Construction Curriculum Developed for Continuation Schools

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This paper will discuss a curriculum, an introduction to construction fundamentals, that was built for continuation schools. A continuation school is a school for at-risk youth in which it provides programs of empowering, inspiration and outlet. Five modules were created that focus on different sections of the construction industry. These modules consist of Site Safety, Introduction to Basic Math, Introduction to Power Tools, Introduction to Construction Drawings, and Basic Employable Skills. Each module will consist of a ten-question quiz and presentation. Two homework assignments were also created. One homework assignment for site safety which requires students to identify if the provided image looks safe or not and to explain why. The second homework assignment for the employable skills module which requires students to create a well-organized resume. Through these modules students will have the ability to learn from different sections of the construction industry and apply the learning objectives. Students will be provided a perspective of the construction industry and be inspired to pursue a career/future within this sector. Even if the students do not decide to go into the construction industry, they will still basic construction skills and professionalism.

Key Words: Continuation schools, curriculum, construction education, introduction to construction, project-based

Introduction

This senior project consists of creating an introduction to construction fundamentals and basics course for continuation schools. For those reading who may not know, a continuation school is an alternative high school diploma program. According to the California Department of Education, “students who are sixteen years of age or older, have not graduated from high school, are still required to attend school, and who are at risk of not graduating” (Continuation Education, n.d). Typically, these schools are for high school dropouts, endangered students, students behind in credits, students who need a flexible schedule due to work, and juvenile students. A continuation school is a school for at-risk youth in which it provides programs of empowering, inspiration and outlet. At these schools, they typically provide classes that teach them skills, craft trades, and job training. According to California Department of Education, students take courses that are required for graduation along with guidance and career counseling (Continuation Education, n.d). Students range from sixteen years of age or older and are guided by counselors, guest speakers, and instructors to make good choices. Continuation schools provide students with opportunities to repair the past, find new career paths, and find new purpose in hopes of becoming responsible citizens. These schools try to provide the necessary tools in enhancing life skills through leadership, productivity, and accountability.
Through the curriculum, the author hopes to inspire these students. He wishes these students will recognize that they can become professionals in the construction industry. He will provide real life scenarios, hands on experience (if possible), and new aspirations.

**Inspiration**

The way this inspiration came to life is that the main objective for the author’s senior project was to make it project-based and develop something for his hometown Salinas, CA. This idea became more centralized after he discussed with industry leaders in his community on what he could possibly do for his project. It was suggested to help teach a construction class at Rancho Cielo, a continuation school in Salinas, CA. Growing up he knew people who were sent to continuation schools, so this truly grabbed his attention. He, also, knew Rancho Cielo was helping change lives. He immediately contacted the school, signed release forms, and explored their facilities. He found high interest on how the class was being taught. The construction class was very hands on and allowed the students to build an engineered structured home. The instructor later suggested that he could help teach the students on how to perform trades like mechanical, electrical, plumbing, and finishes on the home they were building. This would fit with his objective of making his senior project hands-on, project-based, and inspiring the youth in his community. Unfortunately, this route wasn’t able to be done due to Covid-19, so he had to find a new approach.

The author began having discussions with his Subject Matter Expert (SME) and the construction teacher at Rancho Cielo about other options. After some reflection and consideration, he realized that he could build a curriculum for continuation schools. Not specifically focused for Rancho Cielo, but for all continuation schools. He knew that he could create a curriculum based on what he has learned from his professors at his university and life experiences. He also knew that the curriculum would have to focus on basics and serve as an introduction to construction. After further discussion with his Subject Matter Expert, Dr. Thomas Kommer, he knew which direction to take. Building a curriculum for continuation schools would fit with the author’s main objective; which were to have a project-based senior project that would inspire youth. These students might be inspired to enter the construction industry through trade schools or attend college and obtain a construction management degree. Regardless of what route they take, he wants to help with the process by creating a positive impact in their lives.

**Process**

Prior to starting, the author identified a book that covered the topics he was passionate about. The book is “Core Curriculum: Introductory Craft Skills Fifth Edition” by NCCER. This book helped him select the five modules he wanted to focus on and what topics to discuss in each lecture. The five modules selected were Basic Safety, Introduction to Construction Math, Introduction to Power Tools, Introduction to Construction Drawings, and Basic Employment Skills. Each module ranged from 40-100 pages. The author decided to take the top topics he found in the book and incorporate them into the lecture. Along with including book details, he also wanted to include personal experiences. This was of particular concern since he did not want to overwhelm the students with an over-abundance of information. However, he also wanted to make sure he hit every important main detail. After each lecture he included a summary slide in which he reviewed the prior points discussed in their respected module. Along with book details, the author included bullet points reflecting his personal insight.
At the completion of each lecture, he created a ten-question quiz focused on the material discussed in the lecture. The quizzes consisted of true or false questions and multiple-choice questions. The focus of the quizzes was not to test the students on whether they had read every detail in the book but focused on the comprehension of the main learning objectives. He did this same process for all 5 modules.

