

Incorporating New Computer Technology into the English Curriculum

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OVERVIEW OF PAPER

This paper reviews results of the Educational Technology Sub-project conducted under the umbrella of a larger Curriculum Development Project between the academic years 1996 and 1998 at the Foreign Language Center of the University of Tsukuba. Accompanying this is a critique of the overall situation at the university with regard to computerization, with the suggestion that there are severe limitations as to what can be accomplished at the departmental level. Such limitations are then highlighted by contrasting the situation with that of another major university where both facilities and support are significantly more advanced. Finally, mention is made of different but related projects which actually use new technology to enable a more diversified and interesting palette of educational activities and resources.

THE EDUCATIONAL TECHNOLOGY PROJECT

Proposal

As one of five areas targeted for improvement, the objectives of the Educational Technology Sub-project were stated to be:

- use of electronic mail
- development of multi-media learning tools and procedures
- use, application and integration of video

The proposed timetable for these goals was:

1996	A	<ul style="list-style-type: none">• establish communication via e-mail between Tsukuba students and students in other countries (for reading/writing practice)• establish an e-mail network between students and instructors• establish internet and WWW routines for students• communication and research projects in order to locate, retrieve and use information from international resources
	B	<ul style="list-style-type: none">• explore how learners use technology by organizing a small multimedia self-access workstation
	C	<ul style="list-style-type: none">• create a database of video texts according to genre using digital editing tools
1997-98	A,B,C plus:	<ul style="list-style-type: none">• evaluate quantitatively communicative progress made• review qualitatively communicative progress made• establish appropriate learning modules for e-mail and self-access

Purchases

For these purposes, roughly 25% of the umbrella project's budget was allotted for use by the Educational Technology Sub-project for hardware, software, and improvement of facilities. Purchases included:

- CPU upgrades, memory modules, multimedia soundboards, CD-ROM drives, SCSI cards, and LAN for five pre-existing desktop computers
- LAN and SCSI cards for five notebook computers, for distribution to interested faculty
- installation of five LAN hubs and cabling in three faculty rooms and two classrooms
- networking, browsing, scanning, OCR, programming, and HTML editing software packages
- a sampling of CD ROM multimedia and reference packages for inclusion in a staff library
- one Macintosh computer for users of that operating system
- scanners and printers for common use

Original plans to purchase a powerful computer for multimedia editing were never actualized. Neither were plans to purchase a video camera, a video capturing device, and digital editing facilities. No DVD software or hardware was purchased, nor anything for student self-access.

Results

As a result of the above purchases, old equipment was upgraded, faculty members were connected to the university LAN and Internet, and programming utilities and a sampling of CDs were acquired. Of these, the installation of LAN facilities in faculty offices was the most significant. Though the updated computers remained only marginally useful,¹ a minimum level of computability and connectivity was established for the first time.

In addition to three faculty rooms, LAN hubs were installed in two classrooms, and PCMCIA LAN cards distributed to potential users. It was hoped that teachers would use notebook computers to combine multimedia presentations with live Internet access. For this purpose, 'decoders' for displaying notebook screens on classroom video monitors were also acquired. Unfortunately, the difficulty and inconvenience of having to setting up equipment inhibited interest and use. The facilities remain, however, and it is hoped that they will still find some use; but multimedia classroom presentations on a wide basis will only come about with better facilities and support."²

Likewise, the purchase of programming languages and HTML editors (BASIC, C++, JAVA, FrontPage) created possibilities that as of yet are largely untapped. These tools

enable the construction of new kinds of computer-based and multimedia materials. Though the number of faculty members who interested in programming their own materials is limited, interest in these resources should grow now that the Center's WWW server is up and running. As for the CD-ROM collection in the Staff Room, it is small, titles are already outdated, and no networkable items are included. It is primarily for dabbling with by instructors, though a few of the CDs have been used by teachers with classes. Again, a start—albeit barely—has been made.

As a result of the Educational Technology Sub-project, some changes in the ways teachers work can be seen. Such changes include e-mail communication with students, the submission of homework through e-mail, retrieval of class materials from the Internet, OCR scanning of printed materials, use of shared network printers, and the use of CD-ROM materials for reference.

