

Appendix E



California State University, Chico
Office of the Vice Provost for Information Resources

“Smart” Classroom Plan

Five Year Plan

“Smart” Classroom Plan

EXECUTIVE SUMMARY

Smart Classrooms are in high demand by faculty. During class, they need access to the Internet, electronic resources, online course management tools, and other curriculum related materials. Traditionally, Chico selected large lecture rooms that are centrally scheduled to be converted to “Smart” classrooms containing computers, an Internet connection, data projectors, media players, and audio equipment. As equipment costs have decreased and one time money has become available over the last twelve years (1995 to 2007), we built 98 “Smart” classrooms out of 135 centrally scheduled rooms.*

In addition to these classrooms, Chico has over 150 other instructional spaces and/or conference rooms that are managed by colleges and departments. Based on local departmental or college decisions and funds, approximately 41 of these instructional spaces have been built out as “Smart” classrooms and differ in equipment and age from the campus’ centrally scheduled “Smart” classrooms.

Hence, there are two parts to this “Smart” Classroom Plan:

PART I – Classroom Technology Build Out and Refresh for Centrally Scheduled Rooms

PART II – Departmental Classroom Technology Refresh & Support

Strategic Importance

The strategic importance of supporting classrooms and instructional spaces at the university are reflected through out CSU Chico’s strategic plans:

- CSU Chico Strategic Plan, Priority 1 states “*Believing in the primacy of learning, we will continue to develop high-quality learning environments both inside and outside the classroom.*”
- CSU Chico Strategic Plan, Priority 3 states “*Believing in the wise use of new technologies in learning and teaching, we will continue to provide the technology...and the support needed to create high-quality learning environments both inside and outside the classroom.*”
- CSU, Chico 5-year IT Strategic Plan: Aligning the Future: Theme C- Learning Infrastructure states “*Provide reliable and quality classroom technology that meets the needs of the students and faculty.*”

** Includes centrally scheduled classroom spaces beyond Chancellor’s Office designated classroom space and/or Facilities database 001 lecture spaces.*

Classroom Technology Build Out and Refresh for Centrally Scheduled Classrooms

EXECUTIVE SUMMARY - PART I

Proposed Action:

- Build out all the 135 centrally scheduled classrooms as “Smart” classrooms
- Develop a sustainable funding model to refresh classroom technology on an annual basis
- Provide additional Classroom Technology help desk support for all “Smart” classrooms

Benefits:

1. Building out 100% of the centrally scheduled classrooms by the year 2010/2011 reduces scheduling conflicts given faculty demand for classrooms.
2. Standardizing on technologies used in all the centrally scheduled classrooms supports ease-of-use for faculty who are scheduled to teach in multiple rooms each semester. In addition, technical support costs are reduced through standardization allowing central control for problem solving and readily available inventory of spare parts, minimizing downtime.
3. A sustainable funding model provides for equipment refresh in order to minimize support calls, and maintain currency and efficiency of classroom equipment.
4. Currently Classroom Technology Support includes 4 FTE positions with each technician supporting up to 40 classrooms. Support is provided from 8AM - 8PM Monday-Thursday, and 8AM - 5:30PM Friday. The full build-out would require one and a half additional fulltime technicians to provide faculty support and maintenance of centrally scheduled classrooms.
5. As new technologies emerge, this model would provide for those technologies to be added or replaced in these classrooms (e.g. “clicker” technology is now being added).

Costs for PART I:

The following table shows total costs to implement the five year plan for all centrally scheduled classrooms. The annual “Refresh Costs” includes updating technology regularly as we expand the number of rooms (see Attachment A for breakdown of Refresh Costs). The “New Rooms” costs include the build out of both new classroom infrastructure and new equipment. By the year 2010-2011, all centrally scheduled classrooms would be “smart” and hence funding for “New Rooms” would no longer be needed except for new buildings. In the year 2008-2009, hiring an additional 1.5 FTE would be needed in order to have enough technicians to support and maintain growth in the number of “Smart” classrooms and to support the faculty using those classrooms 12 hours a day.

