

## **Strategic Planning for a New Building Created a New Learning Environment**

**Richard N. Stewart**

**Associate Professor, Communications and Parish Administration  
The Lutheran Theological Seminary at Philadelphia  
Director of Distance Education – Eastern Cluster of Lutheran Seminaries  
Philadelphia, PA 19119  
215-248-6378  
[rstewart@ltsp.edu](mailto:rstewart@ltsp.edu)**

**John Kahler**

**Director of Communications  
The Lutheran Theological Seminary at Philadelphia  
Philadelphia, PA 19119  
215-248-6397  
[jkahler@ltsp.edu](mailto:jkahler@ltsp.edu)**

### **Abstract**

A reflective presentation of a small school's advance to a new learning environment. This school of 500 students has taken a strategic grant and turned it into a strategic plan for educational enhancement for a school that had never had an official classroom building. The plan included the planning, construction, equipping, and implementing the technological infrastructure of a new classroom building. The plan also included the building of awareness and opportunities for experimentation, in the classroom presentations of the faculty prior to the building coming on line. Once the building was on line, the challenge was to facilitate a reasonably smooth transition from 7 classrooms scattered in 4 buildings, into teaching in a fully accessible learning environment, with 9 classrooms, 7 seminar rooms and a 300 seat auditorium that can be subdivided into three classrooms or opened up into a banquet room for 200. The presentation is a logical follow-up on the 2003 ASCUE presentation by Prof. Richard Stewart of "On-Time Grants for On-Time Technology in the Classroom".

### **Background**

The Lutheran Theological Seminary at Philadelphia is one of eight seminaries of the Evangelical Lutheran Church in America whose mission is to teach and prepare professional and lay leaders for the church. The church has divided these eight seminaries into three clusters: The Western Mission Cluster [Pacific Lutheran Theological Seminary - Berkeley, and Luther Seminary - St. Paul]; Covenant Cluster [Wartburg Lutheran Seminary - Dubuque, Lutheran School of Theology at Chicago, Trinity Lutheran Seminary – Columbus]; and the Eastern Cluster of Lutheran Seminaries [Lutheran Theological Southern Seminary – Columbia, SC, Lutheran Theological Seminary at Gettysburg, and The Lutheran Theological Seminary at Philadelphia].

In 1994, Prof. Stewart presented a paper at ASCUE, which highlighted the historical process by which The Lutheran Theological Seminary at Philadelphia [LTSP] became computerized, "Computerizing on a Shoe String: With Lots of Prayer." The fact that the Business Office was

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the last office computerized was the central point of the presentation. With intense discussion computerization started with the administrative offices that needed database support.

In 2003, “On-Time Grants for On-Time Technology in the Classroom” highlighted the receipt and use of four grants to facilitate the use of technology on the seminary campus. The first grant in 1999 was a planning grant from the Lilly Endowment for “Informational Technology for Theological Teaching Project.” The planning grant produced a proposal that garnered a \$300,000 implementation grant from Lilly Endowment in 2000. The grant facilitated the introduction of Blackboard as LTSP’s course management platform, the addition of two staff members in educational technology and help desk positions, and the training of faculty to use the new elements of technology that were placed in a faculty development laboratory. With the availability of staff assistance and faculty development grants, there was one hundred percent participation by faculty in the use of technology in enhanced classrooms by the end of the three year grant.

The Luce Foundation in 2001 funded the research and the planning to implement a cluster project to have “One Library in Three Locations.” The online catalogue listing the holdings of all three institutions and sharing of resources has fostered some savings in the library expenses and targeted the acquisitions and reduced the duplication. In 2002, the fourth grant came from the Teagle Foundation to explore the “Modeling a Seminary System in Multiple Locations.” Administrative functions were shared among the three seminaries located in Columbia, Gettysburg, and Philadelphia. The Dean of the Doctor of Ministry Program, the Director of Diaconal Ministry, the Director of the Lutheran Theological Center in Atlanta, Director of Distance Education, a Joint Appointment in Homiletics and Old Testament, and the Director of Continuing Education and Lay Theological Education were all positions that were supportive of programs of the Evangelical Lutheran Church in America or were shared among at least two of the institutions.

### **New Building**

Since 1995 the seminary administration spoke of the need for a classroom building. In 1998 a committee explored the possibility of reallocating the space that had been vacated in the original 1888 building that had been used as a dormitory. As a part of the Lilly Endowment planning grant, several staff members attended the University of Wisconsin Distance Education conference, and Prof. Stewart attended an auxiliary continuing education event sponsored by the U. Wisc. Engineering School on Classroom Design. A core learning from the event was to bring the technical engineers into the process at the beginning of the first designs of the architect. The Implementation grant included funds to support the initial contracting of a consulting educational technology design firm to assist in the design of the new classroom building.

