New Jersey Institute of Technology Center for Building Knowledge

Multimedia Education Platform and Pilot Course Report

(Subtask 4.1.4)

10 February 2012

Original Purpose of Subtask

The original purpose of this subtask was to identify "...material and a delivery format suitable for a multimedia documentary on the technology, tools and processes under consideration for inclusion in the 661 retrofit."

Because the Building 661 Retrofit process focused primarily on pre-design activities during Year 1, there was relatively little "material" developed over the period, especially material that would showcase "the design strategies, technologies, construction techniques, operational systems and team management dynamics" that were originally proposed as the focus of the effort. As a consequence, NJIT turned its attention to the "delivery format" aspect of the project rather than the "material identification" aspect, simply because not much material was actually created over Year 1.

Revised Subtask Focus

As originally proposed, one goal of the project was to eventually "...create a multi-media, online teaching tool out of the planned retrofit of Building 661 into the new home for the HUB." As Year 1 progressed it became clear that such a teaching tool could be a key "delivery format" for information on Building 661 and, more expansively, for information generated by and/or for the Hub as a whole. As a consequence, NJIT CBK focused its efforts on exploring whether and how GPIC might create such an online tool as an educational platform for the Hub.

Subtask Activities

The first step in the process was to review potential sources of content for the platform. Building 661 was an obvious choice but, as noted above, material suitable for an educational offering had not been developed over the course of Year 1. A potential exception was Project Fishbowl, established under the auspices of PennDesign to observe and analyze "... the planning, design, and construction process of the "building 661+" retrofit,..." in order to "...draw conclusions from this specific retrofit case that can be applied generally to retrofit scenarios in the region." The findings from an interim report on Project Fishbowl, submitted in July 2011, contained a series of findings concerning the process (to date as of July) of implementing the 661 retrofit, but NJIT CBK considered them too preliminary for an educational offering. However, it is anticipated that Project Fishbowl will become a rich source of educational content as it - and the Building 661 retrofit - progress over time.

A second potential source was results from ongoing research in GPIC's five core tasks:

- Integrated Modeling and Design
- Integrated Technologies and Systems
- Policy, Markets and Behavior
- Education and Workforce Development
- Demonstration and Deployment

All of these tasks can and will be rich sources of educational content over time but they, like Building 661, were only establishing themselves and gathering momentum in Year 1. They were not producing the types of outputs that could be translated into educational offerings and, while they are expected to become significant educational "content engines" as GPIC matures over the next four years (and beyond), these engines were only warming up in Year 1.

Fortunately, a new GPIC activity was initiated during the second quarter of Year 1: a workshop/conference series tied to the Education and Workforce Development task, but initially implemented as part of GPIC's Public and Client Relations activities. Two workshops and one conference were developed and convened over the course of Year 1:

Workshop 1 Financing and Incentives for Energy Related Building Retrofits

Held on May 10, 2011, this workshop featured regional experts who discussed how to access loans and grants from the EnergyWorks Green Energy Loan Fund (PA) and the New Jersey SmartStart Buildings program, as well as lease financing and performance contracting models and ways to minimize first costs with proper project design.

Workshop 2 Energy Efficiency Opportunities for Commercial Office Tenants

Held on June 14, 2010, this workshop brought together national experts and key stakeholders in the commercial office building industry from the greater Philadelphia region to discuss how tenants can save energy in their leased office space.

Conference 1 Educator's Conference for Subject Matter Experts and Leaders

Held on October 20, 2011 this conference brought together more than 60 educators and industry representatives to forge connections, discuss the state of the energy efficient building industry is today, what role educational institutions can play to help drive the market, and how to bridge the transition. The meeting was intended to begin discussions among regional educators, GPIC, and business leaders around the goals of GPIC. The conference report summarizes the presentations and discussions made during the event.

NJIT CBK developed and convened Workshop 2 with the express intent of not only conducting a timely and engaging GPIC event at the Navy Yard, but also creating an educational offering based on the content conveyed during the event. The goal was to analyze and test how this workshop – and similar events in the future - could be captured and "translated" into an online learning experience that was credible, compelling and replicable.

The workshop took place on June 14, 2010 in Building 100 at the Navy Yard. Over 80 attendees participated, including representatives from: property development and management companies; financial institutions; utilities; product manufacturers; architecture and engineering firms; green consulting companies; and others.







The workshop included four presenters:

- Doug Baston, North Atlantic Energy Partners (program management);
- Frank Gundal, NSTAR (utility perspective);
- Amy Renbarger, New Buildings Institute (Office of the Future program); and
- Yerica Mujica, Natural Resources Defense Council (policy).

And a panel of respondents:

- Williams Agate, Philadelphia Industrial Development Corporation (developer's perspective);
- Brian Cohen, Liberty Property Trust (property management perspective); and
- Alan Hoffmann, VITETTA (tenant's perspective).