FY	2006/07	2007/08	2008/09	2009/10	2010/11
New Rooms To Be Added	10	12	12	13	0
Total Central Smart Classrooms	98	110	122	135	135
Refresh Costs	\$140,000	\$156,167	\$187,102	\$208,113	\$208,113
New Rooms	\$165,000	\$198,000	\$198,000	\$214,000	\$0
*Additional IT Support Needed	\$0	\$0	\$72,000	\$72,000	\$72,000
Total	\$305,000	\$354,167	\$457,102	\$494,613	\$280,113

**Not included are 4 existing technical positions supporting 40 rooms/technician at 12 hours/day.*

Departmental Classroom Technology Refresh and Support

EXECUTIVE SUMMARY - PART II

In addition to 135 centrally scheduled classrooms, Chico has over another 150 instructional spaces and/or conference rooms that are managed by colleges and departments. Approximately 41 of these departmental instructional spaces have been built out as “Smart” classrooms with individual department resources. Based on local decisions, these instructional spaces differ in equipment and age from the campus’ centrally scheduled “Smart” classrooms. This tends to cause faculty frustration in managing old and different technology as well as having to call a different support number to get the local technician to solve any problems. Classroom Technology Services only provides limited support for these departmental rooms based on limited time and knowledge for supporting nonstandard equipment.

Proposed Action: Determine Funding Model for Supporting Departmental Classrooms

There are three options to consider with pros and cons for each:

Option 1: Do nothing - departments continue to maintain & support rooms (often sporadically)

Option 2: University (central funding) provides for Classroom Technology Support to manage all “Smart” classrooms both central and departmental. (We estimate that approximately 80 departmental instructional spaces would be elected by departments to become “smart.”)

Option 3: Classroom Technology Support provides Service Level Agreements on a case-by-case basis with each department interested in the support and services offered (i.e. design, installations, maintenance, support, etc.)

Costs for PART II, Option 2 Only:

The following table shows the additional costs for Option 2 including costs to standardize, refresh, and support college and departmental instructional spaces. The annual “Refresh Costs” is to update the equipment in the rooms regularly. The “New Rooms” costs include the build out of both new classroom infrastructure and new equipment. After 2010-2011, 80 departmental classrooms would be “smart” and hence funding for “New Rooms,” would no longer be needed except for new buildings. Refresh costs and support costs beyond 2010-2011 would total \$286,067 per year. Additional technicians would be needed in order to support and maintain growth in the number of “Smart” Classrooms and to support faculty using those classrooms.

FY	2006-07	2007-08	2008-09	2009-10	2010-11
Departmental Classrooms	41	50	60	70	80
New Rooms to be Added	\$0	9	10	10	10
Refresh Costs	\$0	\$150,883	\$135,883	\$127,433	\$142,067
New Rooms	\$0	\$148,500	\$165,000	\$165,000	\$165,000
*Additional IT Support Needed	\$0	\$96,000	\$96,000	\$144,000	\$144,000
Total	\$0	\$395,000	\$396,883	\$436,433	\$451,067

**Need 1.5 FTE for every 40 rooms/technician to support for 12 hours.*

”Smart” Classroom Plan

Background:

“Smart” classrooms are in high demand by faculty. Changing student demographics and new academic technologies to support learning and teaching are creating the need for redesigned classrooms. During class, faculty and students need access to the Internet, electronic resources, online course management tools, and other curriculum-related materials. Over the past 12 years, Chico selected certain classrooms out of the 135 centrally scheduled to be converted to “Smart” classrooms containing computers, Internet connections, data projectors, media players, and audio equipment. As the costs of equipment have decreased and one-time money has become available over the last eight years (1995 to 2007), we built out 98 smart classrooms.

As with all technology, “Smart” classroom equipment is continually changing, so maintaining currency without a sustainable funding model is becoming increasingly difficult. As the equipment in the classroom ages, it needs to be upgraded on a periodic basis to stay current. For example, computers need to be upgraded to the new operating systems (such as Windows Vista). The operational plan calls for computer equipment to be replaced on a three year cycle and all other equipment to be replaced on a five year cycle. Support and currency issues impact faculty and students in their ability to effectively use the classrooms while also impacting Classroom Technology Support resources for increased maintenance and trouble calls.

