THE BROAD DIMENSION
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In this Edition:

Jobs and Education
Geoff Canham, Editor

Jobs has certainly been the big headline recently. But as influential as Steve Jobs has been, in this instance we are talking about jobs in connection with unemployment.

In October the unemployment rate dropped to 9% from 9.1% where it had been for a few months, but that still left 13.9 million unemployed, with 5.9 million classed as long-term unemployed (which is defined as having been looking for work for at least six months). Construction employment declined by 20,000 in October, largely offsetting an increase of 27,000 in September, but at least things are slowly moving in the right direction over all. In September 2011 the unemployment rate for the construction industry was at 13.5%, compared with 17.2% twelve months previously. That slight improvement in construction industry figures also reflects in our bid index.

Bid Index
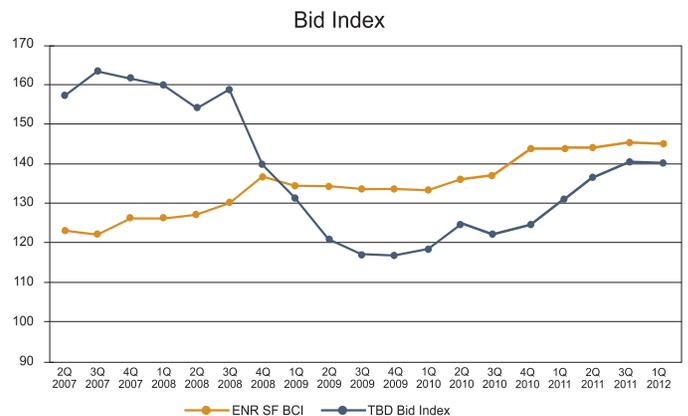
But getting back to national employment/unemployment, the JOLTS program (Job Opportunities and Labor Turnover Survey) of the Bureau of Labor Statistics lists 3.056 million unfilled non-farm job openings. If those unfilled positions could be filled by the unemployed, it would bring the unemployment rate down to almost 7%. So what is stopping that happening?

To some extent it could be that the jobs and the potential employees are simply in different locations, but generally potential employers state that they cannot find people with the required qualifications. It has been suggested by

some that this lack of skilled labor results from societal pressure on students to go to a university in preference to attending a technical school. But whether it comes down to a lack of education or too much of the wrong education, it still comes down to education. We are also seeing many positions, such as meter readers, being made obsolete as technological advances render them unnecessary. That results in a need for retraining for the displaced staff, again coming back to the need for education.

Yet educational has been a sector that has suffered more than many during the recession. Each year we hear of teachers receiving pink slips as school districts are uncertain what funding they will get. Cutbacks and layoffs in education are not the same as in industry, where the layoffs result from a lack of need for the services. The same number of children will still be going to the schools looking for education even if the teaching staff has been reduced, so the result is larger class size, and less personal attention for students, which can easily result in a poor learning environment that puts the students off learning at a time when education is becoming even more essential than it had been. We are also seeing the cancellation of many sports and other non-core courses, and it is often these courses that help make school interesting for the students.

The changes that society has gone through as a result of technological innovation are not likely to abate any time soon. Based on a fairly limited study it is often stated that today people change jobs ten to fifteen times (with an average of 11 job changes) during their career. That might depend on your definition of what constitutes a 'job change', but whatever the true average is, as technology keeps developing it is expected to rise rather than fall.

Again that is going to require more education for retraining, and the term life-long-learning is becoming common.

All this leads to the conclusion that we really need schools that have the buildings, staff and environment to make education interesting and exciting for the students, and something they will want to continue with. We are seeing some hopeful movement in that direction, as discussed in the other articles in this newsletter.

We can just hope that the recovery from the Great Recession picks up pace and lets us move ahead with these goals fast enough to help the upcoming generation.

High Efficiency Schools

High efficiency schools are schools that use green building techniques to improve the learning experience for students and the working conditions for staff, improve energy efficiency to save money and to have less adverse impact on the local area, and demonstrate good stewardship of the environment.

Studies have shown that improving the indoor environment can have a marked effect on students' scores, with improvement of 26% being seen for reading scores, and 20% for math. BCA Architects, San Jose, CA, presented information related to Christopher High School (above), the new, second high school in Gilroy, showing that API (Academic Performance Index) scores went up by around 7.5% overall for the new school compared to the older Gilroy High School where the students and teachers had transferred from. Also, Downer Elementary (next page),

San Pablo, was a tear down and replace project, and that resulted in API scores rising by 4.5% after the new school was completed. Energy savings and improvements in water usage of 33% have been shown to be easily achievable for green schools.

So we can see that real advantages stem from using green building techniques for schools, but don't they cost more? It is certainly true that going green will usually add something to the initial costs of construction, especially if the school is pursuing a certification to prove its green building commitment. However, that cost premium is very small, usually in the range of 0% to 2% of the initial construction cost. But the cost of any building does not stop at the initial construction costs. When you look at the savings that accrue over the life of the building, taking into account energy savings, lower maintenance costs, and other benefits, the payback time can be counted in a handful of years. A study in a Capital E Report by Gregory Kats, from October 2006, looked at 30 school buildings and assessed the premium cost of building green to average out at about $3.00/SF, while the accumulated savings and benefits over the life of the schools averaged out at about $70.00/SF. A report by McGraw Hill showed benefits of building green included decreased operating costs, increased building value, improved ROI, increased occupancy, and rent rises, although not all of those benefits apply necessarily to schools.

So, you have decided to be sensitive to the environment with your school building program, and you want a nice shiny plaque to let everyone know you are building green. But then you find you have a decision to make, because there are two certification courses available: LEED for Schools and CHPS (Collaboration for High Performance Schools).

