White Paper on Support Services for Multimedia Classrooms

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5 August 2001
# White Paper on Support Services for Multimedia Classrooms

## 0.1 Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 Foreword</td>
<td>3</td>
</tr>
<tr>
<td>1.0 Multimedia Classroom Description</td>
<td>3</td>
</tr>
<tr>
<td>1.1 Multimedia Classroom Description</td>
<td>4</td>
</tr>
<tr>
<td>1.2 Standard Equipment</td>
<td>5</td>
</tr>
<tr>
<td>1.2.1 Basics</td>
<td>6</td>
</tr>
<tr>
<td>1.2.2 Extras</td>
<td>6</td>
</tr>
<tr>
<td>1.2.3 Checkout Equipment</td>
<td>6</td>
</tr>
<tr>
<td>2.0 Training and Support</td>
<td>6</td>
</tr>
<tr>
<td>2.1 Faculty Input</td>
<td>7</td>
</tr>
<tr>
<td>2.2 Initial Training</td>
<td>7</td>
</tr>
<tr>
<td>2.3 Follow-up Training</td>
<td>8</td>
</tr>
<tr>
<td>2.4 Expanded or Related Training</td>
<td>8</td>
</tr>
<tr>
<td>2.5 User Survey</td>
<td>8</td>
</tr>
<tr>
<td>2.6 User Forums</td>
<td>9</td>
</tr>
<tr>
<td>2.7 Technical Support</td>
<td>9</td>
</tr>
<tr>
<td>2.8 Reference Materials</td>
<td>10</td>
</tr>
<tr>
<td>2.9 Golden Key Club</td>
<td>11</td>
</tr>
<tr>
<td>3.0 Rubric</td>
<td>12</td>
</tr>
<tr>
<td>3.1 Build Ownership</td>
<td>12</td>
</tr>
<tr>
<td>3.2 Construct with the Users in Mind</td>
<td>12</td>
</tr>
<tr>
<td>3.3 Train the Users</td>
<td>13</td>
</tr>
<tr>
<td>3.4 Keep the Users Informed</td>
<td>13</td>
</tr>
<tr>
<td>3.5 Support the Users</td>
<td>13</td>
</tr>
<tr>
<td>3.6 Fight for Feedback</td>
<td>13</td>
</tr>
<tr>
<td>4.0 About the Author</td>
<td>14</td>
</tr>
<tr>
<td>5.0 Appendices</td>
<td>15</td>
</tr>
<tr>
<td>5.1 Initial Training Handout</td>
<td>15</td>
</tr>
<tr>
<td>5.2 Workshop Critique Form</td>
<td>15</td>
</tr>
<tr>
<td>5.3 Multimedia Classroom User Critique Form</td>
<td>15</td>
</tr>
<tr>
<td>5.4 Multimedia Classroom User Forum Agenda</td>
<td>15</td>
</tr>
<tr>
<td>5.5 Multimedia Classroom Daily Inspection Checklist</td>
<td>15</td>
</tr>
</tbody>
</table>
0.2 Foreword

This paper is based on the conference presentation “360-Degree Support: Wrapping a Full Array of Faculty Support Services Around the Introduction of Multimedia Classrooms” made by Dr. Richard A. Ranker, Director of Academic Technology Support, East Tennessee State University (ETSU), to the Seminars on Academic Computing (SAC) in Snowmass, CO on 5 August, 2001.

The presentation commenced with a description of practical and successful steps taken to introduce multimedia classrooms on one mid-sized campus. It ended with transforming this approach into a rubric that might be applied to the introduction of other technology in academe.

This white paper is intended to focus on the support services surrounding the implementation of the multimedia classrooms. Another white paper will be prepared to describe the equipment, wiring diagrams and other technical features of the multimedia classrooms.
1.0 Multimedia Classroom Description

The Multimedia Classrooms at East Tennessee State University (ETSU) are basically state-of-the-art teaching and learning systems. ETSU chose the name “multimedia classroom” to distinguish them from many of the other simpler but nonetheless media-equipped-tech classrooms. Often similar rooms are referred to as “smart classrooms,” “high-tech classrooms” or “mediated classrooms.”

These classrooms were designed with the faculty in mind. Feedback from the faculty indicated that they placed premium value on stability, reliability and ease-of-use.