Although 70% of Chico’s centrally scheduled classrooms are technology-mediated, there is still high demand and more centrally scheduled lecture spaces to be converted. Beyond the centrally scheduled classrooms, there are over 150 additional labs, instructional spaces and conference rooms that are maintained by individual departments and colleges that need to be addressed. Forty-one of these have already become “smart” but many are outdated. Demands for more of the instructional spaces to become “smart” are on the rise and need to be considered when planning for infrastructure, equipment and support.

Hence, there are two parts to this Classroom Technology Plan:

PART I – Classroom Technology Build Out and Refresh for Centrally Scheduled Rooms

PART II – Departmental Classroom Technology Refresh & Support

PART I Recommendations:

1. **Build out all** of the 135 centrally scheduled classrooms to be “Smart” classrooms by 2011
2. Provide **standardized technologies** with current, cost-effective and maintainable equipment that can be controlled centrally over the campus network for monitoring and quick troubleshooting.
3. Develop a **sustainable funding model for refresh** to maintain currency & effectiveness.
4. Provide **responsive support and services** with the efficient use of human resources through equipment standardization and centralized control.
5. Monitor and recommend **emerging technologies** for integration into standardized classroom configurations.

Goal 1) Build Out 100% of the Centrally Scheduled Classrooms by Year 2011

Centrally scheduled classrooms (lecture spaces) are defined at the Chancellor's Office through the Space and Facilities database designations. Currently at Chico, 116 lecture spaces are defined as centrally supported and 72 have been converted to "Smart" Classrooms (~ 72%).

- ◆ All centrally scheduled classrooms will be equipped with the standard technologies by 2011
- ◆ Currently, the initial one-time cost to build out the infrastructure of a room and install new equipment is \$16,500/room (See Attachment A – "Smart" Classroom Equipment Costs for breakdown of equipment costs and FMS & TSRV costs.)

The table below shows the total cost per year for the next 5 years in order to attain 100% build out of 135 centrally scheduled lecture classrooms at \$16,500 per room.

FY	2006-07	2007-08	2008-09	2009-10	2010-11
Total Central "lecture" Classrooms	98	110	122	135	135
New Central Classrooms equipped/yr	10	12	12	13	0
Total	\$165,000	\$198,000*	\$198,000*	\$214,000*	\$214,000*

***Funding not identified/secured**

Goal 2) Standardized Technologies

Ensure that the classrooms are always configured with the standard equipment and controls. Standardization in this manner supports:

- ◆ Ease of use for faculty when moving from room to room
- ◆ Standard equipment allows central control and monitoring
- ◆ Reduction in support costs
- ◆ Readily available spare parts

Goal 3) Sustainable Refresh Funding Model

Develop a funding mechanism that provides for equipment refresh to maintain currency and effectiveness of installed classroom equipment.

- ◆ Computer refresh cycle is every three years
- ◆ All other equipment refresh cycle is every five years
- ◆ Refresh costs are approximately \$1,500 per classroom per year in 2007 dollars
- ◆ See Attachment B – Refresh Costs for "Smart" Classroom Equipment for breakdown of equipment costs.

The table below shows the refresh costs of "Smart" classroom equipment per room per year.

FY	2006-07	2007-08	2008-09	2009-10	2010-11
Total Central "lecture" Classrooms	98	110	122	135	135
Chico Unit cost per room	\$1,420	\$1,420	\$1,534	\$1,542	\$1,542
Total	\$140,000	\$156,167*	\$187,102*	\$208,113*	\$208,113*

***Funding not identified/secured**

Goal 4) Service and Support 12 Hours Per Day

Provide fulltime classroom technology support staff for centrally scheduled classrooms 12 hours per day. Currently Chico Classroom Technology Support provides the following:

- ◆ 3 FTE Technicians + 1 Supervisor for “Smart” classrooms
- ◆ 2 FTE Technicians support for mediated classrooms requiring A/V services, support for transparency projectors and other legacy systems still in service. They also provide internal ATEC support.
- ◆ Support is provided 12 hours from 8AM - 8PM Mon-Thur, and 9.5 hours on Friday 8AM - 5:30PM
- ◆ The number of staff technicians has remained fixed while the number of classrooms to support and maintain has increased
- ◆ The forecast for additional staffing needed as we grow is based on:
 - Improved efficiencies from standardization of classrooms
 - Centralized control of standard classroom equipment implemented in 2006
 - Support for 1.5 technicians per 40 rooms in a 12 hour period

The table below shows the staffing costs to manage the support and maintenance of centrally scheduled smart classrooms as we expand until 2010 when we complete the build out. For the years 2006-2008, the existing staffing costs provided by Information Resources/Academic Technologies for Classroom Technology Support personnel are shown. As we add 47 new classrooms from 2006 to 2011, an additional 1.5 FTE would need to be funded permanently to sustain a 1 to 40 ratio of technicians to smart classrooms for 12 hours of support per day.