In its first 135 plus years as a school, LTSP had never had a specific building for classrooms. Space has been carved out of the chapel, the administration building, the basements of dormitories, and the library. Yet at the start of the design development stage for this new building, grants already garnered had given the campus a technologically rich educational environment. The budget of \$15,000 covered the initial expenses of a technology consultant to work with the architect and the project manager. The first goal set by the LTSP Committee for Electronic Educational Development was that the campus technology planning team was to not have one change order related to technology. The second goal was to have a building that was flexible and capable of growing into a technologically rich yet unknown future.

## **Design**

Faculty were surveyed about their expectations for a new classroom building, and observed in their current teaching and learning settings. Having just expended three years in working with all of the faculty in the use of technology in pedagogical presentation, they were quite articulate in their expectations of what was now necessary for their classroom use. The survey produced the following results:

### **Elements Necessary for a Smart Classroom**

**Podium:** A Central Teaching Spot – This may or may not have an equipment rack included. This could easily be configured as a teaching table.

**Equipment Rack:** This equipment would house additional electronic equipment: ie. VCR, DVD, CD, Cassette Recorder, Computer, electronic Control equipment

**White Board:** Teaching Tool minimum 4' in small rooms and 6' in large spaces, these may be wall mounted and contain clips for holding flip charts.

**LCD Projectors:** Visual Display presenters for computer and video input, permanent ceiling mounts in large spaces and large classrooms, portable units available for Conference rooms and offices. Minimum 2500 Lumens.

**Plasma Panels:** Flat computer/video monitors with a minimum of 42 inches in width. Should be capable of displaying HDTV.

**Electric Screens:** Wall or ceiling mounted screens for viewing projected images. Not needed in rooms with Plasma Panels.

**Touch Screen Controllers:** Electronic controllers to permit one person use of all the electronics in a room from a single place. These are essentially small dedicated computers.

**Document Camera:** Teaching tool which facilitates visual display of papers, overheads, hard items of a small nature. Can be used with writing tools.

**VCR Playback:** S-VHS playback for video presentation

**DVD/CD Playback:** DVD video and audio and CD audio playback equipment.

**Audio recording:** Cassette recording equipment for recording of lectures for easy distribution to students.

**Program Audio:** Microphone [wireless] for projecting teaching voice and other electronic audio input. Front mounted speakers included.

**Audio Enhancement:** Ceiling mounted speakers for enhancing audio input for large classrooms and meeting spaces. Tied to this equipment would be equipment for ADA speech enhancement. [Personal PA]

**Dedicated Computer:** A computer installed in each teaching location

**Laptop Interface:** Electronic connection for laptop use with installed equipment in a teaching location.

**Variable Lighting:** Dimmable lighting

**Screens/Blinds:** Window treatments to assist in limiting light infiltration in a teaching environment.

**Power ports:** Electric outlets for both presenters and students in every room.

**Data ports:** LAN Local Area Network connections for each teaching space for both presenter and for students. May be used for wireless access ports.

**CATV ports:** Access to Campus Cable system for each room.

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These kinds of expectations could not have been formulated without the educational advantage that was offered by the Lilly Endowment grant. The faculty, even those who considered themselves to not be media sensitive, had developed a threshold of knowledge that had significantly grown. With this information in the hands of both the architect and the technology consultant, the placement of doors and windows, room pillars, noise generating building infrastructure became a part of the discussion of design elements for a building that was more than just a large box divided into smaller boxes. Wiring closets and wiring races/runs were designed into the initial blueprints, rather than being added after the fact and being carved from previously allocated space.

An important consideration in the planning phase was the recognition that the economics of the seminary would not allow for the level of staffing that could be necessary to operate a state of the technology art building days, nights and weekends unless the basic functions were easy to operate and the technology could be used with basic training. The ability to monitor and manage the technology plant had to be as automated as possible and as accessible to support staff as possible, a concept that was relatively new, yet quickly developing.

The institution wanted to maintain some of the technological capability that it had already acquired, such as video conferencing. Administrative requests, financial constraints, technology team dreams, and best practices identified by the team from other institutions and presentation experience were incorporated into the design elements offered by the technology consultant who offered the following **Scope of Work**:

**Room Darkening for Audio-visual:** Concerns were expressed about afternoon sun; blackout shades were deemed undesirable.