Stability was important because faculty need to change the whole way that they are teaching as they adapt their instruction to the multimedia classrooms. If the platform is not stable, all this work is for naught. Faculty need to know exactly how the equipment is configured and be assured that the teacher in the previous class did not change that configuration. They need to know the software versions on the computer and that it run their PowerPoint presentations. Sometimes the drive towards stability necessitates a choice of equipment that is not the newest or latest “gee whiz” sort of tool; instead a more stable, known entity might be chosen.

Reliability is also very important to faculty. No faculty member wants to have restructured an entire class, walk into the classroom and not have equipment work—every time. Obviously, this presents a significant challenge to those who are tasked to design, install and maintain technology. While the reliability of instructional technology in general has increased significantly over the last ten years, nobody in the business would be foolish enough to guaranteed that any technology-based system would work every time. Thus, highly reliable equipment must be installed. However that is not enough. Reliability can be increased through the use of aggressive preventive measures.

Instructional technology must be designed and installed to assure ease of use. If any particular instructional technology is not easy to use, it will likely not be used. We have to look at technology from a point of view of the faculty. They are being challenged to change their livelihood—teaching—by incorporating technology into it. Their teaching role often demands that they present complex concepts, procedures or principles. No faculty member wants to be faced with the choice of focusing on making the technology work for them instead of focusing on their instructional content. In other words, instructional technology must always be about instruction, not the technology. No faculty member wants to fumble with the technology in front of his or her class. They would prefer to not use technology if it gets in the way of their instructional mandate. Assuring that all installed technology is easy to use increases the probability that that technology will be used, thereby making the design, installation and maintenance tasks worth the time and effort.

In short, stability, reliability and ease of use are a triad that most faculty demand of any instructional technology. This became a cornerstone of the design at ETSU.
1.1 Physical Renovation

One of the surprises we found at ETSU was the faculty’s insistence upon physical renovation of the classrooms prior to the installation of any multimedia equipment. They were very specific about the need for new boards, improved acoustics, zoned lighting, teacher-controlled heating and air conditioning, fresh paint, and elimination of external wall conduit. Also noted was a desire for additional electrical outlets and a clock in the back of the room. While some of these items may seem foolish or extreme at first, we came to understand that the faculty were basically asking for a first-class teaching and learning environment that was not just functional but also pleasant and comfortable.

New student furniture was also high on the faculty list of concerns. Faculty pointed out that much of the furniture on our campus was bought 20-30 years ago. Since that time there have been two significant changes in the student body. The first is that our institution gained a significant proportion of nontraditional students who were not straight out of high school. The second major change is that according to national surveys, the height, weight and girth of students has significantly increased in the last 30 years. As a result many students do not fit comfortably in the older furniture. This observation drove us toward selecting chairs on casters and tables to better accommodate the student body.

1.2 Standard Equipment

This section briefly describes the standard equipment placed in each of the ETSU multimedia classrooms. The first section describes the basic instructional equipment. The second describes some of the extras placed in the classrooms to assure operability and maintenance at the highest standard. The third section describes check-out equipment that can be placed or used in multimedia classrooms but must be requested.

1.2.1 Basics

At the heart of each multimedia classroom at ETSU lies a basic set of electronic equipment. Since, as noted in the Foreword, there will be a separate white paper which details the technologies installed in the classroom, this section will only list the components so that the reader might get a sense of the instructional system we call a multimedia classroom. The majority of the equipment is located in a cabinet or on the teachers’ desk, unless otherwise specified. It includes the following:
• Thin screen monitor
• Keyboard
• Visual presenter
• Touch screen controller
• LCD projector
• Ceiling-mounted speakers
• VCR (which also serves as a tuner for access to the campus cable and satellite downlinks)
• DVD player
• Audio tape player
• PC
• Macintosh
• Laptop connection
• Audio Amplifier
• Wall-mounted phone
• ISDN and Ethernet connections on teachers’ desk
• Ethernet and electrical connection for each student
• Duplex electrical outlet

1.2.2 Extras

The extras as listed below include a set of equipment and supplies to make the teacher’s use of the classroom more comfortable. Placed conveniently in the teachers’ desk (see picture at left), they also help build confidence.

