Classroom Support Model Recommendation

April 2005

Submitted by:

Carolyn Gard
Senior Director, Academic Technology Services (ATS)

Scott Apfeld
Manager, Classroom Technology Services, Academic Technology Services
# Table of Contents

**Executive Summary** ......................................................................................................................... 3  
  - Project Goal .................................................................................................................................. 3  
  - Project Drivers ............................................................................................................................... 3  
  - Summary of Recommendations ..................................................................................................... 4  

**Introduction** ........................................................................................................................................ 4  

**Background** ........................................................................................................................................ 5  
  - Phase 1: Summer Classroom Upgrades ............................................................................................ 5  

**Support Model Strategy Critical Success Factors** ............................................................................. 6  

**Support Model Recommendation** ...................................................................................................... 6  
  - ATS Classroom Technology Services Supports Classrooms ............................................................... 6  
  - Upgrading the Classrooms .................................................................................................................. 7  
  - Preventative Maintenance of the Classrooms ..................................................................................... 8  
  - Supporting Faculty Using the Classrooms ......................................................................................... 9  
  - Continuous Improvement of the Classrooms .................................................................................... 10  

**Resource Requirements** .................................................................................................................... 11  

**Support Model Benefits** .................................................................................................................... 12  

**Appendix 1**: Project Scope Document ................................................................................................. 13  

**Appendix 2**: Project Organization ......................................................................................................... 16  

**Appendix 3**: Standard Technology Benchmark ................................................................................... 17  

**Appendix 4**: Classrooms with Standard Technology ............................................................................ 18  

**Appendix 5**: Classroom Standards ....................................................................................................... 19  
  - Standard Classroom and Auditorium Technology ............................................................................. 19  
  - Teacher Station .................................................................................................................................. 20  
  - Touch Screen Control Panel ................................................................................................................ 21  
  - Typical Classroom Layout Lighting Zone Layout ............................................................................. 22  
  - Pathway and Connectivity Standards for all Construction ................................................................. 23  
  - Conduit Riser/Wall Elevation ............................................................................................................. 24  

**Appendix 6**: Classroom Enhancement Council ....................................................................................... 25
Executive Summary

Project Goal
The goal of the Classroom/Open-access Computing Labs project is to develop a classroom and open-access computing lab model strategy and implementation plan that provides technology-rich classrooms and open-access computing labs for teaching and learning that are consistent across the university while reflecting the programmatic needs of the individual disciplines.

Project Drivers
During the development of the Miami University IT Strategic Plan in 2003-2004, the core team identified that the overall support structure and facilities of classrooms and open-access labs were in need of significant improvements. In fact, the most common issue found during the internal environmental analysis phase of this project was the faculty and student dissatisfaction with the classrooms. The level and quality of technology in both classrooms and open-access labs has been inconsistent and widely varied as to the level of sophistication. The problems include:

- Lack of technology, both audio-visual and computers
  - Software unmanaged and generally unavailable
- Outdated and broken technology
- Lack of consistency in the technology with each room functioning differently
- Inadequate usage documentation
- No knowledge of classroom status prior to class
- Inadequate support including inability to summon help during class
- Faculty desiring technology assigned rooms without it
- Registrar has scheduling difficulties
- Expectations of newer faculty regarding classroom quality not being met

In recent years, learning spaces have evolved dramatically as teaching faculty integrate new methods of communication, collaboration and technology into their pedagogy. It is now a commonly accepted principle that the proper design of learning spaces can enhance learning and that excellent design can even improve learning outcomes. The converse is also true; poor design can impede learning and restrict faculty options.

From the recent EDUCAUSE Applied Research Bulletin of April 12, 2005, Campus Learning Spaces: Investing in How Students Learn, by Stephen R. Acker, The Ohio State University and Michael M. Miller, University of Michigan-Ann Arbor, are some relevant quotes:

“A variety of research studies document that today’s students learn differently than did many of the faculty who are now teaching them and that the design of learning spaces can favor or disadvantage different learning styles.”

“The Center for Academic Transformation study also showcases the importance of equipping traditional classroom space with presentation technologies-51% of the pilot population was predominately visual, 42 percent indicated equal preference for verbal and visual, while only 8% preferred verbal (traditional lecture) presentation of material.”
Summary of Recommendations

Move technology support of all learning spaces under the scheduling authority of the Registrar to the recently established Classroom Technology Services unit within Academic Technology Services (ATS) department of IT Services. Below is a summary of the recommendations with comprehensive details found in the Support Model Recommendation section:

- Bring each of these classrooms, up to the standard technology level for the size of the room.
- Provide production quality maintenance of the classrooms.
- Provide comprehensive support to faculty in using these rooms.
- Install telephones in every room and implement a sophisticated dispatching system of classroom support technicians.
- Deliver software to all classrooms in a consistent, server-based methodology, thus ensuring that the software needed by a specific faculty member will be available in any generally scheduled classroom and computing lab as licensing permits.
- University wide coordination and oversight by the newly established Classroom Enhancement Council

Financially this will produce savings in the academic units by eliminating their need to fund equipment and software purchases, as well as staff the rooms with support technicians.

Introduction

This report addresses the model for classroom support in accordance with the objectives of the IT Tactical Project: Classroom/Open-access Computing Labs (Appendix 1 and Appendix 2). This project began in May 2004 and has the following deliverables:

- University-wide assessment of the status of technology in classrooms and open-access labs.
- A model or strategy to provide technology-rich classrooms and open-access computing labs for teaching and learning that are consistent across the university while reflecting the programmatic needs of the individual disciplines including, but not limited to:
  - Identification of levels of technology in classrooms including minimum standards.
  - Plan for classrooms of the future.
  - Plan for labs of the future.
  - Documentation and training for faculty and students.
  - Phones and dispatching support.
  - Software, servers, and images.
  - Ongoing mechanism for continuous improvement.