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The presentations and subsequent discussion between the presenters and the respondents were both lively and informative, and sparked an energetic dialogue with the audience. The workshop was filmed and recorded, both to create a record of the event and as a means to capture content that could be re-purposed into an online educational offering.

Initially, NJIT CBK planned to use the video footage, linked to the powerpoint presentations, as the instructional format. However, upon closer review of the filmed and recorded material, it became clear that the presenter/respondent discussions did not work well from an instructional design perspective. They worked well as "color commentary" in a live setting, but they would be less effective in a more formally structured course like the one envisioned. So NJIT CBK decided to focus on the presentations themselves - which were all well organized and informative - as the core content source.

Upon further review of these presentations, it became apparent that the visual component of the videos was clear and tracked the presenters well, but that there were two glitches with the voice component: it was occasionally synced incorrectly and the volume was often too low. Fortunately, NJIT CBK had made a second, voice-only recording of the presentations where the feed was more consistent and the sound of the voices was louder. Rather than trying to sync this recording to the original video — which was doable, but might not have improved much on the original - NJIT CBK decided to use the second recording as the basis for a "voiceover powerpoint" course, as distinct from the "video plus powerpoint" originally envisioned. This format is very versatile and forgiving and, as a consequence, is a very popular form of distance education.

Subtask Results

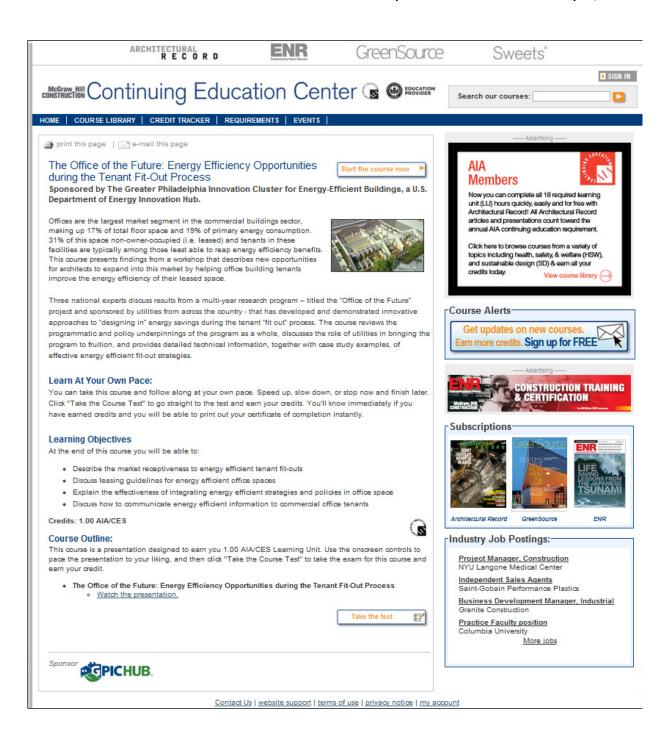
Based on these findings, NJIT CBK proceeded to sync the voice recording it had made at the event to the slides presented by the technical experts and, using a learning management system authoring tool, to transform it into a one-hour, SCORM-compliant online course, titled "The Office of the Future: Energy Efficiency Opportunities during the Tenant Fit-Out Process." NJIT CBK also developed a 10- question test to accompany the course (a requirement of many institutions – such as the American Institute of Architects – for the course to receive credit toward continuing membership and/or toward professional licensure).

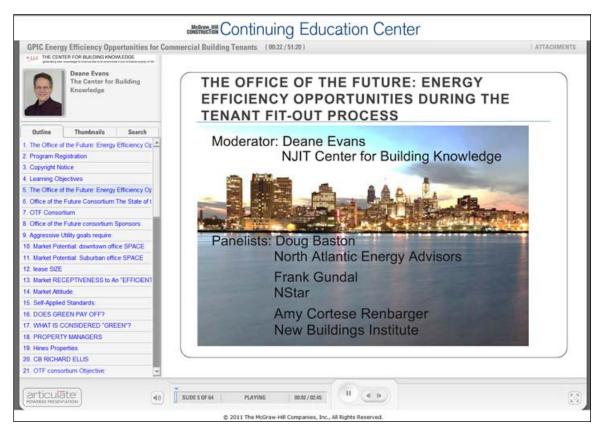
NJIT CBK has a longstanding relationship with McGraw Hill Construction, publishers of *Architectural Record* and *Engineering News Record* magazines, and the leading provider in the US of continuing education to architects. With their cooperation, NJIT CBK uploaded the course, including the test, to their Continuing Education Center, and it was launched to the public on December 6, 2011 – GPIC's first online course! The url for the course is:

