

An ACE Academy Teacher Provides an Overview of How ACE Delivers Curriculum and Instruction

By Erin Butler, English Resource Teacher at ACE Academy

As a teacher at the nascent charter school, ACE Academy for Architecture, Construction and Engineering, I'm amazed by the dedication to learning that the staff, instructors, and students have demonstrated over the course of the past year and a half. Stepping outside the mainstream of public education, we've overcome and are currently working to conquer many of the ineffective and dysfunctional mainstays of education in America. We've come to truly understand the meaning of the cliché "reinventing the wheel." We endeavor to do all this in the Pacific Northwest Carpenters' Institute, where our students congregate from 7 different feeder high schools. In addition to our partner schools, professionals in the trades, architecture and engineering have stepped up to bring real world knowledge and hands-on experience to our students. ACE provides a hands-on, project based and integrated curriculum where credit is based on demonstrated proficiencies. I'd like to unpack these "education speak" terms, so folks outside the academic education circles can understand.

First, I'd like to grapple with the term, "hands-on." Some students arrive at our school thinking that they'll be down on the carpenter's floor all day with a hammer in hand; designing a building on Revit software; or programming with digital electronics. While we do spend time doing those things, we also are in the classrooms learning science, math, and English according to the standard set by Oregon's Department of Education. Let's look at some of our hands-on activities that make ACE unique. Our science and construction teachers, Marjan Rotting and Jon Bardeschewski, worked together to create a lesson on heat transfer and R-value. We had our senior construction students frame some miniature walls with windows to demonstrate basic thermodynamics using heat lamps to understand the transfer of heat through various building materials. The building has four wood framed walls, and each wall has a window. Each side has a different insulation variable: one with an argon filled window; one with an air filled window; one with insulation and an argon window; and one with aluminum reflection and an argon window. The students collected data, calculated R-value, and wrote conclusions. This lesson, in essence, was a hands-on lesson in science, math, English, and construction. As teachers, we try to imbue every lesson with a hands-on element, which makes lesson planning an arduous process. The engineering teacher, Randy Scott, has adapted a national engineering curriculum, *Project Lead the Way™*, into several hands-on projects. Our engineering students have designed and built mouse-trap powered vehicles, wood truss bridges, and marble sorters. As we gain more experience, our lessons will get stronger and better designed, but we try not to be too hard on ourselves if the lesson doesn't go perfectly; after all, we are starting from scratch!

Another distinctive feature of the ACE classroom rests is project-based learning. The biggest project of the junior curriculum is "ACE Village." Once the students have selected a pathway (architecture, construction, or engineering), they choose teams to design virtual houses in the village. Architecture students design a multi-use building while learning the basics of Autodesk REVIT and the design process; construction takes the plans to build balsa models and learn the systems in a house, and

engineering students design the roof trusses and floor joists for the building. Through this process, Doug Mella, the math resource will incorporate a lesson about determining the slope of a roof truss. I'm the English resource, and I will incorporate a lesson on writing a site description in a technical voice. Our senior curriculum is also project-based. Seniors spend half their time learning about their pathway choice and the other half on their capstone, or senior project. The capstone is an intensive process of planning through writing and researching of the proposal. After approval, the student will begin implementing the project and compiling information in a research report. Finally, students will present their projects in a multimedia presentation and a portfolio. I've been so impressed with our seniors' dedication to their projects. Through them, I've learned about school building codes, LEED and green building specifications, fine wood-working, project management, metal fabrication, and industrial engineering, just to name a few! We expose all juniors to architecture, construction, and engineering, through hands-on projects, which gives them experience to create their own projects as seniors.

A third feature of ACE Academy is proficiency-based grading. One of our first tasks as teachers was to group our disciplines into standards and competencies. So for me, I looked at Oregon's eight major English standards, and grouped indicators that would allow students to demonstrate those skills and prove that they were competent in English. Once we decide on a project or assignment, we decide which skills are best displayed in that way. Some of my English projects have five scores, because I'm grading on 5 different skills. As juniors, each student writes a career report on the pathway of his or her choice, and I will assign competencies that I will grade the student on such as 1.7, which relates to the writing process: "Correctly cite sources." In class, I will teach them about citing sources in APA format, and explain this is a skill that they will be graded on. How many times have students (myself included) received a lower grade on an English paper because words were misspelled or commas were in the wrong place, yet we put so much thought and effort into the content of the paper? It's hard to remember every single rule every single time, but if we break up the skills and be clear about the requirements, students have a better understanding of how to improve. Who wants to correct a paper that looks like it's been mutilated with a red pen? Proficiency-based grading means giving credit when a skill has been demonstrated. If the skill hasn't been demonstrated sufficiently, then a score of "incomplete" will be assigned to that standard. The student hasn't failed; he just hasn't shown that he understands the skill. When we assign "I's", we explain exactly what's missing, so there's no mystery. This is the best success at revising and showing proficiency on assignments that I've experienced. My former students would just throw the paper in the trash and accept the "F." This does mean the teachers have to grade one assignment 2, 3, or 4 times, but I think it's worth it because it benefits the student.

The final aspect of ACE that makes our school work is the integrated learning. As I've noted, one assignment could be related to a number of different disciplines. But we've tried to take integration one step further, by focusing on a special class called "Work Place Skills." All our partners (International Brotherhood of Electrical Workers (IBEW); Northwest College of Construction (NWCC); Pacific Northwest Carpenters Institute (PNCI); and the HVAC and Metals Institute) have stressed the importance of good work place skills to be successful in the work force. Let's go back to that English paper: let's pretend it has few red marks on it, but was turned in late. It would be dropped a letter

grade or something to that effect, right? At ACE, the student earns the English credit he deserves, but earns no credit in his WPS grade, because he hasn't demonstrated timeliness in his work. When we go to work, we have to have skills in many disciplines to be successful at our jobs: we have to integrate writing and communicating with making spreadsheets and analyzing data AND doing it all on time and in a professional manner. ACE seeks to parallel the working environment, and we want our students to move to the front of the line.

All ACE's adjustments to mainstream education have been attempted before; they just haven't been done simultaneously. A good way to visualize this challenge is to understand that there is no grading program out there to accommodate our needs. We don't have discrete classes, broken up by math, science, English, and we don't give singular grades for a singular assignments. The career report gets a grade for English, Introduction to the Design Build Industry, and for Work Place skills. That means three different teachers assess the one assignment. While we've found a way to accommodate our needs through a program called "TeacherEase," we still must come up with a final "score" to transfer to the students' home high schools. In addition to experimenting with traditional education, the teachers at ACE also wear the hats of schedulers, lunch assistants, special education providers, curriculum developers, recruiters, counselors and janitors. I won't even go into the details of how we schedule students who come all day on A or B days, students who come every day in the morning, and student who come every day in the afternoon. We wear all these hats and accommodate the different schedules, because we believe in what we're doing here at ACE Academy. So, as we reinvent the wheel, I just keep in mind that, "Rome wasn't built in a day."