This document will address the deliverables with regard to classrooms. The open access computing labs will be discussed in a separate document with the exception of the desktop-asset management software that is recommended to provision and manage the computers in all the classrooms and labs.
Background

Higher education currently faces challenges to respond to multiple issues that question traditional ways of educating students. Instructor-centered teaching methods focusing upon the lecture as the primary means of knowledge transfer within a time constant and competitive setting is shifting to learning environments that actively engage students in collaborative groups. This activity is conducted under the guidance of experienced facilitators or as self-directed project groups. Some of the main issues facing institutions of higher learning include:

- Institutions now must not only prepare educated individuals, but also enable them to interact and function socially with their peers.
- Competition comes not only from peer institutions, but also from industry and for-profit and electronic universities.
- Institutions that are aware of and implement appropriate responses will have a distinct advantage over those that remain stagnant.
- Technology-advanced students are truly becoming customers, and they bring different expectations and objectives from their predecessors.

Learning environments must encourage creative inquiry, exploration and the discovery of knowledge so classrooms must become functional, flexible, technology enriched and aesthetically pleasing. As a result the following goal was included in the IT Strategic Plan:

Goal 1.1.5 Classroom/Open-access Computing Lab Technology and Support

Provide technology-rich physical and virtual classrooms and open-access computing labs for teaching and learning that are consistent across the university while reflecting the programmatic needs of the individual disciplines. Review and improve the current standards and levels of support provided for all open-access computing labs within the university. Identify emerging opportunities/technologies to experiment with and prototype. Establish a program to ensure that technology in all open-access computing labs and classrooms is current and refreshed.

Phase 1: Summer Classroom Upgrades

With the hiring of the Senior Director of Academic Technology Services (ATS) in May 2004, the decision was taken to bring each classroom upgraded over the summer to the “industry standard” level of classroom technology espoused by many campuses (Appendix 3) across the country rather than the usual piece meal addition of components. This decision was imperative since the summer is the only time major upgrades can be made to classrooms. The level of faculty dissatisfaction and inability to teach as they wanted was such that it could not wait another year.

By the end of the fall 2004, the number of classrooms under the scheduling authority of the Registrar at the standard classroom technology level was:

<table>
<thead>
<tr>
<th>Location</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxford</td>
<td>64 (40%)</td>
</tr>
<tr>
<td>Hamilton</td>
<td>8 (10%)</td>
</tr>
<tr>
<td>Middletown</td>
<td>8 (15%)</td>
</tr>
</tbody>
</table>
With the large number of classrooms that now function the same with robust, reliable, well supported technology; faculty satisfaction increased and more faculty members have started using the technology. At the completion of the planned summer 2005 upgrades, the numbers will be:

- Oxford: 90 (57%)
- Hamilton: 11 (14%)
- Middletown: 22 (40%)

A complete breakdown by building is contained in Appendix 4. This has already raised the level of faculty satisfaction and more faculty members are now starting to use the technology.

**Support Model Strategy Critical Success Factors**

For the proposed support model to be deemed successful the following must be true:

1. Classroom environments must allow students to see presented material, hear audible presentations, and participate effectively in discussions. The environments need to be free from noises, distortions, and to be physically comfortable (temperature, furniture, etc.) regardless of the method of instruction used.
2. The use of technology must not get in the way of teaching and learning in classrooms and open-access labs.
3. Classrooms must accommodate differing faculty teaching methods and include a variety of technology and equipment to meet the various needs. These variations should be as transparent as possible.
4. Students and faculty should be comfortable in every room because they have similar looks and feel and consistent technology support. Instructors need to find familiar configurations when they are asked to teach in a new or alternate room.
5. Technology tools should reside permanently in classrooms and be remotely supported to reduce delivery cost and down time.
6. As the university plans new building projects, we must standardize the methods used to make rooms “technology ready.”
7. Instructors should be able to call one phone number to ask for assistance or report a problem. They should not have to remember other phone numbers.
8. Written and on-line documentation should be available to instructors in every classroom and be available on the Classroom Technology Services web site.
9. A standard and accessible method should be available for instructors to request/recommend changes or additions to classroom technology.

**Support Model Recommendation**

With the support model critical success factors in mind, the following are the recommendations for a new classroom support model.

**ATS Classroom Technology Services Supports Classrooms**

The goal of ATS is to provide a high level of service and support to instructors in the classroom. This includes designing facilities for enhanced learning, training the faculty in using technology, and providing service and support of the whole environment. By installing high quality classroom...
technology permanently in a classroom, instructors are more likely to incorporate these tools in their pedagogy. Classroom technology is becoming a critical factor for Miami to maintain a competitive edge in recruiting the best faculty and incoming students and retaining them. The learning spaces must incorporate easy to use, intuitive control systems and have similar features so instructors are comfortable in all rooms they are assigned.

**Classroom Technology Services Supports Rooms under Registrar Scheduling Authority**

One basic tenent of the model is that ATS Classroom Technology Services will install, maintain and support the usage of the classrooms under the scheduling authority of the Registrar. This will ensure that the rooms operate in the same manner, are well maintained and provide faculty the support needed. Faculty will be able to request software to be added to a server and it will then be available to the classrooms and computer labs as licensing permits through desktop-asset management software.

Previously, most technology in classrooms and labs was partially funded and controlled by the different departments/schools/college. The funding to upgrade and maintain the classrooms was in many cases diverted from the classrooms. As a result, the technology was very inconsistent and often old and broken. There was no common way for faculty to use rooms and the support had varying levels of availability and sophistication.

**Service Level Agreements for non-Registrar Rooms**

Classroom Technology Services will assist with college/school/departmental owned classrooms through a Service Level Agreement (SLA), as desired. We are often asked to support departmental presentation systems that fall outside of our Registrar classroom responsibilities. Since this includes requests for system design, project management, installation, and repair services, the SLA is required to define the specific commitments made in order to avoid any misunderstandings as to the level of service provided.

**Regional Campuses**

ATS will provide the initial installation of the standard classroom technology; however, due to the way the regional campuses are funded, the maintenance, phone charges and support will be provided by the regional campus personnel and budget.

