California State University, Northridge
Classroom Technology Committee

Report of Classroom Technology Survey
Conducted in February 2009

Overview:

Across campus, there are increasing numbers of classrooms that are provisioned with various types of technology. The overall goal for provisioning classrooms with technology is to ensure faculty members have the appropriate tools to deliver instruction. The Classroom Technology Committee conducted a survey to get a better understanding of the current use of technology and the faculty's outstanding needs. In this document, we provide a summary of the results obtained via the survey and offer a set of recommendations based upon both information culled from the survey and subsequent discussions of the Classroom Technology Committee.

Survey Summary:

A series of 27 questions related to technology and support were posed to faculty via a web-based survey tool, of which there were 460 respondents.[1] The 460 respondents were proportionally distributed across colleges based upon the number of faculty within each college. In addition, the self-identified level of expertise was evenly split between three major groups: moderately facile, facile, and experienced.

The demographic-based questions also indicated that the respondents were very familiar with smart classrooms; 73% indicated that they teach in a smart classroom 50% or more of the time. Moreover, a vast majority (89.1%) indicated that they have sufficient skills to utilize the technology deployed within these smart classrooms. Also interesting is that over 55% of faculty bring a laptop into the classroom to deliver instruction.

These numbers indicate that the survey provides an excellent window into the needs of faculty across the campus and underscore the dependence on technology for the delivery of instruction.

Summary of Major Observations:

1. A large number of faculty members are interested in and reliant upon technology for the delivery of instruction – whether or not that instruction is provided via an

[1] The survey results have been posted at http://www.csun.edu/academic.affairs.

online, hybrid, or traditional delivery approach. This is borne out by the large percentage of faculty (~20%) that participated in the survey.

2. Many faculty members opt to bring in their own computer (laptop) to deliver instruction. Approximately the same percentage of faculty (36.4%) indicate that they would continue to bring in their laptop even if a computer was available in the classroom. The reasons faculty provided for their preference fall into three main categories:

    a. to access data located on their computer

    b. to ensure that the appropriate software and configuration exists

    c. to maintain a high level of reliability

3. Many classrooms have different types of hardware. Faculty members have a strong preference for the most basic resources: data projector, computer, and CD/DVD. Although some faculty express the need for specific devices to access content stored on different media (CD, DVD, tape cassette, etc.), data within the survey suggest that there is a growing trend to have content stored "online" and to access it remotely. Hence, the need for such devices is expected to diminish.

4. Within the classroom setting, faculty members are using a small set of tools. The majority of these tools relate to slide presentation software, web browsers, and video presentation software. Hence, standardization may offer a higher degree of reliability and familiarity without the loss of functionality and flexibility.

5. In general, the current support structure is perceived as being marginally satisfactory. In addition, faculty have several avenues for support, which they utilize depending on the situation. Sufficient data exist to infer that faculty members are not clear how to get support and many times rely on informal avenues of support.

6. Faculty believe that the top three areas in which additional resources or more emphasis should be placed include (in order):

    a. providing a more stable and reliable environment

    b. simplifying the use of technology already present

    c. providing more specialized classroom technology support

Supporting Comments:

A. The most utilized technology for faculty to deliver instruction within a classroom setting includes: data projector, computer, CD/DVD, wireless, and web-based applications – in that order. Whereas, the less used technology includes (in order): audience response system, document camera, UVN, overhead projectors, and VCR.

B. The most important technology to faculty was also the most utilized. The relative importance, however, of both wireless and web-based application increased over that of CD/DVD. We believe that these numbers indicate that these two technologies (wireless and web applications) will increase in their overall utilization over time within the classroom setting. The decrease in the relative importance of CD/DVD likely indicates that more content will be stored "online" as opposed to being physically brought into the classroom in the future.

C. When asked which technologies faculty would use – if it were made available, faculty responded with "yes" for: computer, CD/DVD, wireless, data projector, and web-based applications (in that order). Additionally, the reverse order of "no" responses also placed these technologies into the top five positions. Moreover, when all responses were averaged, a further consensus for these five (5) technologies was observed.

   Faculty members showed less interest in using overhead projectors, UVN, document cameras, and audience response systems.

Software:

D. The software used most often in the smart classroom is limited to a small number of common software packages. The top three of the packages identified are: slide presentation software, web browsers, and video presentation software. Each of these packages were utilized by more than 65% of the respondents – with 90% using slide presentation software.

   This suggests that uniformity in computer configuration may reduce the number of issues related to software configuration and reliability. Whereas other software packages, while serving an important role, may be better supported via a different model. For example, a remote application server could be used to provide access to a myriad of software without the expense of deploying the software on a large number of desktop computers.