**Teleconferencing:** Capability will be provided on the Third Floor in five different locations: (2) medium classrooms; (1) in the Heineken Room; (1) Board Room; (1) Auditorium Reception Hall.

**Teleconferencing Equipment:** Only the medium classroom has fixed equipment. The remaining spaces will be wired so cameras can be plugged in. The Cameras will be pulled from a pool of equipment.

**Seminar Rooms:** Seminar Rooms will have electronic screens. Other equipment (notably portable projectors) will be pulled from a pool.

**Teaching Labs:** Will have fixed projectors and electronic screens.

**Technology Costs:** Most of the Technology cost is centered in the Third floor spaces. The Control Room alone constitutes approx. \$250,000 of the budget.

**LTSP Power Access Concern:** Faculty has a concern regarding access to power for laptop plug-ins. This has been a problem when the rooms are set up for seminar format, with 35+ students wishing to plug in laptop computers. Power needs to be provided in a grid configuration where 75% of the students are within a few feet of a receptacle in the Teaching labs and medium classrooms.

**Instructional Needs:** Each classroom needs a table with podium set up for electronic control.

**Technology Table:** A rolling technology table with mounted podium will be provided in each classroom. The faculty is concerned that the technology and furniture work together.

**Laptop Campus:** LTSP may become a laptop campus—though this decision had not yet been made. This would eliminate the need for a computer in each classroom.

**Pulpits:** A rolling pulpit must be provided in each medium-sized classroom with a wireless mike and remote Power point capability.

**Carpeting:** Carpet wear is a concern with flexible-seating rooms. The budget assumes vinyl composition tile (VCT) in the teaching labs.

**Lighting Type:** The faculty representatives noted that LTSP classrooms presently tend to be on the dark side. The new lighting would consist of 4x8 fluorescent fixtures with eggcrate lenses. Special at-

tention would be paid to zoning of the lights to provide partial fixture blackout in each room. Fluorescent dimming in the classrooms was currently not anticipated.

**Lighting Dimming:** Fluorescent dimming will be provided in some limited areas. Incandescent lighting will be provided in the control room. Consistent ambient lighting will be the primary goal of the designers.

**Computer Lab:** Graduate students want a computer and printer available to them in one room for occasional use. This could be accomplished through a minimal size printing kiosk with network hookup.

**Wireless Network within classrooms.** LTSP may want to shift to a wireless system for classroom access, similar to one installed at St. Mary's College in Frederick, MD.

**Fixed Computers vs. Wireless laptops:** The present Technology budget includes an allowance of \$2000 per classroom for a fixed computer, and (17) fixed computers in the lab. Wireless hardware is not currently in the budget, but the amount budgeted for fixed equipment could be substituted for wireless hardware.

**Reception Hall:** The reception hall has 14-15' high ceilings, and can be subdivided into three (3) classrooms each capable of accommodating 64 students. The Hall will contain movable whiteboards in each of the three spaces. The middle classroom will have a fixed projector and screen, but no podium. One end classroom will have a roll-down screen on the end wall. Two portable podiums will be provided for this space.

**Clocks:** The faculty requested that clocks be installed in the rear of each teaching room.

**Raised Platforms:** Two raised platforms for use in classrooms will be provided and moved from classroom to classroom as needed by individual instructors. Raised platform segments will be required for use in the Reception Hall for large events.

**Reception Hall mechanical shades.** These are an option. Architects will examine the need.

**PBX jacks:** The current proposal includes a quantity of 150 PBX jacks.

**Library Cataloguing:** It was suggested that a consultant may be necessary to review the library cataloguing system and propose upgrades/alternatives to accommodate the archives and new spaces.

**Mailroom/Breezeway:** The layout of the mailroom and breezeway spaces will be discussed at a separate meeting involving staff. Security regarding all of the new spaces may require a separate meeting

## **Wireless**

With the Lilly Endowment grant, one of the cutting edge elements the implementation was using wireless technology to reach periphery campus buildings, most on the far corners of the campus, without the laying of cables. The wireless umbrella over the fourteen acre campus created an environment of high expectations from the students and the faculty who lived on the campus. Though a newer dormitory had wiring into the apartments, access points were requested for lounges and other living and recreational areas. Faculty housing and border apartments were connected to the network via distributed access points.