FY				2006-07	2007-08	2008-09	2009-10	2010-11
Total Central “lecture” Classrooms				98	110	122	135	135
New Central Classrooms equipped/yr				10	12	12	13	0
	Hrs	#Rms	Unit Cost					
Tech	12	490	\$48,000	4	4	5.5	5.5	5.5
Total				\$192,000	\$192,000	\$240,000*	\$240,000*	\$240,000*
New “adjusted” cost per room				\$1,959	\$1,745	\$1,967	\$1,779	\$1,779

*\$72,000 = one and half positions are not currently funded for 2008 and beyond

Goal 5) Emerging Technologies

New technologies continue to emerge requiring additional or replacement equipment. Some of these technologies may have minor costs which can be absorbed by either discounts of bulk purchases or decreasing costs of some equipment; however, some new technologies may require more detailed scrutiny whether or not the new technology is affordable with the current funding model and sustainable by the current support model. Here are some examples of new technologies on the horizon.

- ◆ Student Response Systems (clickers)
 - Requires RF receivers
 - Requires software installation, training and support
- ◆ Podcasting
 - Requires integrated microphones
 - Requires software installation, training and support
- ◆ Emerging Display Technologies (flat screens)
 - Requires replacing bulky monitors sometimes impairing the screen or blackboard view of a student sitting in a particular desk

PART II Recommendations:

Determine Funding Model for Departmental Classroom Technology Refresh & Support

There are over 150 rooms/conference rooms that are maintained by individual departments and colleges, 41 already have some technology and mediation but many are outdated. There is strong demand for more of these spaces to become smart and consideration is needed in order to address all instructional spaces on campus. There are three options to consider with their pros and cons regarding departmental funding models for these spaces.

Option 1: Do nothing - departments continue to maintain and support rooms often sporadically

This means that as budgets and priorities rise and fall, these instructional spaces will be inconsistently updated and will fall behind the centrally scheduled classrooms configurations. This will increase demand in centrally scheduled classrooms, and continue to cause faculty and students frustration when trying to manage the equipment during instruction in these departmental spaces. During fall 2006, the Classroom Technology Support group was asked by four departments to help them design, procure, install and/or setup many of their “Smart” classrooms. This causes a squeeze on several departments including FMS and TSRV to try and meet the demands in between semesters. As the number of centrally scheduled rooms grows, Classroom Technology Support will not be able to meet the needs of these departments.

Cost: minimum new central funding with some impact on central staffing.

Option 2: University (central funding) provides for Classroom Technology Support to manage all “Smart” classrooms both central and departmental. (NOTE: Not all 150 instructional spaces to become “smart.” We estimate that approximately 80 departmental instructional spaces would be elected to become “smart.”)

This adds additional financial and implementation pressure to this plan but in the long-term, would provide the highest quality in all instructional spaces and provide faculty and students the best learning and teaching environment most conducive for their success. Some negotiation would be required since each discipline may require specialized equipment in their “Smart” classrooms. The more specialized an instructional space becomes, the more time consuming and difficult for Classroom Technology Support to serve the other classrooms and maintain the one technician to 40 classrooms ratio. Faculty and students would find it advantageous to call one number no matter what classroom they were in and have a technician always standing by on the “hotline” ready to answer any classroom calls.

Cost: significant central funding commitment.

Option 3: Classroom Technology Support provides Service Level Agreements on a case-by-case basis with each department interested in the menu of support and services offered (i.e. design, installations, maintenance, support, etc.)