As indicated above, some of the aims mentioned in the original project proposal were never even attempted. The abandonment of such goals primarily resulted from confrontation with realities of the present situation and budgetary constraints. For example, though there is a common desire to create more student self-access capabilities, this proved impossible because of the unavailability of a room for such purposes and the difficulty in budgeting for personnel to monitor such a lab. Digital video editing equipment proved overly expensive, and the idea of building a DVD library was a little too early.

LIMITATIONS IN THE CURRENT SITUATION

Difficulties

One of the original aims of the project was to establish procedures for e-mail exchange with classes. This proved more difficult than would seem, and was at most achieved by teachers on an individual basis. Explanation of this point is illustrative of impediments which must be addressed at the institutional, rather than departmental, level. Below are some of the factors which complicate the establishment of generally applicable procedures.

- Students and faculty use different mainframe systems.
- Though both systems are UNIX-based, student and faculty interfaces to the underlying systems are different. The student-type interface is not available on the faculty mainframe.

- The computing center will not grant an account on the student system to a faculty member. This prevents faculty from being able to demonstrate, instruct, or even know what it is that students must do in order to submit e-mail assignments.
- The student interface is modified from time to time. Teachers receive no information about this.
- For foreign faculty without Japanese language skills, the student interface is undecipherable in any case.

On an individual basis, I was able to overcome these barriers. This is because I, somewhat irregularly, have an account on the student system; I have acquainted myself with the student interface; I have taken the time to learn basic UNIX commands and programs; I have taken on the burden of instructing my students on how to use these systems,ⁱⁱⁱ and have been willing to devote a few weeks of time at the beginning of the year to do this;^{iv} I can read the Japanese menus that students see, and thus help them work their way around. Though I could document the procedures I use for working with my classes, the conditions under which they are invoked are so unique as to render them useless for anyone else.

In the present situation, one must simply assume that teachers will somehow get themselves up-to-grade from whatever level of user they initially are.^v As will be discussed below, however, the difficulties teachers have in using such a system should not be seen as a reflection of a deficiency on their part as much as a fault in university policies and facilities. Similarly, teachers must simply assume that students will acquire the necessary expertise, somehow or other. The truth is that in the current situation, this assumption seems to fail. If the university is serious about computer literacy, it must begin by making facilities and training readily and easily available to all.

Without belaboring each in detail, below are some of the difficulties issuing from systems and policies at the university level.

- delays in creating accounts
- use of difficult-to-use programs
- lack of instruction
- lack of technical support^{vi}
- lack of a university-wide strategy for computerization

At the departmental level, the difficulties are:

- outdated equipment
- lack of technical help and lab assistants
- lack of expertise for planning and implementing new systems

Contrast with another university

So that the above critique does not come across as mere moaning, let me contrast the above situation with that of another university where computerization, computer literacy, and multimedia are serious concerns at the institutional level. Again, without belaboring each point, let me note the following about the situation at Waseda University:

- All classrooms have built in multimedia equipment. If there are exceptions, special staff will both deliver and set up such equipment prior to the beginning of class. As of 1999, many rooms are equipped with DVD.
- Most classrooms have LAN plugs and are equipped to accept the video signals from notebook computers.
- All faculty members are provided with ultra-portable notebook computers. These computers are leased, not bought, from a contracting company, thereby ensuring currency of models.
- Multiple labs are available in each department, in addition to those at the computing center.
- Labs located in the departments are administered by the computing center.
- Labs are constantly staffed with student help.
- Support is readily available to both students and faculty, with specialized help for each.
- Brief orientation courses are available to all at no expense.
- Booklets explaining how to use computing resources are sold in the university bookstore. These booklets are cheap and constantly updated.
- Every time a student boots up a networked computer, the computer is refreshed to a pristine state.
- Labs are equipped with the most up-to-date version of Windows NT. The underlying UNIX of the university mainframes is opaque to the casual user.
- Access to mail and news is through an easy-to-use program specially licensed by the university. This program is distributed freely to all students and staff.
- Creation of new accounts is quick.
- All computers are equipped with MO drives.

