential opportunities, but motivate these students to seek out mentors in their respective fields. Having persons involved that work daily in these areas provides knowledge and excitement that a standard lecture could never achieve.” Finally, Mike Watkins¹³, Hiring & Training Administrator, Watson Electrical Construction Co., said” Students participating in this event appeared to be far more engaged in their learning experience than as I’ve observed in visiting their high school classrooms. This event afforded students the opportunity to experience ‘college life’ in its natural element as they learned construction skills and construction project processes. Another exceptional benefit to this event was the learning experience for the college seniors who assisted with the program: an invaluable learning experience in project management

and supervision! Future sponsors of this type event can greatly benefit their institution in recruiting, image and promotion of careers in construction!”

The author knows that this study would not have been a success without the participation, support, and commitment of the three assistants. These students had the responsibility of monitoring their individual teams 24 hours a day during the program. The author placed a huge amount of responsibility on them, in order to test their performance under pressure. All three exhibited professionalism and compassion towards their assigned tasks. The assistants would sit down after the fire-side chat sessions with their individual teams and discuss the day’s activities and the upcoming team activities for the following day. Utilizing the end of the chapter review questions the assistants would review the section of the text covered that particular day and then cover the answers with the team to assure each team member was well advised on the topics. This process was implemented each night of the program and should be considered the most influential towards the group passing the comprehensive exam affiliated with the NCCER certification process. Out of eighteen participants that took the comprehensive exam the lowest grade was a 78.

The other aspect of the assistants’ involvement was the bonding process in the team building activities. The author observed the participants from day one and noticed how the individual teams had joined together and became competitive before the end of the week. On the first day the participants began arriving and settling into place it was obvious that there were several schools represented. The participants were not familiar with each other and there were a few conflicts at first from rival schools. After the first scheduled lecture this problem vanished and the “rivalry” soon turned into a friendly competition that ended in a three way tie. To keep the participants motivated the author awarded all three teams prizes and left the competition tied.

Conclusion

The author considers this a dual study considering two different target groups were being observed, tested, and evaluated. This dual study approach can be manipulated to fit the Science, Technology, Engineering and Mathematics (STEM) initiatives that are currently providing funding to educators. Instead of focusing on a specific textbook or certification process the program could be focused on career fields in construction that rely on the STEM components. The construction industry needs scientists, technologists, engineers and especially mathematicians. By providing the necessary components to learning that were mentioned in the results of this study, any educator could develop a program that suits their specific STEM initiative needs and if they will include the intentional learning aspect in their planning and development process, not only will their initial target group benefit, the campus students that assist in the study will benefit as well. Real-life experience is a valuable learning tool and if the educators across the country will take the time to include their own students into the process, learning will occur.

Earlier, Ed Prevatt mentioned building a bridge between the construction and the education industries to better enhance the future workforce. It should be apparent to the reader of this study results that there is interest in this idea out there in the real world. The author reveals several key construction owners and administrators that want to become a part of that bridge system. The one thing that the educators must remember is that to invest in something the person investing must feel ownership if the outcome is going to be productive and sustainable and getting the investors involved in the actual process is a win-win for everyone involved.

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