E. Faculty members were also given the opportunity to suggest other applications that should be installed on classroom computers. The most asked for application related to PDF view and creation. Other applications tended to be specific to a discipline or a personal preference of a faculty member.

Support:

F. Faculty were given the opportunity to evaluate the type of support that is provided. On a scale from 1 (very unsatisfied) to 5, with 3 being neutral, based upon both mean (3.32) and mode (571/1615), faculty were on the positive side of neutral with all types of support listed. They also reported that on average, 13 minutes of classroom time is lost in addressing each incident.

   To get a greater understanding of the strengths and weaknesses of support, we compared responses of faculty that were very unsatisfied with those that were

very satisfied. In all cases, a greater number of faculty were very satisfied then were very unsatisfied.

a. For the availability and quality of support, there were three times the number of faculty that were very satisfied as compared to those very unsatisfied.
b. For the type of technology deployed, there were twice as many faculty that were very satisfied as compared to those very unsatisfied
c. For the configuration of technology, the difference between very satisfied and very unsatisfied was less dramatic.

These numbers suggest that more emphasis should be placed on strengthening technology configuration and selection as opposed to availability and quality of support. (Although more unified support should be provided to strengthen the overall support satisfaction.)

G. In general, most faculty (67.5%) seldom require support. When they do, it is either spread throughout the semester (46.6%) or within the first two weeks of the semester (36.6%). We speculate that the type of support they need for these two periods of time differs. We also surmise that most support calls during the beginning of the semester are associated with the technology configuration and selection, whereas maintenance-related issues are more prevalent throughout the semester. We further speculate that uniform configuration and appropriate training can mitigate some of the issues that arise during the semester.

H. When faculty require support, there are a large number of avenues to obtain support. On average, each respondent typically calls 2.14 places for support. The majority (52.5%) seeks support from local technology resources. Whereas 33% of faculty seek support from central resources, with Media Services being the primary resource. An additional 26% of faculty also seek support via informal channels, such as a student in the classroom – which might indicate support needs are minor. While, 16% of faculty either don't know who to call or defer addressing the problem.

I. The number one reason why faculty seek assistance is because they need assistance using classroom equipment (61%). This suggests that additional training may help to reduce the number of support calls.

To further understand support needs, all support examples listed in Question 21 of the survey, as well as the open responses provided by faculty, were categorized into four groups: breakage, configuration, maintenance, and training.[2]

	Breakage	Configuration	Maintenance	Training
Examples		37%	30%	51%

[2] Note that some examples were listed within multiple categories.

Open Responses	25%	41%	34%	
Combined	2%	32%	26%	40%

Table 1: Categories of Support Areas

Although faculty members indicate that they have sufficient training to use classroom technology, other data suggest that many support issues can be mitigated by appropriate training and by faculty having a greater familiarity with technology deployed within the classroom. This point also underscores the need to have greater standardization of technology deployed across campus as well as to simplify the technology that is already present.

Resource Emphasis:

J. Faculty were also given the opportunity to provide input on the placement of additional resources. Overwhelming, the faculty indicated that providing a more stable and reliable environment as being essential (40.7%). Moreover, 67% of faculty indicated that providing a more stable environment is either a high or essential priority.

In Table 2, we provided three set of numbers for each category. First, the percentage of faculty that rated each category as being "essential" is provided. Second, the percentage of faculty that rated each category as being either "high" or "essential" is provided. Third, the overall rating for each category, on a scale of 1 to 5, is provided.

K. On average, faculty members also indicated a preference for more resources to be placed on specialized classroom support. On a scale from 1 (not important) to 5, faculty rated this option as 3.60.

L. On average, the third highest priority as indicated by faculty is to simplify the use of the technology already present. This item received an average value of 3.58. Moreover, 53.10% of the faculty indicated that simplifying the use of technology is either a high or essential priority; within this ordering, simplifying technology was ranked second in importance.

Category	Average	Essential (5)	High+Essential (4 or 5)
More stable and reliable environment	4.03	40.70%	67.00%
More specialized classroom technology support	3.60	25.80%	49.00%
Simplify the use of technology present	3.58	25.70%	53.10%
More technology to enhance my pedagogy		22.00%	52.00%
More technology training		24.20%	49.90%

More pedagogical support		17.90%	42.30%

Table 2: Faculty's prioritization of resource placement.

Other Messages Heard:

Within the survey, faculty had several opportunities to provide feedback. Through this feedback, several messages emerged as common themes. These messages, enumerated below, influence the recommendations being put forth.

I. When presenting, faculty members need to have a monitor that is in view as they face students in the classroom. This monitor must also not obstruct the view of the students.