**Upgrading the Classrooms**

**Classroom Technology Standards**

In order to have classrooms that support faculty teaching and student learning, the classrooms must be able to provide standard functions and have a common look and feel from room to room. The use of the Crestron control system (touch pad) is an integral part of the standard. The classroom technology standards include basic technology for classrooms and auditoriums, teacher station, touch pad screens, lightning, conduit, etc. and are documented in detail in Appendix 5. Each room may have additional options available based on seating capacity, use of room and the discipline specific needs. The classroom technology standard here is what was defined as Level 3 and the auditorium technology standard was level 5 in the "Miami University Comprehensive Classroom Study, Final Report” prepared by Comprehensive Facilities Planning, Inc., March 2002.
Computer Management Standard
The universities that are successful in managing computers in the classrooms and computer labs employ institution-wide, desktop-asset management software. For example, local colleges and universities that use desktop management software, in this case the Altiris Client Management Suite software, include the University of Cincinnati, Wright State, Sinclair Community College, and Cincinnati State. Desktop management allows software that a faculty member needs for a class to be installed once on a server; without it, a new image must be built and physically loaded on each computer. Miami needs to acquire such software to manage the institutionally supported learning spaces and computer labs. This same software should also be made available to managers of departmental computer labs and non-institutionally managed learning spaces. This is the only way that faculty software needs can be met in a timely fashion without a very large staff. This also makes the same desktop image and applications available in all the classrooms and computer labs, licensing permitting. Any software a faculty member requires must be legal and server licensed.

Contract Standards
Following the lead of the University of Cincinnati, we are implementing a term contract to purchase the equipment and installation for a standard technology classroom. A separate term contract is being executed for the instructor station cabinetry. These are yearly contracts renewable for 5 years. At designated times we can change the equipment specifications. The vendor will sell us any equipment they can get at 15% over cost due to the volume arrangement. Three vendors will be awarded these contracts. When the contracts are in place (at Procurement now), we can simply order a given number of standard technology classrooms and we can chose which of the 3 vendors to use. This contract mechanism will save the University time, money and guarantee the consistency of the installed classrooms.

Four Year Initial Installation Cycle
As discussed in Phase 1 by the end of this summer, we will be 2 years (56% of the classrooms) into a 4 year plan to have the standard classroom or auditorium technology installed in all learning spaces under the scheduling authority of the Registrar. The remaining classrooms must be upgraded to the standard technology level to ensure that Miami is competitive in recruiting the best faculty and students and retaining them. With a faculty turnover rate around 30-40% in the next 3-4 years for some schools, this will become more even more of an issue in recruiting young faculty already used to having the technology available.

Once the technology is initially installed, it is imperative that that it be maintained and always in good working condition. Faculty will not believe that the commitment to providing high-quality learning environments is real, if they find equipment that is non-functional in their classroom.

Preventative Maintenance of the Classrooms
Remote Classroom Monitoring over the Network
Several initiatives are underway to ensure this. First and foremost is the use of Crestron Room View to monitor the classroom technology over the network through the Crestron Control System. Currently 48 rooms are being monitored and Crestron Room View is used routinely to correct problems without client intervention.
Routine Classroom Checks
Additionally, all rooms will be manually checked at least monthly. For each room a check list will be filled out. Everything that a faculty member can use in the room will be tested; the results recorded and problems corrected. Any physical defects of the room noticed will also be documented and PFD notified.

Appropriate Inventory Levels
Finding the problem is only the first step. Sufficient inventory must be maintained in order to repair/replace failing equipment quickly. If the problem can’t be fixed in 1 day then the equipment must be swapped out or temporary equipment placed in the room. An inventory standard has been set for each piece of equipment in any of the classrooms and the reorder level set. The levels set depend on how quickly the item can be replenished, cost of the item and how quickly the technology changes. For instance when a projector used in the rooms becomes obsolete; the replacement projectors will be the current brand/model.

Supporting Faculty Using the Classrooms

Outside Class

**AdAstra for Online Classroom Documentation**
The Registrar will implement new room scheduling software AdAstra in summer 2005. This room management package has many new features which will allow us to provide information directly to the faculty about the capabilities, equipment and instructions including interactive learning modules for the classrooms they have been assigned. Faculty will be able to use the web interface to check the status of their classroom prior to teaching that day to ensure all the resources are in working order and available. If a needed resource is unavailable, the instructor can make alternate plans for that day’s class. We will also have the ability to contact instructors directly regarding critical service outages and training opportunities.

**Instruction on Using the Classrooms**
In addition to the web-based materials, faculty will be invited to an open house in several classrooms where they can hear about and experiment with the capabilities of the classrooms. One-on-one classroom training will also be provided on request and a classroom support specialist will attend their first class in a room to provide additional support, if desired.

**Software on Classroom and Lab Computers**
Faculty who need specialized, software installed on the computers in the classrooms and labs can have Classroom Technology Services install it once on the desktop-asset management server. It will then be available to the classrooms and computer labs as licensing permits. This process is safe and can be done quickly; although, it is recommended that it be done in a time frame that allows the faculty to check that the installation parameters are as they want.

**Classroom Technology Services Help Desk**
The IT Services Support Desk phone number 9-7900 will be used a “Single Point of Contact” for faculty to call for assistance with any classroom issue. Faculty Option 3 Classrooms will automatically transfer calls to 9-6015 the current Classroom Technology Services Help Desk. Calls concerning problems in the classroom environment will be forwarded to PFD. Questions on room scheduling will be forwarded to the Registrar’s office. We realize not all calls will be
classroom support issues, but we will better serve our clients by helping with all aspects of the learning environment.

Contact numbers for the regional campuses will remain the same, with separate numbers for presentation support and computer support.

**Online Problem Reporting**
For problem reporting (not critical enough to call during class time), asking questions or making suggestions, a listserv classroomsupport@muohio.edu is available. Additionally, a web form will be created for the same purpose so faculty can phone, email or use the web as they prefer.