The most difficult issue with this option is that, like Option 1, since there would be no refresh cycle for the department classrooms, they will have nonstandard and aging equipment requiring more support labor with a ratio of one technician to 20 departmental classrooms. It would also be difficult for Classroom Technology Support to predict staffing and workload. Service Level Agreements would come and go or the number of requests from multiple departments would rise or fall particularly with the budget tides so sustaining personnel would be very challenging.

Cost: decentralized funding with support cost covered by colleges and units.

Issues to be addressed:

- For Option 2, in order for Classroom Technology Support to provide services for both central and departmental classrooms, the departmental classrooms must all be brought up to the current standard equipment in order to manage support efficiencies. Otherwise, the model of one technician to 40 classrooms can not be sustained.
- The equipment in these departmental rooms would need to be on a funded refresh cycle
- The funding model would need to support departmental requests to add new rooms

Summary

The university's learning spaces are the heart of where formal learning and teaching takes place for the faculty and majority of our residential students. Hence, it is important that we keep these learning spaces up to date, consistent and readily available to access online content and mediated resources used in contemporary curriculum. Once all 135 centrally scheduled classrooms are built out to be "smart" within the next five years, the annual cost for refreshing and supporting these rooms would be approximately \$280,000 per year.

The approach for supporting departmental and college labs/instructional spaces needs further discussion amongst the stakeholders; however, the same issues mentioned above for the centrally scheduled classrooms are true for the department learning spaces as well. Once eighty of these departmental learning spaces are built out, the annual cost for refreshing the equipment would be approximately \$142,000 per year. However, more classrooms would require three more technicians to support an additional eighty learning spaces 12 hours a day at a cost of \$144,000 per year. While Service Level Agreements are a middle-road solution, this leaves staffing and workload vulnerable due to the inability to effectively manage going from high to low demand when budgets peak and fall.

Overall, Chico has made great strides in creating a solid model for building and supporting "Smart" classrooms. The next step requires a consistent and annual funding commitment to meet the needs of faculty and students in their learning and teaching environments. Without a sustainable funding model, the amount of faculty frustration and wasted resources to manage and support the "Smart" classrooms will continue to rise and be unproductive for faculty, students and staff.

Attachment A

Smart Classroom Standard Equipment Costs (January 2007)

Standard Equipment	Costs
Epson Powerlite 6100i Data Projector	\$2,100
Extron MLC-226IP-AAP Media Controller	\$950
Extron MLS 304SA Media Switcher & amp	\$850
Extron Mini Loudspeakers, black	\$250
Spectrum Link Lectern 42" w/ handle	\$1,200
Computer: Dell GX520 minitower	\$900
Monitor swing arm for computer	\$170
Panasonic AG-VP320 DVD/VCR	\$200
Projection Screen	\$200
Spare lamp for projector	\$400
3-M Model 1880 Overhead projector	\$350
Cables, connectors & misc supplies*	\$930
Total	\$8,500
Estimated FMS/TSRV costs	\$8,000
(includes electrical, lighting, network & infrastructure)	
TOTAL COST PER STANDARD ROOM	\$16,500

Note: Long throw projectors and additional equipment such as document cameras add \$2,000 - \$4,000 each to the cost.

Attachment B

Refresh Costs of Smart Classroom Equipment (January 2007)

FY		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Central Classrooms		98	110	122	135	135
Equipment	Unit Cost					
Computer system	\$850	\$12,000	\$31,167	\$34,567	\$38,250	\$38,250
Data Projector	\$1,900	\$0	\$0	\$46,360	\$51,300	\$51,300
DVD/VCR players	\$150	\$8,000	\$0	\$4,575	\$5,063	\$5,063
Document Cameras	\$2,000	\$18,000	\$20,000	\$25,000	\$28,000	\$28,000
Media Controllers	\$750	\$15,000	\$20,000	\$18,300	\$20,250	\$20,250
Switchers Amplifiers	\$750	\$38,000	\$15,000	\$18,300	\$20,250	\$20,250
Overhead Projectors	\$250	\$5,000	\$10,000	\$10,000	\$10,000	\$10,000
subtotal		\$96,000	\$96,167	\$157,102	\$173,113	\$173,113
One time upgrades*		\$19,000	\$35,000			
Expendables		\$25,000	\$25,000	\$30,000	\$35,000	\$35,000
TOTAL		\$140,000	\$156,167	\$187,102	\$208,113	\$208,113