The questions about the need for connectivity in the new building were a construction issue as well. Office space and classrooms were wired for connectivity, but to maintain classroom flexibility, power was supplied to the desktop with each classroom offering wireless access for student use. Construction barriers were considered in the design of the wired and wireless networking of the building.

## **Laptop Campus**

We struggle almost each month in our meetings about the wisdom of requiring laptop computers for our students. We have researched the implications for accessibility of technology in diverse

populations. We have almost come to the conclusion that our part-time minority students may be more computer savvy than some of our more youthful day time students. Yet we worry about the implications of a firm final decision for our part-time students and the occasional auditing student.

### **Construction Issues**

Moving from concept to reality, especially with technology, requires a mix of flexibility, being informed about the latest and next generation products coming or expected to come to market, a certain amount of crystal ball gazing, and a constant review of the objectives the technology would be expected to meet and aligning the technology being incorporated into the facility to meet those objectives. During all phases of planning and construction, technology staff remained on top of advances in the industry, and were prepared to press and challenge the consultants to be sure that appropriate advances were incorporated into the design. Network-based controls and technology were beginning to become available from vendors, and the consultants were challenged to change their designs, and move beyond their comfort zone, to adopt state of the art technology that was increasingly becoming network-based. While this required a change in the way components would function, this also made the ultimate design more flexible and less expensive.

One challenge that was not directly related to technology but which would have effected the teaching/learning experience was a consequence of retaining part of the old while building a state of the art building. The architect creatively designed a building incorporating the façade of the old dormitory that provided a “face” for a modern building. The problem with this design was ceiling height in the classrooms. Dormitory rooms have much lower ceilings than those required for classrooms expected to seat 60 or more students and equipped with appropriate projection systems that would be visible to all in the room. This required some extensive and expensive revisions, but was essential to make the rooms comfortable and functional.

The decision to remove teaching/learning technology from the guaranteed maximum price (GMP) of the project was made for several reasons. Financing the building required a cost cap for the GMP that would have left too little for funding the technology, and LTSP realized that without the full complement of technology the usability of the teaching and learning spaces would suffer. This did benefit LTSP in that this also removed a significant amount (\$750,000) that would be subject to the contractor’s overhead markup, and would also allow us to finance technology over a term more appropriate for expendable equipment than for a building. Working with the consultants, this also allowed us to be in complete control of the selection of vendor. The disadvantage was that technology installation wasn’t directly tied to the construction schedule, and by the time funding was in place and contracts signed the construction was much further along, presenting challenges to the technology vendor. Indeed, while the building opened before the beginning of fall semester in September 2005, the technology contractor has had to work around a busy building and is just now completing the project.

While the project overall went smoothly, a significant omission had the technology team scrambling. Somewhere in the development of the project and the GMP, the network infrastructure had been missed. While the technology consultant had incorporated the network into its drawings and specifications, and provided details for costing and installation, the network was not included in the contractor’s final documents. After some discussion and wondering how anyone

miss the inclusion of a network infrastructure in the construction documents for a state of the art building, LTSP worked with already on site subcontractors to remedy this oversight, and the contractor agreed to handle daily management of this work.

With the target date of July 31, 2005 set for the general contractor to turn over the building at a stage of substantial completion, thus giving the seminary enough time to shake down the building, move in the furniture and get everything in place for fall semester, construction was begun and continued through almost two years. The AV contract was let in May of 2005, a mere four months before the beginning of classes, and faculty and students were expecting those state of the art classrooms to be available from day one. The technology team had agreed to do the day to day oversight of work by the technology contractor, and would call on the consultant only when needed. This allowed the process to continue at a pace that resulted in functional spaces from day one, and completion and implementation of some of the “bells and whistles” that were in the design as time allowed and users were ready to use some of the advanced elements.

### **Training Issues**

As previously noted, the technology was designed to meet the needs and desires determined by the pre-design survey of faculty and other users, with an emphasis on ease of use while requiring minimal day to day support staff and holding down costs. Several assumptions that were built into the design assisted in the training and successful use of the technology:

As part of the regular replacement cycle, all faculty members were being supplied with laptop computers as their primary personal computer, and they would use these in the classroom for Web access, presentation and other uses. Many were already using their computers this way, even without properly equipped classrooms.

The Blackboard course management system would be used by most if not all courses to some extent, and all faculty would be trained in the use of Blackboard.

The technology in all equipped classrooms would be consistent from room to room, with special use equipment in rooms equipped for video and audio conferencing added to the same standard configuration. Thus, an instructor could walk into any equipped classroom and be instantly familiar with the equipment and operation interface for that room’s equipment.