CHPS was the first of these green certification systems for school, starting in California in 1999, with the aim of addressing energy efficiency in schools. CHPS has since spread, and there are now CHPS certifications available in 11 states (California, Colorado, Connecticut, Maine, Massachusetts, New York, Rhode Island, Texas, Vermont, Virginia and Washington) with Hawaii expected to join them around the time this newsletter is published. In that way, the CHPS certification has been tailored for local conditions. CHPS focuses on Sustainable Sites, Water, Energy, Materials, Indoor Environmental Quality, and Policy & Operations, and has 11 prerequisites and 85 available credits. To be CHPS verified you must meet all the prerequisites plus 32 credits, but you do not get any special recognition for getting more credits than that. Some documentation requirements are considered to be more stringent than with LEED, but certification costs are less.

LEED for Schools was introduced in 2007 (revised in 2009), and is based on the basic LEED for new construction and major renovation, with 10 prerequisites and 110 available points. There are four grades that can be achieved: Certified for achieving 40 to 49 points, Silver for 50 to 59 points, Gold for 60 to 79, and Platinum for 80 or above. The categories covered are similar to those for CHPS, except that there is nothing for Policy & Operations. There is a category for Innovation & Design Process and it has a Regional Priority category for region-specific issues.

The issues addressed by both systems are similar, but of course there are differences. For instance, CHPS has a prerequisite about using the sustainable elements for educational purposes whereas it is an optional innovation credit in LEED.

So, which one should you choose? In many cases it is a matter of personal choice, but if your school happened to be outside the U.S. then you might choose LEED for Schools because it includes Alternative Compliance Paths for such projects.

But sometimes the choice is made by the pocket book. For instance, California Proposition 1D (HPS – High Performance Schools) established a method by which school districts could obtain additional funding by building green, and that system uses CHPS. Actually it uses 10 of the CHPS prerequisites and 75 CHPS credits for new construction (77 credits for major modernizations and additions). The category of Policy & Operations is not used, and there are some special requirements about

energy points. A sliding scale, based on the number of points achieved, will let a school district obtain between 2% and 9% in additional matching funds over and above the basic grant.

Whatever rating system is chosen (or even if no certification is looked for) the goal should be to provide a better, healthier, learning environment that minimizes energy use and protects the environment.

Virtual Classrooms

If you have ever taken part in an online meeting, or used some form of remote access to connect to your office or home computer, then you have used some of the technology that helps make virtual classrooms possible. If you work in a hospital or some other environment where staff has to abide by strict compliance laws, then you will very likely have taken part in a virtual classroom, because that is a popular way of serving up refresher courses on compliance and other subjects.
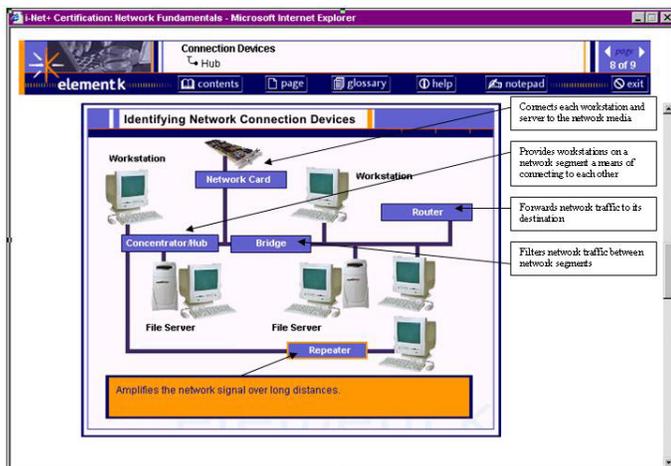
Virtual, or online, classrooms make use of that very popular medium – the Internet. Just watch the number of people pecking away at their smartphones and tablets as you commute on the metro line, and you can see how easy it can be to use that medium to serve a very wide portion of the population. The system can also let students work at their own pace, so students do not have to feel left behind, or end up being frustrated by being slowed down.

Virtual classrooms can provide more than just the courses themselves, with real-time communication, chat rooms, breakout rooms, and other facilities often being made available. Virtual classrooms build on the history of distance education and correspondence courses by providing a more immediate solution and adding the ability to have interaction with lecturers and other students. That interaction may not always be instantaneous, but it is far quicker than waiting for the mail.

The use of virtual classrooms does not have to be separate from traditional teaching institutions. One idea that has been tried in schools is effectively reversing the normal classwork/homework sequence by making the lectures and reading material available online for students to study outside of school, and then to do the practical work (that traditionally would be 'homework') in class where the teacher is available to assist and encourage. Also, universities sometimes make lectures available online as video and/or audio presentations, so students can view or listen to them at any time, replay sections if necessary, or pause them to research an interesting point.

In the physical classroom a related technology, virtual desktop, can also be used. This allows cheaper so-called dumb-terminals being used by students instead of more expensive PCs. The terminals do not have hard drives nor do they require normal operating systems or software to be installed directly on them. Instead, they work over the network utilizing software on the central server, where there is the added advantage of closer control over virus protection, etc. So this saves on the initial cost of the computer/terminal itself, and also gives savings in relation to the ongoing maintenance costs by IT staff.

The technology of virtual classrooms also allows educators to reach out to students who would be otherwise inaccessible, and bring students and lectures together from around the world. For instance, an online university, The University of the People, provides courses free of tuition that are available to anyone around the world who has an Internet connection.

At the Techonomy 2010 conference at Lake Tahoe, CA, Bill Gates voiced the opinion that in five years the best lectures in the world will be available on the Web for free. Now we need to encourage the upcoming generation to be interested in availing themselves of these resources that are even now becoming available.