

**Report on the Survey on Technological Fluency**

Office of the Provost

UMBC

February 27, 2001

## Introduction

The Institutional Reporting Process for Responding to the Board of Regents Technological Fluency Resolution requires each campus to submit a 3-page report by March 1, 2001 that describes broad institutional and divisional strategies for assuring that all graduates have technological fluency competencies appropriate for their interests and goals. In addition, the Report of the Honors University Task Force Steering Committee (January 2001) recommended that the Provost engage each department in a discussion of how the major programs are presently addressing the discipline-specific technological fluency needs of their majors. As a start to these departmental dialogues and to collect initial data to be used in the required report, the Office of the Provost sent a survey to the academic departments. (See Appendix.)

The first broad question to be addressed is the extent to which the current course requirements prepare the graduates for technological fluency in the professional fields related to the discipline. The second broad question is what barriers must be removed and additional steps taken to ensure that graduates in each major have the specialized skills they need to compete and perform successfully in their careers after graduation.

The survey requested the following information:

- the basic and conceptual skills that each department believes are prerequisites to work in their majors;
- the degree to which students enter the major program with these skills;
- the discipline-specific IT skills that each student should ideally possess upon graduation;
- the specific courses taught in each department to develop discipline-specific skills; and
- the barriers to requiring discipline-specific skills and actions needed to overcome them.

Each of the departments that responded to the survey was assigned a number, from 1 through 26. Departmental responses are identified in the report by their number, rather than by name, in parentheses after each response. However, where the content of the response from a given department mentioned a specific course(s) by name, that information is reported verbatim.

## Highlights from Survey Results

- The majority of departments consider these basic and conceptual skills as prerequisite to the acquisition of their discipline-specific skills: accessing and manipulating computer files at UMBC; using word processing to complete a paper or lab report; using a web browser to find and retrieve information; using email and mailing lists; using *myUMBC*; understanding the limitations of information technology; and evaluating the quality of electronic information sources.
- The extent to which departments report that students already have the prerequisite competencies needed for discipline-specific skill development varies. Some departments require their majors to either complete an IT course (e.g., IFSM 201) or show basic computer competence through examination. Other departments, including some of the sciences, engineering, social sciences, and arts, indicate that students enter their programs with a relatively strong degree of basic technological skills or learn them quickly in the program, enabling them to advance to the discipline-specific skills. A few other departments in the social sciences indicate that while some students enter the major ready to learn discipline specific skills, many need basic skills such as spreadsheets, word processing and web browsing.
- Approximately half the departments would ideally like their graduates to be proficient in just the basic skills listed above, indicating that these are what is required in their fields. Many other departments – mostly sciences and engineering -- identify, in addition to the basic skills, specific advanced computer and specialized software skills needed for proficiency in their disciplines. While a number of departments require students to take an IT-specific course in the major to develop these skills, many of the science and engineering departments, as well as some arts and social sciences programs, have integrated their technological fluency requirements throughout their curricula, obviating the need for specific IT courses.
- The most commonly reported barriers to requiring discipline-specific IT skills of students are: training and support needed for faculty development; need for additional computer lab space and equipment for students; institutional support for discipline-specific specialized software programs; advancements in classroom wiring and equipment for technology-enhanced teaching and learning.

Data from this survey will be further analyzed and shared with the IT committee and with faculty. Together with the Strategic Plan for IT and the recommendations of the Honors Task Force Steering Committee, the results of this survey will be used to develop refined assessments and campus and departmental plans for continued advancement of students' technological fluency, both core basic skills and concepts and discipline-specific. Faculty development programs and software, hardware, and technical support initiatives that address such barriers as those identified in this report will be included in the campus priority-setting and budget process to ensure continued advancement in the technological fluency of UMBC graduates.

### Summary of Departmental Responses to Survey: Part 1

**Question:** Below is a list of basic conceptual IT skills edited from previous USM documents. For each skill, list “yes” if it is a prerequisite skill for students to acquire in their freshman and sophomore years before majoring in your discipline.

| Basic Skills   | # of Departments Responding "Yes" | # of Departments Responding "No" | Other                  |
|--|-----------------------------------|----------------------------------|------------------------|
| Accessing/manipulating computer files at UMBC                  | 22                                | 3                                | 1 N/A                  |
| Using a word processing program to complete a paper/lab report | 23                                | 2                                |                        |
| Using a web browser to find/retrieve info                      | 21                                | 4                                |                        |
| Using electronic mail and mailing lists                        | 20                                | 5                                |                        |
| Using a spreadsheet  | 8                                 | 14                               | 1 N/A                  |
| Creating a web page at UMBC                                    | 4                                 | 18                               | 1 N/A                  |
| Using <i>myUMBC</i>  | 20                                | 5                                |                        |
| Using Blackboard or WebCT                                      | 5                                 | 18                               |                        |
| Using presentation software                                    | 4                                 | 16                               | 1 maybe; 1 some        |
| Any others? (specify which)                                    | 3                                 | 2                                | comments               |
| Conceptual Skills  |                                   | 1                                | 1 N/A                  |
| Understanding how a computer works                             | 13                                | 9                                | 1 Yes & No             |
| Understanding the limitations of information technology        | 16                                | 7                                | 1 not clear            |
| Evaluating the quality of electronic information resources     | 15                                | 6                                | 1 Yes & No<br>Comments |
| Any others? (specify which)                                    |                                   | 3                                |                        |

Comments:

1. Students in the Biological Sciences program usually declare their major by the end of their freshman year, although if they wish to complete the major in four years, they will have already started in the curriculum in their freshman year. Thus, the above questions, which were directed towards students prior to declaring their major, are being answered with respect to freshman and sophomores who have declared Biological Sciences as their major and are taking the recommended freshman and sophomore year classes.
2. Under Basic Skills, while the Honors College does not make specific requirements of its members with regard to technological fluency in order to obtain the Certificate of General Honors, we do ask that all members maintain an E-mail account; and the bulk of our communication with the membership is carried on through the College list serve. We encourage all members to use *myUMBC* to register for course and to access information on their academic records.