**During Class**

**Classroom Hotline**
Every classroom at the standard classroom technology level will have a telephone installed for faculty to summon immediate help for classroom technology problems and for enhanced safety and security, particularly during evening classes. To support this, a dispatcher will always be available from 7:30 AM – 7:30 PM to either talk the faculty member through the problem or dispatch a technician to the classroom immediately. A technician for the afternoon-evening shift is being hired now. The shifts will overlap for proper handoff of problems. The technicians have already been equipped with Nextel Direct Connect phones for this purpose. The Hotline phone number will be the IT Services Support Desk phone number followed by a number which transfers directly to the Classroom Technology Services Hotline number.

If the technician can not resolve the problem quickly, the technician will use AdAstra to determine the next available time to make the repair. For instance, changing a projector bulb is dangerous when students are sitting under the projector. A description of the problem and estimated time of resolution will be added to the AdAstra record for the classroom. When completed, the AdAstra record for the classroom will be cleared of the problem.

**Documentation in the Classrooms**
Every classroom will have easy-to-read, easy-to-use documentation including the Classroom Hotline phone number available in the classroom for all the technology in the classroom. This will be online as well.

**Continuous Improvement of the Classrooms**

**Classroom Enhancement Council (CEC)**
Realizing that all aspects of a classroom can enhance or hinder learning, the Classroom Enhancement Council (Appendix 6) was created to coordinate all aspects of the classrooms and to prioritize requests for classroom upgrades. The charter was written and approved by the Provost. The CEC has met a half dozen times and approved the summer 2005 upgrades. Next steps include creating timeline and process for requesting upgrades. The goal will be to coordinate resources so that rooms will be upgraded as a whole by coordinating the work of ATS with PFD and the needs of the faculty and Registrar. The creation of new prototype classrooms will be coordinated by the CEC.
Monitor National Trends

Miami University is a member of EDUCAUSE, a sustaining member of the EDUCAUSE National Learning Infrastructure Initiative (NLII) and subscribes to the EDUCAUSE Center for Applied Research (ECAR) reports. The members of the CEC and their staff actively participate in the national conversations in their disciplines about what constitutes the best learning environments. Information is shared across disciplines and incorporated into planning learning environments. Interaction with Miami faculty is another vital component of staying current across disciplines.

Survey the Faculty Annually

An annual survey of the faculty will be conducted to gather their opinions on all aspects of the classroom environment. This will probably take place mid-semester in the fall so that the input can be incorporated into the planning for the summer upgrades. This input will also lead to experiments in prototype classrooms.

Annual Review of all Classrooms

A comprehensive annual survey of all classrooms on all three campuses will be undertaken and a standardized form will be used to document all aspects of the room condition. In addition to existing technology, the condition of the floors, ceiling, lighting, HVAC, and furniture will be noted. Digital pictures will be taken of all rooms. Existing documentation will be checked and updated instructions based on will be posted in all rooms and updated in AdAstra. All survey information will be made available to the CEC, PFD and the Registrar and will be used in planning classroom upgrades.

Implement a Technology Life-Cycle Replacement Plan

A “life-cycle” replacement program is needed to ensure that all classroom technology is kept fresh and stays current with industry and higher education developments. At the end of the 4 year period to install the equipment initially, we will need to begin a 4 year replacement cycle as equipment installed in the first year then will be out of warranty and obsolete. We are currently trying to deal with the hodge-podge of equipment installed prior to summer 2004 as we do the new installations. Without the life-cycle replacement, we will be right back to where we started.

Resource Requirements

In order to undertake the above responsibility, 3 staff positions were added to ATS. Two Classroom Technology Specialists have already been hired and the third position is currently being filled.

With the new classrooms in the new/renovated buildings (McGuffie, Psychology, SEAS and SBA) the number of Registrar classrooms on the Oxford campus will increase from 158 to 260 over the next five years unless classrooms in the existing buildings are taken offline. The number of rooms with the standard technology will grow from 64 currently to 225. IT Services will need to add two more support technicians by 2008 to maintain a reasonable “technician-to-classroom” support ratio.

The acquisition of desktop-asset management software and servers to provision the computers in all classrooms and computer labs is vital. This is now being dealt with as a campus wide initiative.
Fiscal Requirements & Possible Economies:

<table>
<thead>
<tr>
<th></th>
<th>Operating Biennium 06-07</th>
<th>Operating Biennium 08-09</th>
<th>Operating Biennium 10-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>University-wide classroom technology management</td>
<td>$222,800</td>
<td>$350,000</td>
<td>$23,000</td>
</tr>
<tr>
<td>Desktop Management Software (for Classroom Portion only)</td>
<td>$170,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Possible savings from university-wide classroom management labor savings</td>
<td>($50,000)</td>
<td>($100,000)</td>
<td>($150,000)</td>
</tr>
<tr>
<td>Savings from discontinued departmental classroom support</td>
<td>($200,000)</td>
<td>($300,000)</td>
<td>($400,000)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$142,800</td>
<td>($40,000)</td>
<td>($517,000)</td>
</tr>
</tbody>
</table>

Note that savings would be either in the form of reduced number of technicians needed in academic units to support classrooms and reduced amount of hardware and software required to be purchased by these units.

**Support Model Benefits**

The benefits of the recommended support model will include the following:

- Every Registrar-controlled classroom on each campus is equipped with the Standard Technology level of equipment according to room size.
- Hardware and software needed by any instructor or student who uses the room, no matter what building or room she/he is in, will be available when needed.
- The guess work concerning technology needed, reporting a problem, or asking for assistance is removed.
- Reduced down-time which automatically increases instruction time.
- Miami is more attractive to the best prospective faculty and students.
- Faculty will be able try new instructional methodologies with well supported reliable technology.
- Through the synergy of the 3 ATS units, Classroom Technology Services, Advanced Learning Technologies and Research Computing Services, faculty support can be implemented as a whole.
  - Research technologies can be incorporated into instructional materials
  - New instructional methods can transform the classroom technology
  - Robust, well supported classroom technology will allow the faculty to try new pedagogies and serve students with different learning styles.
Appendix 1: Project Scope Document