• Lavaliere mic
• Hand-held mic
• Laser pointer
• Keyboard switch (allows the same keyboard to be used to control either the PC or Mac)
• Wireless mouse
• Extra batteries
• Extra board markers
• Board cleaning supplies
• Remote control for LCD projector
• Equipment users manual
1.2.3 Checkout Equipment

Initial discussions with faculty communicated that several specialized pieces of equipment were desired by some faculty. However, it was obvious that not all faculty and therefore, not all multimedia classrooms, needed that equipment permanently installed. Thus, our design included several the following pieces of equipment which could either be checked out by faculty or installed by the IT staff upon faculty request:

- Digital still camera
- Digital video camcorder
- Laser disk player
- Slide-to-video space converter (for 35 mm slides)
- Audio conferencing system
- ISDN-based videoconferencing system
- Student response system

2.0 Training and Support

Few people would allow an untrained driver to operate their expensive new car. Similarly, few new car owners buy that car with the assumption that it would never need maintenance support. Instructional technology is basically no different. This section describes training and support issues which allow for the efficient operation and maintenance of multimedia classrooms. It starts by describing faculty input that was used in the design of the classrooms. This is followed by a description of the initial, follow-up and expanded training. User surveys and forums are described as they relate to developing an appropriate level of faculty support. This is followed by technical support, references provided, and the continuing support provided by the Golden Key Club. Each of these topics is described below in greater detail.

2.1 Faculty Input

Faculty input was key in the design and development of the multimedia classrooms at ETSU. Open forums to which all faculty was invited were held as the first step in the planning phase. The purpose of the forums was to gain a sense of the needs and desires of the faculty in their art of teaching. Care was taken to show respect for all inputs and to reject no ideas in this initial phase. At the request of senior administrators, we provided some good examples of what we considered to be effective uses of instructional technology. This was useful in providing the faculty with a sense of what was technologically feasible. However, the examples were provided primarily to “prime the pump” or as a beginning point for the dialogue, not an end point. If asked, comments were made about feasibility of particular requests.

2.2 Initial Training

Before the multimedia classrooms were built at ETSU, the Senior Staff agreed on a few basic guidelines for their use. One of those guidelines was that all multimedia
classroom users would attend a mandatory training session before they were given access to the classroom. As previously mentioned, the rationale given was that nobody would let a stranger drive his or her expensive car without first being trained to operate it. This agreement was reached without much consternation on the campus for two reasons. First, we were talking about a facility that did not yet exist, so there was no real precedent to the contrary. Second, numerous other technological installations on the campus had been significantly damaged by prying fingers and untrained users and were subject to faculty criticism.

Great effort was taken to develop an initial training course that was short, professional, tailored to faculty needs, and hands-on. We developed a one-hour course with PowerPoint slides (Appendix 5.1) and handouts that focused on tasks that the faculty had to do routinely. The workshop was conducted up close and personal, typically with only one or two faculty users at a time. The workshop concluded with an exercise requiring each faculty member to enter the classroom with the lights and equipment turned off and a task to go through the steps to turn on the equipment he or she would most likely use. The exercise also included having the faculty go through the shut-down procedure. Faculty received a copy of the PowerPoint slides and were shown the location of the Users Manual. It contains the operating instructions from the manufacturer’s users manual; there is a tab for the instructions for each piece of equipment. After the college’s multimedia classroom use policy was reviewed, faculty members were then issued a key, told how to get their ID card programmed to open the door lock, and asked to fill out a critique form (Appendix 5.2). It is not surprising to me that my staff members who conducted these highly individualized training sessions earned an average satisfaction rating of 4.98 on a 5.0 Likert scale.

2.3 Follow-up Training

The OIT trainers indicated to faculty in the initial training that they fully expected them to have some unanswered questions, which is natural, and encouraged the faculty to do two things. First, they should practice the skills learned in the initial training before they have class. Second, they were invited to schedule follow-up training. In general, the trainers recommended that follow-up training be conducted about two weeks after the initial training and be totally focused on the specific needs of that faculty member. This was a great confidence builder for the faculty knowing that they could get whatever training they needed to succeed. It also continued building a personal relationship with the faculty and let them know that we are here to serve.