Though there are more, the above differences suffice to highlight the primitiveness of systems and support at the University of Tsukuba.^{vii}

Future considerations

Abstracting from the above, we can suppose that any serious attempt to computerize, promote computer literacy, and bring multimedia to classes will include:

- equipment with sufficient power to use the newest operating systems
- software for guaranteeing system integrity and security^{viii}
- user-friendly interfaces and applications
- readily available support
- self-access labs/rooms
- free and frequently-offered training courses
- multimedia- and network-ready classrooms
- regular upgrading of systems

Perhaps most importantly, these features must be addressed at an institutional level rather than a departmental one. The necessary expertise cannot be expected of non-technical faculty; even if it could be expected, it would be redundant to address these issues severally in each department. On the departmental level, there is neither the expertise nor the manpower for planning, implementing, and maintaining highly technical and rapidly evolving systems.

RELATED PROJECTS

The significance of the Educational Technology Project is difficult to assess in isolation. Other projects—some group, others individual—coincided in the attempt to enhance facilities at the Foreign Language Center. Below, mention is made of four such projects with which I have been principally involved.

Multimedia computer lab

In 1996, specifications for the Foreign Language Center's own multimedia computer lab were drawn up, university administrators were lobbied, and contractors selected. By the following year, a new lab with 48 student consoles was operative. The lab is now entering its third year of use. Instructors who use the lab are excited about it, and it creates for the possibility of new types of learning.

It is from my involvement in managing this lab, however, that I have come to realize many of the constraints touched upon earlier in this paper. Chief among these is the absence of support and maintenance staff. The result is that only instructors who can figure out the

system for themselves are able to use it; and the lab is shut when not in class use. The lack of system security has been another source of consternation. Users can freely modify systems, resulting in an increased need for maintenance along with decreased confidence in the constant operability of a complete set of functions for all users. Nothing has been upgraded in the lab since its original installation, and no plans or budget for doing so currently exist. Only one multimedia English learning application is installed. Though one networkable reference tool has been purchased and another learning program is being considered, the time-consuming duty of installing these on each computer is not in anyone's job-description. We have now realized that getting such a lab was really only one aspect of a larger set of issues. These issues have yet to be addressed.

WWW server project

In 1997, a server class machine for the purpose of a creating a Web site for the Foreign English Center was bought. Again, managing this computer has by default become an additional duty of teaching faculty.^{ix} Different faculty members have been asked to contribute various contents, but the weight of additional burdens and lack of skills has made progress slow. It is anticipated, however, that momentum will gradually increase, and that eventually the cumulative results will prove indispensable to Center operation and educational practices. Currently, two faculty members use this Web site for class pages. Wider use will be contingent on the availability of training and support. For the foreseeable future, such services will depend on the beneficence of colleagues who are willing to assume additional responsibilities at the risk of jeopardizing time for research.

It has been hoped by some parties at the Center that we could furthermore administer our own mail server. Motivating this hope is the fact that faculty members are currently charged fees by the computing center for all mainframe services including mail. These charges come to a significant amount when totaled over the department. By having our own mail server, it is hoped that fees now paid to the computing center could be saved. The problems associated with such an approach can be extrapolated from what has already been stated.

New means of intra-class communication

In 1996, I received funding from the university for a one-year project entitled "Expanding the Means of Intra-class Communication". In this project I experimented with class mailing lists that students used to provide feedback to each other outside of class regarding class activities such as student presentations. Feedback was then collated by the receivers and fed back to the class as whole. This enabled direct but structured communication between students outside the temporal and spatial confines of the classroom. A kind of 'virtual

classroom' was added on to the real one, with an exponential increase in student-student communication.

Class-generated learning material for on-line use

From 1996 to 1998, the Ministry of Education funded a project I worked on in which students generated databases of educational quizzes—questions and explanatory information about correct answers for learning purposes. In the near future, such resources will be accessible to all students on campus through the Foreign Language Center's WWW server.