II. Placement of the whiteboard needs to be considered when a room is equipped with a data projector. Faculty members need to have the ability to use both mediums during a single presentation. All too often, the use of the whiteboard is lost because of poor placement of the data projector and screen.

III. The variety of different systems and configurations makes it difficult for faculty to be sufficiently familiar with the technology deployed. Hence, standardization of systems and the integration of systems should reduce the frustration experienced by faculty teaching across the campus.

IV. Faculty members are accessing more data as part of their instructional delivery. However, faculty members are finding it difficult to access this data in a uniform and reliable manner. Therefore, access to online ubiquitous storage is of increasing importance.

V. Wireless access is becoming increasingly important. Yet wireless is not uniformly deployed across campus, with some areas having inconsistent coverage. The wireless infrastructure must be reliable.

VI. There is not always support available to faculty. Such support is typically provided 9 a.m. to 5 p.m., yet many faculty members have evening classes and also require support during these times.

Recommendations:

Support:

We have concluded that most individuals do not know whom to call for support or when support is available. For example, most individuals (52.5%) call local IT support, yet local IT offices typically close at 5 p.m. Moreover, many of the individuals who utilize local IT support might not realize that Media Services is available until 10 p.m.

1. Each classroom, regardless of location, should have a new sign indicating a **single** number to call for support. This number would be uniform across the

campus and would be routed to the appropriate IT support location – based upon time of day and department of origin.

For example, a faculty member can call x1500 from any classroom. This phone call can be automatically routed to the local IT staff prior to 5 p.m. and routed to Media Services after 5 p.m.

Under this approach, faculty members could be assured of a single phone number to call and a consistent set of hours for support. Moreover, they will be connected first to the local IT group that – in most cases – has the most expertise with resolving potential issues within that particular classroom.

In addition, the signage should include the URL for the Media Equipment in Auditoriums & Classroom, which provides technical guides to faculty member on the equipment deployed within classrooms. This URL for this site is:

http://www.csun.edu/~it/services/media/mediservequimain.html

2. A publicity campaign should be established to inform faculty of the single classroom tech support phone number, the hours that it operates, and the support it provides.

3. Many faculty members (27.6%) indicate problems with logging into a classroom computer. We surmise this problem is associated with different login processes for classroom computers and faculty desktop computers. The campus provides a uniform desktop management solution (aka Active Directory) in which all computers that are part of the solution are part of the CSUN "domain." As such:

    a. All classroom computers should be made part of the CSUN domain. (Moreover, the GPO that has been specifically designed for classroom presentation computers should be deployed on these computers.[3])

    b. Ideally, all faculty computers should be made part of the CSUN domain.

    These two steps will help to ensure that faculty members all utilize a single username/password to access all campus resources.

4. In addition, the CSUN domain should be provisioned with two special accounts: kiosk and visitor. (Both these accounts already exist; with each account have different set of capabilities.)

    a. The visitor account[4] information should be provided to a faculty member, whenever a faculty member reports a login issue. That way they can quickly resume their presentation.

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[3] Under this group policy object (GPO), the screen saver functionality is disabled to prevent the screen saver to from interrupting a presentation.

[4] The visitor account currently has a password that is reset on a daily basis.

b. The kiosk account information should be posted within the media box. (Although this account has limited capabilities, it should be sufficient to allow a faculty member to proceed with their presentation.)

5. Currently, faculty experience a wide range of IT-related issues, yet there is no central database in which issues can be tracked, identified, resolved, and – most importantly – resolved within a timely manner. Each college has an independent IT staff and problem triage, determination, and solutions are not shared across organizational units. Hence, all college IT staff should use a single Helpdesk solution. EBSuite is currently being implemented on campus in some areas, and this software should be reviewed as a potential campus-wide solution for classroom technology support.

6. It has been noted that many faculty require classroom technology support during the first two weeks of the semester (36.6%). During this crucial time, the local IT staff should ideally be integrated more closely into the Classroom Technology support fabric. Specific recommendations include:

    a. Prior to the start of each semester, the local IT group should review all technology (both computer and media based) deployed in classrooms within their physical area. This activity should be coordinated with IT/ Media Services, IT/Desktop Support, and UVN Services. This activity will ensure that appropriate software is installed, cabling is present and connected, appropriate, fresh batteries are installed, etc.

    b. Each local IT group should have someone appointed to be available – at least – during the first two weeks of the semester, whenever classes are in session.

    c. Local IT groups should, on a regular basis – perhaps monthly – review all classrooms within their physical area to double-check both computer and media configuration.

7. Currently, faculty members are provided with various opportunities for training. Many faculty members do not avail themselves of these opportunities for a variety of reasons. The current training offerings should be reviewed to determine the best way to provide a more uniform and consistent training model that faculty value. Training should be provided for faculty through new faculty orientation and "just in time" training opportunities should be offered to returning faculty.