2.4 Expanded or Related Training

As a part of the training mission our division has, we offer a wide variety of open enrollment and cohort workshops. For example, during the academic year of 2000-2001 we offered 330 open enrollment and cohort workshops on 87 topics. (See http://ats.etsu.edu/registration.htm.) Sixty-six of those 330 workshops were initial training on the multimedia classrooms. In addition there were several other open enrollment workshops provided throughout the year. The faculty was encouraged to
sign up and attend workshops on topics such as “Using the SmartBoard,” “Posting in Class to the Web,” and “Videoconferencing in the Multimedia Classrooms.” These expanded training opportunities were provided to faculty who wanted to hone specific skills on equipment available in the multimedia classrooms. It is interesting to note that workshops on three additional multimedia classroom related topics were offered, but few signed up for them. We surmised that the initial training had largely satisfied their needs.

Another possible explanation of why the expanded training was not heavily used is that we provided a CD-ROM to each of the faculty at the end of initial training. It contained some just-in-time training on each piece of equipment in the multimedia classrooms. The CD-ROM was developed as a student project by the ETSU Advanced Visualization Lab and has earned favorable comments from numerous faculty.

2.5 User Survey

Approximately three weeks before the end of each semester, we distributed a simple six-question survey (Appendix 5.3) form to all scheduled users of each multimedia classroom. Data were collected and collated by classroom so that we could use the feedback to identify problems in particular classrooms. Surveys were to be completed by the faculty anonymously and the faculty were instructed to return them to the training manager for analysis. Average ratings for each classroom were collected and reported in two ways. First, the data summary was provided back to the faculty from which it was collected. Second, the data were used as part of the Multimedia Classrooms Manager’s annual evaluation. Specific numerical goals for average faculty ratings on these classrooms were established at the beginning of the year. Thus, the annual evaluation reflected the faculty’s satisfaction. Knowing that the Multimedia Classroom Manager was being rated on faculty satisfaction with his performance sent a powerful message to the faculty. It also made it clear to the Multimedia Classroom Manager exactly who he needed to satisfy.

2.6 User Forums

Within the same e-mail that asked the faculty to complete the user survey, we also asked them to attend a User Forum. One User Forum (Appendix 5.4) was scheduled for each classroom near the end of the semester. Its purpose was to discuss problems and successes, gather all comments and suggestions, schedule appropriate improvements, and incorporate the user survey results gathered to date with the live feedback. Minutes were recorded and distributed to each faculty member that was scheduled to use the room that semester.

The User Forums ended up differing from our expectations. We expected faculty to attend the forums in approximately equal numbers for each classroom. What we found was quite different. In the rooms where the faculty experienced virtually no problems as reflected in the user survey, we found faculty did not show up. In those classrooms where we had some difficulty during the semester, the user surveys were largely
neglected by faculty. However, faculty with problems preferred to air those problems in public. By focusing faculty comments away from the problem and toward its solution, we were able to make these forums very productive. The faculty was encouraged by the fact that our minutes were not watered down, but rather reflected their sentiments completely and accurately. They were even more encouraged by the fact that the solutions discussed in the forums were acted upon quickly.

2.7 Technical Support

The introduction of any new technology is augmented by the concurrent implementation of technical support. Probably the most reassuring sign of technical support was the presence of a wall-mounted telephone right behind the teacher's desk. Next to it were detailed instructions for assistance. These included instructions on how to gain emergency support by use of the pager or routine support through the Help Desk. A placard with those instructions was posted next to the phone. In the initial training, we defined an emergency as anything that would disrupt a current or soon-to-start class. A routine request was one that could wait a day or two before it was resolved. We guaranteed faculty a ten-minute or less response time to an emergency call. We used the full-time staff but mostly the graduate assistants to provide this rapid response. Emergency help was made available from 8:00 a.m. to 9:00 p.m. daily through the use of graduate assistants.