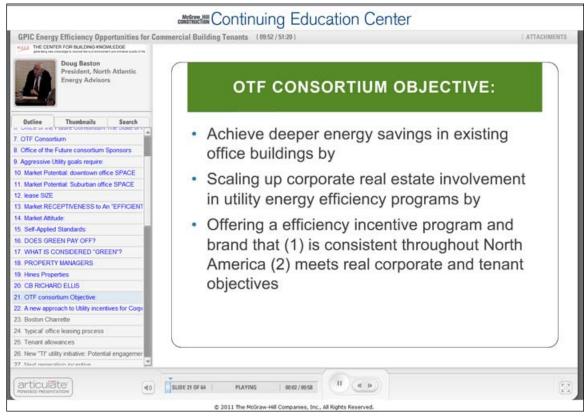
http://continuingeducation.construction.com/crs.php?L=273&C=843

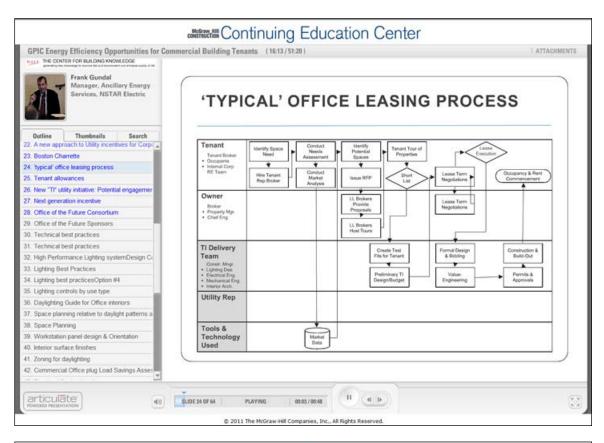
As of the writing of this report, the course had received 10,144 individual page views and a total of 284 individuals had taken the test and received credit for the course.

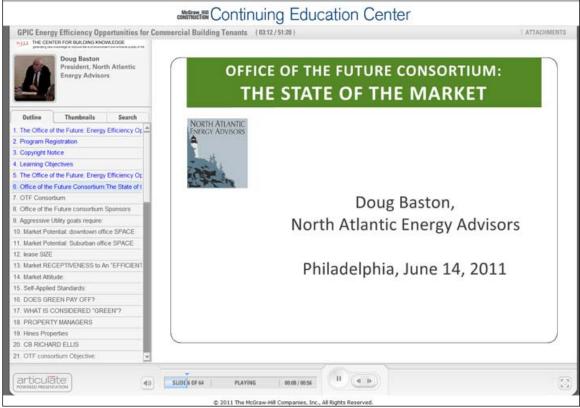
A series of representative screen shots from the course are provided below and on the following pages.