Project Information

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Classroom/Open-access Computing Labs Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>October 25, 2004</td>
</tr>
<tr>
<td>Project Sponsor:</td>
<td>Carolyn Gard</td>
</tr>
<tr>
<td></td>
<td>Senior Director for Academic Technology Services</td>
</tr>
<tr>
<td>Project Steering Team:</td>
<td>Classroom Enhancement Council</td>
</tr>
<tr>
<td>Project Manager:</td>
<td>Scott Apfeld</td>
</tr>
<tr>
<td></td>
<td>Manager of Classroom Technology Services</td>
</tr>
<tr>
<td>Project Consultants:</td>
<td>Kay Roman</td>
</tr>
<tr>
<td></td>
<td>Consultant, Cornelius &amp; Associates</td>
</tr>
</tbody>
</table>

Document History

<table>
<thead>
<tr>
<th>Document Version</th>
<th>Document Version Date</th>
<th>Revised By</th>
<th>Requestor</th>
<th>Approved By</th>
<th>Description(s) of Change</th>
</tr>
</thead>
</table>
| #1               | 8/31/04               | Kay Roman  | Carolyn Gard |             | • Incorporation of the initial scope document for draft review and discussion.  
|                  |                       |            |           |             | • Revision based on combining study project with implementation project.#2 |
| #2               | 9/14/04               | Kay Roman  | Scott Apfeld |             | • Update following meeting with Reid.  
|                  |                       |            |           |             | • Addition of 4.2.9 |
| #3               | 10/25/04              | Kay Roman  | Carolyn Gard |             | • Changes from sponsor. |
1. **Objective:**

   **Phase 1: Immediate Improvement Opportunities**
   1.1. Monitor implementation of classroom upgrades as outlined during spring and summer 2004.

   **Phase 2: Model for Ongoing Strategy for Continuous Improvement**
   1.2. Develop a classroom and open-access computing lab model strategy and implementation plan to provide technology-rich classrooms and open-access computing labs for teaching and learning that are consistent across the university while reflecting the programmatic needs of the individual disciplines.
   1.2.1. Develop the high-level model concepts with resource requirements by February 2005 to ensure inclusion in the FY06 budgeting process.
   1.2.2. Complete the development of the model and implementation plan by June 30, 2005.

2. **Background & Narrative:**

   2.1. During the internal environmental analysis phase of the Information Technology Strategic Planning Project, information technology in classrooms and open-access labs came up frequently in discussions with students and faculty as needing improvements, consistency, and ongoing support.

   2.2. Phase 1 of this project was started immediately to provide improvements to classrooms on the Oxford campus as well as on the Hamilton and Middletown campuses during the summer of 2004. This work will continue.

3. **References:**

   3.1. IT Strategic Plan Goal 1.1.5 Classroom/Open-access Computing Lab Technology and Support: Provide technology-rich physical and virtual classrooms and open-access computing labs for teaching and learning that are consistent across the university while reflecting the programmatic needs of the individual disciplines. Review and improve the current standards and levels of support provided for all open-access computing labs within the university. Identify emerging opportunities/technologies to experiment with and prototype. Establish a program to ensure that technology in all open-access computing labs and classrooms is current and refreshed.

4. **Deliverables:**

   4.1. University-wide assessment of the status of technology in classrooms and open-access labs.

   4.2. A model or strategy to provide technology-rich classrooms and open-access computing labs for teaching and learning that are consistent across the university while reflecting the programmatic needs of the individual disciplines including, but not limited to:
   4.2.1. Identification of levels of technology in classrooms including minimum standards.
   4.2.2. Plan for classrooms of the future.
   4.2.3. Plan for labs of the future.
   4.2.4. Documentation and training for faculty and students.
   4.2.5. Phones and dispatching support.
   4.2.6. Software, servers, and images.
   4.2.7. Ongoing mechanism for continuous improvement.
5. Boundaries:

5.1. The implementation portions of this project will be managed by resources within Academic Technology Services, and will provide regular updates to the core team.

6. Assumptions:

6.1. A large number of people will be involved, including vendors.
6.2. The appropriate resources will be available.

7. Risks:

7.1. Expectations for immediate and widespread improvements may not be met.
7.2. Resources are unavailable or hard to pull together for meetings.
7.3. Team will not conduct a thorough assessment of the current situation.
7.4. Team will not fully consider the future of classroom/open-access lab technologies.
7.5. The team will be so focused on the immediate improvements and needs that the team loses sight of the need for a long-term plan.
Appendix 2: Project Organization

Project Sponsor
Carolyn Gard – Senior Director of Academic Technology Services

Steering Team - Classroom Enhancement Council
Dick Pettitt - Chair, Assistant to the Provost and Associate Dean of Libraries
Carolyn Gard - Senior Director of Academic Technology Services
Jim Haley - Associate Vice President of Facilities
Bob Keller – University Architect
Bob Kubat – University Registrar

Project Manager
Scott Apfeld – Manager, Classroom Technology Services

Core Team
Scott Apfeld
Micah Cooper – TSR, Computer Resources Manager, SEAS
Jim Lipnickey – TSR, Director of Computing Services, Hamilton Campus
Randy Mikesell – ATS Coordinator, Classroom Facilities Design
Tom Montgomery – ATS Manager, Learning Technology Center
Tim Reisert – ATS Supervisor, Classroom Facilities
Randy Stephens – PFD, Project Manager Classroom Specialist
Marsha Walters – Registrar, Administrative Assistant

Labs of the Future Focus Team, Chair Tom Montgomery
Catherine Hollins – Program Manager, Continuing Education
Dan Meyers – Director, Interactive Language Resource Center
Lisa Santucci – Center for Information Management, King Library
Rob Speckert – Chair & Professor, Engineering Technology, Hamilton Campus
Jim Swartz – Professor, Educational Psychology

Faculty Support Focus Team, Chair Tim Reisert
Don Becker – Senior Technical Services Specialist, Middletown
Kevin Blakely – Contractor representative
Rebecca Brown - student
Jim Lipnickey
Marcia Walters