CONCLUSION

Conditions for the successful incorporation of new technology for the purpose of enabling new types of educational activities

Networked computers are not just productivity tools; they make possible completely new types of activities. Information and communication are what education is about, and both are changing at an ever increasing pace.^x Thanks to the Educational Technology Sub-project and other projects mentioned above, the Foreign Language Center of the University of Tsukuba has taken the first steps toward incorporating new computer, network, and multimedia technology. For the first time, teachers are networked, a multimedia computer lab has become operational, the Center's own web server has gone on-line, and individuals are experimenting with projects of their own.

In the process of coming this far, however, many difficulties have been encountered which require addressing at the institutional level. These include provision and centralization of planning and support. Planning and implementation would best be conducted more on the institutional level. Of course, separate departments may have to customize the university technological package, but much of the vision must come from true experts. Instructors should focus on research and teaching; and while they must learn to use new systems, they should not be expected to design, set up, and maintain them. Technical expertise at the departmental level cannot be assumed to exist. If the computing center will not assume more responsibility for supporting the various faculties, the university must be willing to create new technical staff positions in the separate departments. All parties must endeavor to make systems more accessible and friendly. There is no excuse for not providing all students with quicker orientation and easier interfaces. The fact is that other universities have had friendlier systems for years. Assistance for teachers wishing to

conduct classes in departmental computer labs should also be planned for realistically. Expenditures for hardware without allocating for necessary support is myopic.

The process of incorporating new technology into the educational environment must continue. What is referred to here is not just office automation, but rather the creation of new forms of communication about information available in new ways. As a result, educational practices will change. Neither ignorance of this trend, hesitation in proceeding forward, nor naïveté regarding the complexity of tasks will do. A start has been made at the Foreign Language Center, but any future planning must address the issues raised by efforts thus far.

Notes

- I. After refurbishing, each computer was equipped with an 83 MHz overdrive processor on an Intel 80486 class system board, 16 MB of memory, hard disk capacity of 1.4 GB, and a sound card.
- II. In spite of having these capabilities demonstrated to them, no teacher other than myself actually used them. From this experience it can be concluded that it would be better to focus future purchases on the acquisition of high-resolution multi-scan monitors for classrooms rather than decoders, or to provide teachers with notebooks that have ports for straight video output. Another source of dissatisfaction with the current system is that the conversion of high-resolution computer images to low-grade TV quality ones does not make for a very readable image for the students.
- III. At the University of Tsukuba, students take a one-term (ten meetings) computer class sometime during their freshman year, in which they are supposed to learn some of these things. For many students, this does not come until the last of three terms. In any case, e-mail (UNIX *sendmail* with *emacs* as the editor!) is not something most students master. An interesting consequence is that the few students who know of *hotmail* tend to use their browser for this rather than bother with UNIX!
- IV. Even with instruction—mine and the computing center's—students regularly fail to submit assignments successfully. This is primarily a result of the unfriendliness of the system with which students are forced to work. A consequence of being unable to submit assignments properly is that students may not receive proper assessment for the skills for which they are primarily to be evaluated.
- V. This is not a waste of time from the point of view of language study, since the students must understand what is being taught in the target language, and prove their understanding by doing it properly.
- VI. The computing center does offer limited courses to faculty, but only for fees.
- VII. There is a help desk in the computing center for users there. There is no help desk for the university as a whole. Each department is forced to learn for themselves what "LAN", "hub", "TCP/IP", etc., mean, and what the proper settings are.
- VIII. Waseda University is not cited here as a special example. Many other universities, both public and private, also surpass our own in the above respects.
- IX. At Waseda, all student machines use Windows NT v.4, and systems are checked and refreshed upon boot-up. By contrast, at the Foreign Language Center's computer lab, there are no security or system checks; students can freely alter and subvert systems without traces.

- X. I am currently the only one at our Center able to administrate such a system. Though the university is requesting that the various departments set up web sites, it offers no support for doing so. Inevitably, the burden falls on people who fortuitously have a little extra knowledge about such things.

- XI. Bill Gates recently authored *Business@speed of Light* (Warner Books, 1999) in which he discusses the impact of computer technology on business management and the quickening pace of innovation. In a similar vein, one could argue that in order to remain competitive, universities will be forced to speed up the pace at which they reform themselves technologically and pedagogically.