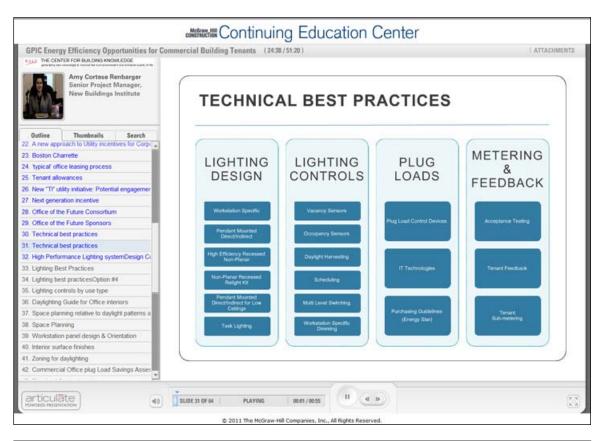


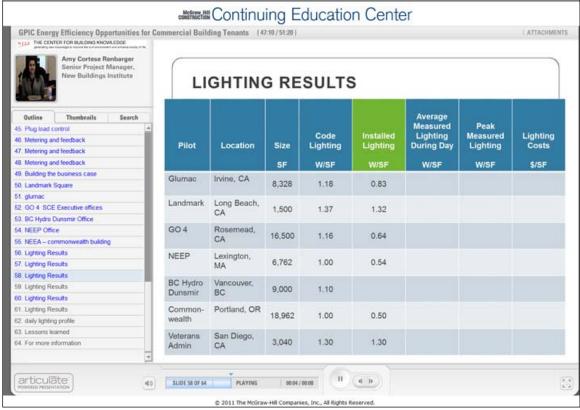


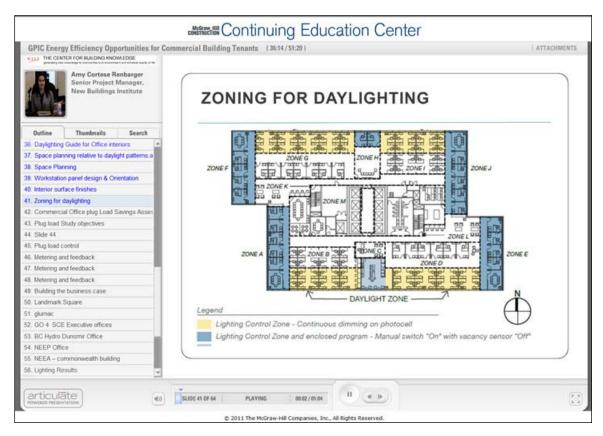


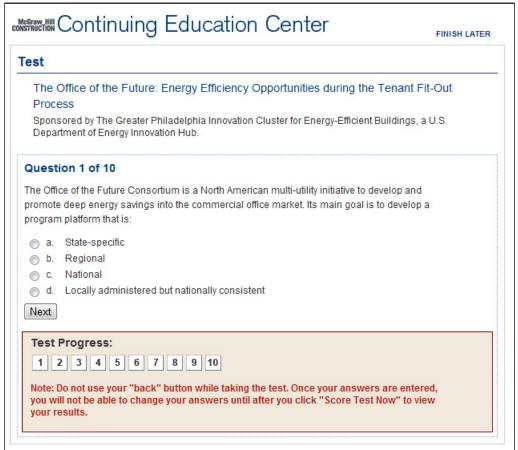












Conclusions and Recommendations

This project tested the feasibility of creating professional online training derived from GPIC work products – in this case, a technical workshop focused on a cutting-edge topic related to energy efficient commercial buildings. The test worked, and GPIC launched its first online course for building professionals in December 2011.

Going forward, the potential for replicating and expanding this process appears promising and could occur at any of the following three levels:

- Level One Present Results of GPIC Symposia and Workshops
 - GPIC could institute a practice of recording all its future workshops and symposia with the specific intent of turning them into online courses. GPIC staff already videotape these events, so the process of capturing the content is already well-understood. The key variation to current practice would be to manage the events with a clear focus on their eventual use for educational purposes including clear, consistent guidance to presenters on how to organize and present their information so that it can be effectively used for training. Clearly, not every event at the Navy Yard will be suitable for these purposes, but many will be and could, over time, constitute a rich body of online training coming from the Hub.
- Level Two Present Results of GPIC Research and Demonstration Products
 GPIC could encourage its members and partners to develop educational presentations on
 the results of their research and demonstration efforts. GPIC could then develop these
 presentations into online courses following the procedures used for the symposia and
 workshops. Deploying research results as education would be relatively novel but would
 also be entirely appropriate for an "innovation hub." This approach would require some
 standardization of presentation formats across teams and tasks, but this would not be
 especially onerous for the teams or GPIC staff.

Special Focus: Building 661

A core focus of Level Two activities would be the tools and procedures used to create – and the technologies and systems incorporated into – the Building 661 retrofit. It is anticipated that the design and construction process itself could be transformed into several online courses, drawing from the information captured through Project Fishbowl. In addition, an entire "Building 661 Curriculum" could be created around the innovative products and technologies used in the facility. A systems integration "theme" could be woven through all these courses, providing a unique learning experience not currently available in professional continuing education.

• Level Three – Present Educational Offerings from Outside GPIC

In this scenario, GPIC could serve as the national platform for relevant educational offerings from sources <u>outside</u> the Hub. GPIC would need to develop clear guidelines for those wishing to use the platform – both in terms of content and format – and would need to provide consistent review and oversight. In addition, GPIC would need to launch and administer these external courses for a period of time. While none of these activities are particularly difficult or costly, they do require ongoing attention and engagement by GPIC staff. It is therefore suggested that Level Three only be considered if and when GPIC determines that serving as the national platform for online professional education on energy efficient commercial building retrofits is core to its mission.

If GPIC chooses to move forward at any of these levels, it will need to establish its own online education platform – perhaps something like the GPIC Energy Efficient Commercial Building Retrofit Online Academy. While McGraw Hill Construction was pleased to support GPIC's first offering, based on its longstanding relations with NJIT CBK staff, it will not be willing to do so on an ongoing basis. Creating such an online academy, with an embedded learning management system, should be a relatively straightforward proposition for one or more of GPIC's university partners, who are well-acquainted with distance education systems and technologies. GPIC will also need to register as an authorized provider of professional education with one or more professional accrediting bodies (for example, the American Institute of Architects), but this is also a straightforward and inexpensive process.

The resulting academy could establish GPIC as a – if not <u>the</u> - trusted source of professional training on a topic that will be new to many architects and engineers: energy efficient commercial building retrofits. Such a position seems entirely in keeping with GPIC's mission and objectives and would directly complement the GPIC's ongoing workforce education activities.