Classroom Technology Levels Focus Team, Chair Randy Mikesell
Terry Calhoun -
Tom Kopp – Assistant Professor, Teacher Education
Jim Lipnickey
Pam Seibold – Visiting Instructor, Hamilton Campus
Marsha Walters

Software, Servers, and Images Focus Team, Chair Scott Apfeld
Lee Back – Network Manager, Computer Facilities, Middletown Campus
Hao Doan – ITS, Supervisor, Technical Support
Scott Haughin – Network Support Specialist, SEAS
Ricardo Maduro – Classroom Technology Support Specialist
Tom Montgomery
Bill Sylvester – Network Coordinator, Hamilton Campus
Appendix 3: Standard Technology Benchmark

By attending national and state-wide conferences and meetings, we determined that by adopting the following standard (formerly called Level 3) Miami will be consistent with many other universities. For benchmarking purposes we used Wright State, Indiana University, the University of Vermont, and the University of Cincinnati.

<table>
<thead>
<tr>
<th>Miami University's Standard Technology classroom consists of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ceiling-mounted data projector</td>
</tr>
<tr>
<td>• Custom Teacher Station</td>
</tr>
<tr>
<td>• Wall-mounted screen</td>
</tr>
<tr>
<td>• Crestron Touch Panel Control System</td>
</tr>
<tr>
<td>• Small room sound system</td>
</tr>
<tr>
<td>• DVD and VCR combo unit</td>
</tr>
<tr>
<td>• Resident computer</td>
</tr>
<tr>
<td>• Laptop interface with to projector and Internet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wright State's basic technology classroom consists of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ceiling mounted data projector</td>
</tr>
<tr>
<td>• Teaching Station</td>
</tr>
<tr>
<td>• Wall screen</td>
</tr>
<tr>
<td>• Extron 5CR presentation switching system</td>
</tr>
<tr>
<td>• Stereo Audio System</td>
</tr>
<tr>
<td>• VCR</td>
</tr>
<tr>
<td>• Resident computer 733 MHz Pentium III or greater</td>
</tr>
<tr>
<td>• Laptop interface with audio</td>
</tr>
<tr>
<td>• Overhead projector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The University of Cincinnati's Model Room Equipment List contains:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Loudspeakers</td>
</tr>
<tr>
<td>• Amplifier</td>
</tr>
<tr>
<td>• Document Camera</td>
</tr>
<tr>
<td>• VHS VCR</td>
</tr>
<tr>
<td>• 6' VGA W/Audio Cable</td>
</tr>
<tr>
<td>• 8 x 4 Matrix Switcher</td>
</tr>
<tr>
<td>• Cue amp/speaker</td>
</tr>
<tr>
<td>• Data projector</td>
</tr>
<tr>
<td>• Control system</td>
</tr>
<tr>
<td>• Video Touch panel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The University of Vermont has a “Level III Technology Room” that consists of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Instructor Technology Desk or Podium</td>
</tr>
<tr>
<td>• Installed Computer for Instructor</td>
</tr>
<tr>
<td>• PC &amp; Mac Connection for carry in computer</td>
</tr>
<tr>
<td>• Network Connections</td>
</tr>
<tr>
<td>• Document Camera</td>
</tr>
<tr>
<td>• Data/Video Ceiling Mounted Project</td>
</tr>
<tr>
<td>• Basic AV hardware: VCR, Overhead Proj., Slide Proj., Screens</td>
</tr>
<tr>
<td>• Zoned or Adjustable Room Lighting</td>
</tr>
<tr>
<td>• Sound System, stereo, ADA assistive listening system</td>
</tr>
<tr>
<td>• Wireless “Smart Room” Remote Control of Technology Systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indiana University describes their “smart classrooms” as including:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Technology cart that includes a computer, document camera, DVD/VHS player</td>
</tr>
<tr>
<td>• Ceiling mounted data projector</td>
</tr>
</tbody>
</table>
Appendix 4: Classrooms with Standard Technology

Prior to this project there were fewer than 30 rooms that approximated the new standard and in many of these rooms the technology was so old that we have had to replace numerous components including 11 projectors.

<table>
<thead>
<tr>
<th>Building</th>
<th>Rooms</th>
<th>Rooms</th>
<th>Percentage</th>
<th>Rooms</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumni</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Art</td>
<td>4</td>
<td>3</td>
<td>75%</td>
<td>3</td>
<td>75%</td>
</tr>
<tr>
<td>Bachelor</td>
<td>18</td>
<td>3</td>
<td>17%</td>
<td>12</td>
<td>67%</td>
</tr>
<tr>
<td>Benton</td>
<td>5</td>
<td>1</td>
<td>20%</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>Boyd</td>
<td>6</td>
<td>1</td>
<td>17%</td>
<td>2</td>
<td>33%</td>
</tr>
<tr>
<td>CAB</td>
<td>2</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Culler</td>
<td>12</td>
<td>1</td>
<td>8%</td>
<td>4</td>
<td>33%</td>
</tr>
<tr>
<td>Gaskill</td>
<td>2</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Hiestand</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Harrison</td>
<td>11</td>
<td>3</td>
<td>27%</td>
<td>4</td>
<td>36%</td>
</tr>
<tr>
<td>Hughes</td>
<td>4</td>
<td>2</td>
<td>50%</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>Irvin</td>
<td>16</td>
<td>1</td>
<td>6%</td>
<td>3</td>
<td>19%</td>
</tr>
<tr>
<td>Kreger</td>
<td>3</td>
<td>2</td>
<td>67%</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Laws</td>
<td>16</td>
<td>14</td>
<td>88%</td>
<td>14</td>
<td>88%</td>
</tr>
<tr>
<td>MacMillan</td>
<td>4</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Millett</td>
<td>3</td>
<td>2</td>
<td>67%</td>
<td>2</td>
<td>67%</td>
</tr>
<tr>
<td>Peabody</td>
<td>5</td>
<td>2</td>
<td>40%</td>
<td>2</td>
<td>40%</td>
</tr>
<tr>
<td>Phillips</td>
<td>3</td>
<td>0</td>
<td>0%</td>
<td>2</td>
<td>67%</td>
</tr>
<tr>
<td>Pearson</td>
<td>3</td>
<td>3</td>
<td>100%</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Presser</td>
<td>3</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Shideler</td>
<td>6</td>
<td>3</td>
<td>50%</td>
<td>3</td>
<td>50%</td>
</tr>
<tr>
<td>Upham</td>
<td>28</td>
<td>20</td>
<td>71%</td>
<td>27</td>
<td>96%</td>
</tr>
<tr>
<td>Williams</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>1</td>
<td>50%</td>
</tr>
<tr>
<td>Oxford Campus</td>
<td>158</td>
<td>64</td>
<td>40%</td>
<td>90</td>
<td>57%</td>
</tr>
<tr>
<td>Hamilton Campus</td>
<td>80</td>
<td>8</td>
<td>10%</td>
<td>11</td>
<td>14%</td>
</tr>
<tr>
<td>Middletown Campus</td>
<td>55</td>
<td>8</td>
<td>15%</td>
<td>22</td>
<td>40%</td>
</tr>
</tbody>
</table>
## Appendix 5: Classroom Standards