Software/Hardware Configuration:

8. A major theme of the survey was faculty indicating a lack of standardization across the campus. The DASC committee has been developing software and hardware configuration guidelines for desktop computers. A subcommittee has been established, with a dual reporting to the Class Technology committee. Via both parent committees, a number of recommendations should be carried forth into implementation. These recommendations include:

a. The list of required software, obtained from the survey, should be

- added to the image for all instructor's computers in smart classrooms
- available for the image for all faculty desktop computers, perhaps through a guaranteed software suite on thin clients
- included in campus-wide licensing
- included in the list of software in which user guidelines and training is provided (if not already included)

b. The list of specialized software should be created, and

- Determine the appropriateness of obtaining campus wide licensing for each of the software packages listed.
- Consider deploying the software on a central application server to alleviate the need to deploy the software on individual workstations for each of the software packages listed.

c. For all classrooms – regardless of IT stewardship – a standard configuration should be developed and deployed. This configuration should consist of:

- A short-cut to the "Media Equipment in Auditoriums & Classrooms" website should be placed in a prominent location on the computer's desktop. This short-cut will allow the faculty member to quickly locate technology guides related to the media equipment deployed in the classroom.
- A small footprint computer (possibly a thin client) that allows access to all the common software used by faculty.
- A small footprint computer that allows access to server-side applications that contain infrequently used or domain-specific software. This will also allow faculty to access the software from any computer on-campus or off-campus.
- A small footprint computer that is configured to allow remote helpdesk support. Such remote access will enable IT support staff to triage issues and to take corrective steps without physically visiting the classroom, thus minimizing potential time loss.
- A set of standardized media equipment with similar configurations to ensure uniformity across campus. Moreover, this configuration should include the capability to monitor and to control the classroom equipment remotely. For example, these capabilities would allow the projector's lamp life to be monitored (and proactively replaced) and allow IT support staff to remotely control input devices to aid faculty in correcting device settings.

9. As faculty move towards content being stored (and available) "online," devices such as tape cassette, VCR, CD, and DVD players become less important. As such, other vehicles of delivery should be explored (e.g., the University Video Network (UVN)) to further remove the need, to the extent possible, for faculty to "schlep" media to class and to manage another type of device.
10. Faculty have noted that the wireless infrastructure is not uniformly deployed across campus. Wireless coverage within all classroom areas should be reviewed to determine appropriate changes, e.g., access point placement, to provide more consistent coverage and a more stable and reliable utility.

Data Access:

11. As more faculty members increase their use of technology, there will be greater demands for storage. This storage needs to be ubiquitous and easily accessible. Currently, all faculty members have access to the campus uDrive for this storage need. Most faculty members, however, are not familiar with the uDrive and a communication campaign should be established to inform faculty members of the effective use of accessing remote file systems.
12. When a faculty member logs into a campus computer that is part of the domain, they are automatically mapped to their uDrive. Many faculty members are not aware that the uDrive is available and some faculty member's office computers are not part of the CSUN domain.[5]

    a. All faculty members are encouraged to make their computers part of the CSUN domain.
    b. Specific training to assist faculty in creating, managing, and delivering course content by using various data sources, such as the uDrive and data repository, should be created.

13. The University Video Network (UVN) maintains a substantial amount of content that could be utilized by faculty – with more content being added yearly. Currently, only 20% of the faculty avail themselves of this resource.

    In addition, the survey results support the notion that there is a growing trend to access content online, primarily via a web-based mechanism. The UVN, however, is not accessible via this mechanism. As such, a strategic plan for the UVN

[5] The campus also provides video streaming capabilities via the vDrive and is moving forward with providing web-publishing capabilities, perhaps, via the wDrive. Regardless of the specific architecture, all data sources should be folded into a comprehensive "data" strategic plan.

system should be developed to allow it to remain an integral data source and to expand its usability by faculty and students.[6]

14. A strategic plan should be developed for data. This plan will encompass storage needs for documents, presentation, videos, and learning objects, etc. This plan also needs to leverage other projects that are underway (e.g., the learning objects repository). Although bulk storage and access issues are important, the emphasis should be placed on faculty-level support to allow them to effectively use existing resources and new resources being provided.

In this section, we have provided fourteen (14) recommendations to improve upon current classroom technology and support. These recommendations are presented within three areas: support, software/hardware configuration, and data access. In carrying out any of the enumerated recommendations, primary emphasis should be placed on faculty-level support to ensure that the technology investment results in a direct benefit to classroom instruction.

[6] It is noted that there are many issues involved in transforming UVN to be accessible via a web-based approach, and such a transformation will take time.