Technical support has two arms; one is reactive and the other proactive. You can focus your energies on fixing what is broken as reported by users. This type of reactive maintenance, however, always puts you in an emergency mode. The problem with being in an emergency mode all the time is that pretty soon technicians become desensitized to that sort of state of emergency. The proactive approach deserves greater attention and can save you from having to respond reactively. We set up a schedule in which virtually every classroom was inspected by a graduate assistant daily. The graduate assistant had a checklist (see Appendix 5.5), which he or she was required to use and turn in to the Multimedia Classroom Manager. By testing each piece of equipment and assuring that the physical surroundings were up to standards, we were able to maintain high standards throughout the year while minimizing emergency calls. By collecting the daily inspection checklist, we were able to identify interesting trends, such as the room that used four times as many magic markers as any of the other rooms.
2.8 Reference Materials

The reference materials have largely been described in other sections of this report. The multimedia classroom website (http://ats.etsu.edu/mc/newsite) served as a collection point for the training materials. It includes classroom policies for each classroom, the training materials used in the initial and follow-up training, and will soon include more detailed explanation of how to use each individual piece of equipment found in multimedia classrooms.

A Users Manual was placed in the teacher’s desk in each multimedia classroom. It consisted of a three-ring binder with a tab for each piece of instructional equipment. Behind that tab, faculty could find the manufacturer’s user manual for that piece of equipment.

A CD-ROM, as described in the Expanded or Related Training paragraph above, was intended as just-in-time training for the classroom. It is also loaded on the computer in each multimedia classroom for faculty’s easy access.

2.9 Golden Key Club

The “Golden Key Club” started out as a joke. As the trainer for our first multimedia classrooms completed his initial training, he handed the faculty a shiny brass key and said, “You’re now a member of the Golden Key Club.” The key could be used to open the teacher’s desk and equipment cabinet in each multimedia classroom on campus. In a sense, therefore, the recipients were the members of a club and responded very favorably to that notion on our campus. When we built a distribution list for each classroom of trained faculty, we called it our Golden Key Club list. We used it to distribute notifications of planned maintenance, problems and solutions, answers to faculty questions, and classroom upgrades. It proved to be a very effective vehicle for keeping the faculty informed and to build a sense of ownership and membership among them.
3.0 Rubric

In a SAC presentation three years ago, Jerry Niebaum provided a typology that helped me better understand the relationships between data, information, knowledge and wisdom. In summary, he said the data was factual information. By drawing together data that was related to each other, you can construct information. This construction process is based on the interrelationship of the various data points. By adding organization to information, you construct knowledge. When you add social value to knowledge, it may result in wisdom. In this typology, it appears as if organization and social relevance or value as it relates to the human enterprise are the key to the construction of wisdom from information.

Thus far this presentation has provided you with a great deal of information. The purpose of this section is to transform that knowledge into a deeper understanding, and wisdom about any technology implementation. Through this process of taking the specifics previously provided and generalizing the lessons learned (social import), we can arrive at a rubric which you could use to wisely implement any technological change.

3.1 Build Ownership

In our multimedia classroom implementation, several efforts were made to build faculty ownership of the multimedia classrooms. They include: gathering faculty input in open forums as part of the initial design phase; reporting and asking for feedback on the technical specifications; meeting with the intended faculty users of each particular classroom prior to finalizing room renovation plans; providing a special open house for faculty; and, having each college develop its own classroom use policy. In summary, if the technology implementation actively engages intended users (in the case of our multimedia classroom project, the users were faculty), then you are more likely to truly satisfy their needs.

3.2 Construct with the Users in Mind

The notion behind this point in the rubric is that, to the extent possible, the technology should be adapted to the needs of the user. This decreases training issues and support problems. Examples from the multimedia classroom implementation include the following: installing a touch panel with a uniform set of directions for each of the media in the classroom; developing back-up procedures (if the touch panel failed) to build user confidence; marking each individual piece of equipment with a standard set of, color-coded labels; (i.e., blue labels always represent the “power button”) and conveniently placing light switches at the teacher’s desk. For the multimedia classroom implementation, the key was to remember that it is not the technology that matters—it’s the teacher. I believe this is an
emphasis that we, as technologists, too often forget.

3.3 Train the Users

Training is a key element to assure that implementation does not get off track. Both training and the strategic placement of training or just-in-time resource materials are not one-time events. For example, our implementation included: initial training before the faculty were permitted to use the classroom; follow-up training just before the newly trained instructor was to teach; workshops on topics related to multimedia classroom usage; a just-in-time or refresher training CD-ROM; references on the website; and, a User Manual in the desk. Together these training sessions and resources helped build user confidence.