### Standard Classroom and Auditorium Technology

<table>
<thead>
<tr>
<th>Standard Classroom Technology</th>
<th>Auditorium Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum pathway and connectivity requirements.</strong></td>
<td><strong>Minimum pathway and connectivity requirements.</strong></td>
</tr>
<tr>
<td><strong>Equipment List</strong></td>
<td><strong>Equipment</strong></td>
</tr>
<tr>
<td>Ceiling mounted data projector</td>
<td>Standard classroom technology equipment</td>
</tr>
<tr>
<td>Wall mounted screen</td>
<td>Digital Document Camera</td>
</tr>
<tr>
<td>Custom Teacher Station</td>
<td>Interactive Panel to annotate what’s being projected</td>
</tr>
<tr>
<td>Crestron Touch Panel Control System</td>
<td>Additional modifications for room size that could include dual projection display and/or DLP projector, larger sound system and wireless microphone, and a more complex zoned lighting system.</td>
</tr>
<tr>
<td>Small room sound system</td>
<td></td>
</tr>
<tr>
<td>DVD and VCR combo unit</td>
<td></td>
</tr>
<tr>
<td>Resident computer with USB port accessible</td>
<td></td>
</tr>
<tr>
<td>Laptop interface to projector and Internet</td>
<td></td>
</tr>
</tbody>
</table>

### Additional Equipment Options Based on the Needs and Use of the Classrooms

- Wall Mounted Input Interface
- Digital Document Camera
- Auxiliary inputs for Microphones
- Cassette Deck
- Additional Computer Inputs
- Assisted Listening System (for the Hearing Impaired)
- Interactive Panel to annotate what’s being projected
- Interactive White Board
- Wireless keyboard and mouse
- DLP projector upgrade
- Audio and video conferencing equipment
- Zoned Lighting
- Shades and Drapes
Teacher Station

Several Universities have designed custom teacher’s stations or lecterns for their classrooms. Miami is no different. This teacher station is a custom designed cabinet based on several university designs and was built to handle all of the equipment needed in a Standard Technology Classroom.

Internally it can house a tower CPU with pull out tray for keyboard and mouse. It also has a rack rail system to hold the Control System, switching equipment, DVD/VCR combo unit, storage drawer, power strip and other future equipment. Additional storage space and ventilation is built in. There is a pull out shelf on the side of the cabinet to be used for a document camera or laptop computer, or just additional workspace. This unit has four heavy duty casters to allow for moving the unit around to fit the needs of the user. The front doors are lockable for security purposes.
Touch Screen Control Panel

This control panel provides for a simplistic control of all media equipment in the room. The control panel combines 10 engraved pushbuttons with a 4” grayscale touch screen. The touch screen provides for creation of any custom user interface controls while the pushbuttons offer ready, tactile access to the common functions. This unit can be mounted on the teacher station or in the wall. A built in light sensor will automatically adjust the display image for optimal visibility.
This diagram illustrates lighting zone recommendations only, while a minimum of two independently switched zones are required, a front zone and a rear zone at a minimum. This will allow for the reduction of light at the locations nearest the screen.

The lighting layout in the picture is a four zone system. Main room lighting (Zone 1) provides general lighting in the room. Screen lighting (Zone 2) includes fixtures that may illuminate the projection screen area. Wall washes (Zone 3) are fixtures that illuminate the white boards or chalk boards. Instructor station (Zone 4) is a fixture that can illuminate the instructor station while the room lights are dimmed.

A low voltage lighting interface is recommended for controlling this lighting design. This would allow control of the lighting by the touch panel control system.

The main lighting control panel should be mounted near the instructor station with an entry switch near the door. Lighting fixtures should not be low hanging light fixtures. These types of fixtures can create problems with sight lines of ceiling mounted projectors.
**Pathway and Connectivity Standards for all Construction**

**Upper Wall Box** A Wiremold SPMJF-8-8-4 box will be installed in the front corner of the room beside the teaching station location. The placement will be 48” A.F.F. (Above Finished Floor). This box will be the location of the Control Panel. It is necessary for the contractor or manufacturer to provide a cover with an overlap for this box.

**Lower Wall Box** A Wiremold SPMJF-8-8-4 box will be installed in the front corner of the room beside the teaching station location. The placement will be 36” A.F.F. (Above Finished Floor). It is necessary for the contractor or manufacturer to provide a cover with an overlap for this box.

**A.C. Power** A double duplex 110v outlets should be mounted next to the Wall box in the designated teaching station location. The outlet will require an isolated 20 amp breaker that is on the same phase as the Projector Power.

**DTV Box** This is the standard Tele/Data box that is specified by the IT department. It should be located 36” A.F.F. in the designated teaching station location. This is to include but not be limited to a minimum of three data outlets, two phone outlets, and one RF. This box and its conduits are to be in accordance with the Miami University IT standards.