We learned from the surveys and observation that the teaching environment preferred by seminary faculty was more flexible and less structured than traditional higher education classrooms with a desk for the teacher up front. Some would use a tabletop podium and stand during lectures, others would rearrange the space and sit at a table either facing or joining the students. Many were using their laptop computers, some to the extent where it was the only tool they used for their notes, presentations and support. In the only room equipped with a formal podium, the Wiedemann videoconferencing room, faculty would often pull up a table and chair facing the class, much like they did in the other classrooms.

Given these assumptions, several elements were incorporated into user design:

Since faculty were using laptop computers as part of their set of teaching tools, they were essentially carrying a control panel with them at all times. Classroom control would therefore be Web based, with a few touch panels available for outside users or when a laptop was not available.

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This saved us several thousand dollars on each classroom. The biggest problem we have had with this decision is that the interface launches a new browser window, and faculty need to have any pop-up blockers turned off to access the classroom technology.

Installed equipment would be mounted in accessible racks near the front of each room, but away from “prime” space. There would be no fixed electronic podium, desk, instructor’s station or other location that would be a part of the classroom furniture, allowing any classroom to be re-configured as needed to support the teaching style of the instructor and instructional design of the class. This also saved a substantial amount of money by eliminating custom furniture and installation that, in the experience of one of the authors at least, often proved to be inflexible, frustrating and, sometimes, was in the end abandoned.

Like the physical equipment in the rooms, the Web and portable control panel interfaces were designed to be the same for each classroom, and also designed to be task oriented (want to play a DVD? Press the DVD button. Want to use your laptop? Plug into the Laptop input in the floor and press the Laptop button, etc.) with controls designed to be simple, clear and uncluttered. Higher level tech controls are accessible through a tech interface. The machines and interface would look the same and work the same for each classroom. A server based, networked management system is in its final installation stages, and will allow tech support to monitor and control each component in each room, virtually anywhere the Internet is accessible.

We used Blackboard to manage access to the interface and controls for each classroom. By placing the control interface for each classroom into the individual course area in Blackboard, faculty would only need to log into their course (which many of them were already doing anyway) and then click the classroom control link to access the correct classroom control panel. No separate logins, no having to remember which room your teaching in - this is already placed in each Blackboard course site and ready to use.

To keep the cost for replacement components to a minimum, we assign a 15-pin male-male cable to each instructor, which they are encouraged to keep with their laptop and bring to class whenever they, or their students, are using projection as part of a class. This has been successful in keeping replacement cost from lost or stolen pieces to a minimum, and insures that there will always be the proper cable in the room, as long as the instructor keeps the cable with their laptop when not in use. It’s a simple solution that works well.

Training for users is a combination of small group orientation and individual training. All faculty members planning to use technology are invited to orientation sessions at the beginning of the semester, and have been joined by each new group of students in our Th.D. program, many of whom will be acting as teaching assistants and teaching classes during their time at LTSP. A more extensive session touching on both pedagogy and practical use of the technology is presented to each incoming Th.D. cohort, and also offered to incoming faculty, including part time and adjunct. Individual users, including students, are taught the basics by the help desk support technician when needed.

### **Successes and Concerns**

Faculty and students have embraced the use of technology, facilitated by the state of the art design of the technology in The Brossman Center, and regularly, where appropriate, incorporate it

into their teaching and learning. The objective of a simple to use design, friendly to users and requiring a minimum amount of day to day assistance from support staff has proven to be successful. Visiting and adjunct faculty, including those from other institutions known for being “high tech,” quickly learn how to use the technology and easily incorporate it into their teaching and learning. This allows technology staff to attend to other needs where their skills are better utilized.

As faculty and students have “lived into” the new space and technology, they dream of new ways to use technology, and over the next year we will introduce some of the “hidden” components, such as course recording equipment, that will expand the tools available. This was intentional, in part to allow bugs to be worked out, and in part to keep the support staff from being too overloaded. There may still be a significant challenge if faculty embrace additional capabilities before staff is able to meet demand for training and support for what will be higher level technologies and applications.

While a number of students have voiced “concern” over the cost of education in an extravagant new building, these same voices have no memory of what the teaching spaces were before the rather radical and significant changes that took place in a relatively short period of time, ten years. The changes that have been implemented will need some updating, but there will not be wholesale changes for the future. And if there are changes for the future, those of us who had a hand in designing our present day teaching environment hope that we have planned for easier changes and have put in place a robust infrastructure that will allow substantive changes, sometimes without the knowledge of the end users.