3.4 Keep the Users Informed

A hallmark of the information age was when everyday people began to recognize that information was a commodity that could be bought, sold and traded. In any implementation of technology on a campus, information about that implementation almost assuredly will be exchanged and, all too often, misunderstood or misconstrued. Such misinformation might be overcome by repetition of the correct information in several different forums. We chose to provide routine updates on the status of the multimedia classrooms to the Faculty Senate, Deans’ Council, Academic Council, and the campus community in both the OIT open forums and on our website. During the break-in process, faculty were encouraged to add to the “trouble list” written on the side whiteboard in the new multimedia classroom, to clearly communicate progress made, items were lined through as the discrepancies were corrected, not erased. More specific information about the operational status of individual classrooms was provided by the distribution lists we call the Golden Key Club. Multimedia classroom schedules were posted on the web for all to see. Remember, an informed user is more likely to be a merciful critic.

3.5 Support the Users

Once a technology becomes operational, support of its users takes on greater importance. In our multimedia classroom implementation, we provided the following visible signs of faculty support: a phone behind the teacher’s desk; a wall plaque next to the phone clearly stating who to call and what sort of response time they should expect; a special pager with a technician attached; help available from 8:00 a.m. until 9:00 p.m.; and, daily preventive maintenance. This sort of support also helps build user confidence.

3.6 Fight for Feedback

In any technology implementation, you must devise active ways to gain feedback from users. Our examples include the following: requiring each faculty member to complete an evaluation of his or her initial and follow-on training; sending an electronic survey
form each semester to each scheduled classroom user; conducting an open forum for
the users of each classroom; taking detailed minutes from those forums and distributing
them, via the Golden Key Club, to each classroom user; and, reporting faculty
satisfaction survey data in the Multimedia Classroom Manager’s annual evaluation.

The key to feedback is not so much of collecting it as using it. We had an incident
wherein the faculty in a particular multimedia classroom voted to disable a new
technology. We knew from our open forums and surveys that this technology, the
Smart Board, was a favorite instructional feature in the other multimedia classrooms.
However, we disabled it. We realized that the failure to do so would confound the
feedback process. Furthermore, we realized that the multimedia classrooms are only a
teaching tool and that the teachers should make the decision on how they are used.

In summary, the above paragraphs describe a set of guidelines which together
constitute a rubric that can be applied to virtually any technology implementation. In the
actual conference presentation from which this paper is drawn, the participants applied
the bits of wisdom to a new problem posed by one of the conference attendees. The
technology implementation that was volunteered was a new course management
system (BlackBoard) on a campus. Although as a group we only got to go through
three of the elements of the aforementioned rubric, it was obvious to all that it would
work.

In conclusion, this paper has described the multimedia classrooms at ETSU.
Equipment has been listed, which includes the installed, extra and checkout equipment.
A wide variety of training and support initiatives were described, showing how they
combined to make a 360-degree look at support for every aspect of the multimedia
classrooms. Finally, these descriptions were recombined into a six-element rubric,
which can be used to improve the support for other technology installations.

4.0 About the Author

Dr. Rich Ranker is employed by Collegis as Director of Academic Technology Support
in the Office of Information Technology at East Tennessee State University (ETSU). A
retired Air Force lieutenant colonel, Rich held numerous staff and command positions,
including over 12 years of faculty positions in Air Force ROTC at the University of
Southern California, the Air Command and Staff College and the Air War College. He
started the Center for Teaching Excellence and Learning Technology at Fort Hays State
University (FHSU), where he and his staff built eighteen mediated classrooms before
his departure. At ETSU, he started the Academic Technology Support division and,
improving on his FHSU experience, designed and built the campus’ first multimedia
classrooms. He has published several articles on multimedia classrooms and has
made over sixty conference and workshop presentations. His resume can be found at
http://ats.etsu.edu/rankerr/resume/rarvita.htm.
5.0 Appendices

5.1 Initial Training Handout

5.2 ATS Training Evaluation form

5.3 Multimedia Classroom Evaluation

5.4 Multimedia Classroom User Forum Agenda

5.5 Multimedia Classroom Weekly Inspection Checklist