**LV Conduit** Supply a 2” low voltage conduit and a 1” low voltage conduit from the lower wall box to the upper wall box. Supply a 2” low voltage conduit and a 1” low voltage conduit from the upper wall box to a Wiremold SPMJ-8-8-4 box located in an accessible area above the ceiling. Supply a 2” low voltage conduit from the ceiling box to the location of the ceiling mounted projector. The end of this 2” conduit will terminate in the ceiling tile with an end bushing cap. This location will be approximately 12’ from the projection screen surface. This location specification may vary depending on final equipment choice and exact location will be specified by Miami University A/V services prior to installation. Supply a 1” conduit from the above ceiling box to the closest cable tray. Supply a ¾” conduit from the above ceiling box to each speaker location. The speaker locations will terminate in single gang boxes located on the front wall 18” down from ceiling on each side of the projection screen. A maximum of two 90 degree sweeps will be allowed for all conduits. No hard angles will be accepted.

**Projector Power** A double duplex power outlet must be provided at the projector location mounted facing downward on the ceiling surface. The outlet will be approximately 12 feet away from the screen surface. This is based on a 6’ x 8’ screen size. The outlet should be centered on the screen. This specification may vary depending on final equipment choice and exact location will be specified by Miami University A/V services prior to installation.

**Room Lighting** Lighting is be determined by the orientation of the room. The main lighting control will be located near the teaching station. One general lighting switch should be located near the entry. A minimum of two zones of independently controlled lighting should be installed. See the lighting diagram that is a part of this document for greater detail. Low hanging reflective lighting fixtures should be avoided. These types of fixtures may impair projector placement and inhibited a clear visual pathway to the screen.

**Projector Cabling** Cable connecting the teaching station to the projector and speakers will be provided and installed by the Miami University A/V department, or a designated contractor.
Conduit Riser/Wall Elevation

Ceiling

- ¾" Conduit to Each Speaker Location
- Single Gang Boxes
- Left & Right Speakers on Front Wall

Floor

- 1" Conduit to DATA Cable Tray
- ¾" Conduit to Each Speaker Location
- Single Gang Boxes
- Connection for Cart
- 2 Gang J-Box
- 36" A.F.F
- DTV 3 Data, 2 Voice, 1 RF

Wiremold SPMJF-8-8-4
- 8"x8"x4" Flush J-Box
- 48" A.F.F

- 1" Conduit to Cable Tray
- 2" Conduit
- 1" Conduit
- 2" Conduit
- A.C. Duplex
- Near
- A.C. Double Duplex
- End Cap Bushing
- Projector Mounting Pipe
- ¾" Conduit

Classroom Support Model Recommendation
Page 24 of 26
Appendix 6: Classroom Enhancement Council

Miami University

Background:

In recent years, learning spaces have evolved dramatically as teaching faculty integrate new methods of communication, collaboration and technology into their pedagogy. It is now a commonly accepted principle that the proper design of learning spaces can enhance learning and that excellent design can even improve learning outcomes. The converse is also true; poor design can impede learning and restrict faculty options. Educators, technologists and space planners must now work together to integrate technology, pedagogy, learning styles and physical space.

With this in mind, the Classroom Enhancements Council (CEC) has been established to coordinate activities pertaining to the configuration of all instructional spaces under the scheduling authority of the University Registrar (including classrooms, seminar rooms, auditoria, instructional laboratories, etc.) in order to share information and make decisions.

Charge/Key Responsibilities:

Reporting to the Provost and Executive Vice-President for Academic Affairs, the Classroom Enhancement Council will provide university-level coordination of all activities (including the prioritization of those activities) related to planning, renovating, maintaining, equipping and scheduling (for renovation or maintenance purposes) all instructional spaces under the scheduling authority of the University Registrar (including classrooms, seminar rooms, auditoria, instructional laboratories, etc.). The Council will do so by bringing together on a regular basis designated representatives of academic and administrative units with functional responsibilities for those spaces. These representatives will provide input to the Council on behalf of their unit and convey information/decisions back to their unit.

The Council will explore options and make decisions about all changes to the instructional spaces under the scheduling authority of the University Registrar with the goal of providing environments that are conducive to a wide range of teaching and learning styles while also establishing and maintaining a baseline technology configuration for general classrooms that allows faculty to move from room to room and building to building in a seamless manner. This charge will address all aspects of the classroom (e.g. lighting, furniture, HVAC, flooring, writing surfaces, technology, etc.) in order to make the spaces flexible enough to meet the ever-changing needs of our students and faculty.

The Council will serve as the “project owner” (analogous to the Dean/Director) for all projects related to instructional spaces under the scheduling authority of the University Registrar that require the approval of the Space Utilization Group (SUG) (such as new construction, building rehabilitations or building renovations) and as the coordinating body for all work in those same spaces that does not involve a change of use (such as individual room upgrades or maintenance projects). The signature of the chairperson of the Council on Project and Space Utilization Request Forms will signify the Council’s endorsement of the project.
Membership:

The Council will be composed of individuals holding the following positions, as well as two representatives of the academic divisions, and will meet a minimum of six times per year (two meetings each fall, spring, and summer term).

Chair, Special Assistant to the Provost and Associate Dean of Libraries
Dick Pettitt

Senior Director of Academic Technology Services
Carolyn Gard

Associate Vice President of Facilities
Jim Haley

University Architect
Bob Keller

University Registrar
Bob Kubat

Staff of the above offices may be invited to attend as appropriate.

Academic Divisional Representatives – Two members of the Council, appointed by the Provost, will serve two-year terms as representatives of the academic divisions. Representation among the divisions will be rotated so that all academic divisions are represented over time. The first two divisional representatives are:

School of Engineering and Applied Science (through June 2007)
Christine Noble

School of Business (through June 2007)
Elizabeth Baer

In addition, the Council may establish working groups composed of representative stakeholders, including teaching faculty and students, to advise the Council. In all cases, such working groups will receive a clear charge from the Council that defines the scope of its work and the deadline for its report.