After a rough draft of the curriculum was developed, the author communicated with Dr. Kommer, on what revisions should be made to make sure expectations were being met. From there, he was able to produce the curriculum he had hoped to achieve. A curriculum that would teach students of new opportunities, while gaining a better understanding of what they can achieve/accomplish with a construction background.

**Limitations**

Prior to starting this project-based senior project the author did not appreciate the limitations that he would eventually face. As the quarter started for spring 2020, the university transitioned to virtual classes and held meetings online due to Covid-19. As stay-at-home shelter was put into effect it resulted in him having to move back home with his parents. He remained optimistic that he could be as productive and have linear success with the current pandemic effecting the planet. Unfortunately, at first he had a tough time transitioning to telecommunicating at an abrupt moment. Before the pandemic he was accustomed to visiting his professors physically during office hours or to even ask them a couple questions after class. For him, it was more feasible and practical. For some reason, he found it uncomfortable and challenging to only have the option to communicate with his SME either via email or zoom. Fortunately, as the quarter went on, he adapted to the new environment and balanced his workload through these unprecedented times.

Another limitation he found, or more so risk, is not meeting a continuation school’s requirements of what the curriculum should pertain. He identified this risk early in the production stage as he made sure to provide adequate and valuable information in the modules. Another risk he identified is that the curriculum could be too difficult/easy or not extensive. In order to mitigate this risk, he made sure to discuss with his SME what he could include, what he was missing, and what he can improve.

**Deliverables**

The deliverables for this project that the student created were 5 modules. Each module consisted of one quiz with 10-questions and one lecture discussing the main points and his personal insight of each respected module. He had originally planned to create a homework assignment for each module but decided to only create two homework assignments. One homework assignment for site safety which requires students to identify if the provided image looks safe or not and to explain why. The second homework assignment for the employable skills module which requires students to create a well-organized resume. This assignment would help create the foundation of future resumes, and all they would have to do is update it. Through this he hopes to provide students with a curriculum that is not too overwhelming but more so effective to their education.

**Photos of Project**

*Module 1: Site Safety*
This module discusses the importance of safety in construction and the consequences that occur from unsafe environments. The slides cover who is responsible for safety, where injuries occur the most, how to mitigate risk, and what proper equipment to use.

**WHY IS SAFETY IMPORTANT?**
- Allows employee to be productive
- Responsibility of employer
- Obligation to your family, coworkers, and yourself
- Safety reduces turnover costs
- Lower insurance/accident costs
- Good for business

**HOW TO IDENTIFY AND CONTROL HAZARDS**
- If it doesn't look safe, it probably isn't safe
- See proper equipment
- OSHA's rules and regulations are set by the Federal Government
- CSHO is赵旗制和 provides more detailed rules
- Name hazards
- Sources
- Solutions
- Caught violation

**Homework Assignment**

**Quiz 1**
Module 2: Intro to Construction Math

Module 2 discusses the importance of math in construction. It highlights how to solve decimal problems, fraction problems, whole number problems, conversion problems, and basic geometry.

Quiz 2

Module 3: Introduction to Power Tools
Next, there is a discussion on the importance of proper power tool usage. Detail is given on which power tools are most common in the construction industry and how to use each specific tool. A discussion on how to mitigate risk when using a specific power tool is included.

Module 4: Introduction to Construction Drawings

In this module, the author describes how to read construction drawings. He provides tools and key items to look for when trying to read construction drawings. He also discusses the importance of how project specifications tie into the construction drawings.
The curriculum commences with a discussion on basic employable skills and what the students can do to separate themselves from other candidates. The author addresses leadership skills and how valued these are along with problem solving skills. He also talks about what not to do when interviewing and what to do, once they are hired.
Lessons Learned

The author has come to appreciate how it takes a significant amount of time and effort to create a curriculum/course for students. Throughout the process he gained a deeper respect and understanding for teachers. It is one thing to be knowledgeable about a topic, but it is another challenge to be able to simplify it for students and have the ability to teach them effectively. Throughout the process, he learned that it takes a lot of time and effort to take a main point, be able to simplify it, but still touch on all the critical details. He was humbled instantly that it takes a lot of reading along with critical analysis to achieve this. It was also a challenge for him to create quizzes that would target the learning
objectives at hand. He wanted to make the questions and answers as clear as possible because he knows what it feels like to be a student and not understand what the instructor is trying to interpret.

Throughout building this curriculum, the author has been inspired to, one day, teach. He gained a lot of satisfaction in creating a curriculum for continuation schools and for students who do not have much awareness of the construction industry. Growing up, he too was not aware of the career paths available in the construction industry. He did not know how sophisticated it was until he was exposed to all the other trades. Each trade specializes in their designated area and requires a lot of training and time. He will never discredit what each trade is responsible for because it takes a lot of experience and learning to get to that point. That is why he wants to inspire these students to be aware that each trade is valued, and everyone helps contribute to a project, whether you’re a laborer or the project manager.

References

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