In Honors Forum, which all freshmen in the College take, there is incorporated some information regarding computing facilities at UMBC. Honors 201: Methods and Materials of Research is designed to familiarize students with bibliographic sources and methodology in the electronic age; this course is, in our opinion, an extremely valuable one for achieving technological fluency among the College membership.

## Responses of Each Department to Part 2 of the Survey

### Question #1

**Do you feel that students entering the major program have the basic skills necessary for you to teach more advanced discipline specific information technology skills? If not, what basic information technology skills are most often lacking?**

Most of our students already have basic skills in IT, including word processing, database and spreadsheet use, email skills and web browsing skills. Those that don't have these basic skills will acquire them as part of the courses that they take. (1)

This survey is not particularly relevant to most Engineering majors. The technological fluency level surpasses most of the criteria listed in the table. Our students are required to have a high degree of proficiency in computer usage. The curriculum includes exposure to Computer Aided Design, Advanced Simulation Software and sophisticated modeling and computation packages. (2)

With so much emphasis being placed on computer-based information sharing in society today (even breakfast cereal and fast-food joints are pushing web based information gathering) the majority of students already have experience with web browsing, email and file sharing. What seems to be lacking is the "originality" based computer skills where students create files for themselves. Drawing, word processing, spreadsheet manipulations and graphing seem to be the weakest areas for incoming students and require the most effort for our majors. (3)

Communication skills, analytic thinking skills, organization skills, literacy. (4)

For computationally intensive courses like our sequence in numerical analysis, we require that students have basic programming skills in a high-level language like C or Fortran. Additionally, all students are supposed to be familiar with UMBC's computing environment including the Unix/Linux operating system to function effectively. Those skills are supposed to be acquired in CMSC201, which is a core requirement for all Math/Stat majors. We observe that many students do not retain information from that class, despite having passed it with a good grade. Moreover, they do not exhibit much fundamental understanding of how a computer works and what its limitations are, for instance with respect to accuracy of floating-point calculations. (5)

Yes they do have the basic skills, but strengthening Math background would help. (6)

Our Majors are quite computer-literate coming in; they by and large have the skills we need to build on. (7)

No, many of the students entering the major do not have many of the basic skills "necessary for ...the teaching of more advanced discipline specific information technology skills. Oftentimes, the basic skills lacking are conceptual (e.g., limited familiarity and comfort with technical issues-numbers, statistics, statistical concepts, how computers work, etc.). (8)

Most students appear to have basic word processing, e-mail, and search skills, though we are not assured that their preparation is systematic. (9)

No. Many of our majors lack basic spreadsheet/word processing skills. (10)

Considering the pace at which we expect skills to be acquired with instruction provided on an as-needed basis, most entering students are adequately prepared. (11)

Students majoring in our program are required to complete EHS 352, Microcomputer Applications in EHS or IFSM 201 or IFSM 295 or CMSC 100 or show basic computer competency through examination. (12)

Not initially -- not upon entrance to UMBC.

**If not, what basic information technology skills are most often lacking?**

While we enjoy a wonderfully diverse population, in many very discipline-specific, technically well-trained students, we find a consistently weak analytical skill set. For example, while our computer science or IFSM students may be very highly skilled in the software, hardware, and networking applications in their fields, they may be less able to write well about the subject matter, analyze the problems their future clients will face, or critically assess their end user's needs. In addition, they may require more project management/collaboration expertise and a much greater understanding of the user/client/audience's connection to their own work. (13)

More students are coming in with basic skills, but there are many older or returning students who do not have them and many students who have old, obsolete or inadequate computers at home. Such students often are ignorant of basic aspects like the difference between RAM and hard drive storage, so that it becomes difficult to help them when they cannot even describe the capabilities of their own home computers. Often they cannot afford anything newer or better. Also, many students come in with absolutely no experience using spreadsheets. It would be useful if all matriculating students were expected to know or to complete a course in using Excel, for example. (14)

Although nearly all first-year students have requisite skills, some returning students and transfer students are not fully trained in the use of email, electronic reserves at the Library and web-based research. (15)

For the most part, students come to political science pretty savvy in terms of software applications and using the Internet. (16)

We teach using the computer for doing data analysis. Students are variously prepared to do this task. It would be helpful if they all had basic computer skills and the ability to use spreadsheets. Knowledge of types of statistical analysis programs available at UMBC would also be helpful. (17)

There is a mixture of skill levels. Some can move immediately to discipline-application skills; many cannot. Deficits for those lacking computer skills consist of basic typing skills, file transfer capability, word processing for papers, electronic mail, web browsing, and using myUMBC. (18)

Some of them do and some do not. Different instructors have different problems. (19)

Little special that is required (20).

Student skills at present are uneven, but improving. E-mail related skills such as sending attachments. (21)

They usually have the basic skills necessary, although the Department of Modern Languages & Linguistics does not require these skills as a prerequisite to the major. (22)

Most lacking in entering students seems to be the ability to do basic library researching using IT tools. We are coordinating with the library staff to set up regular training sessions for new students. (23)

Students already seem to have the necessary skills. (24)

Most students entering our program have basic computer and web-based skills. They know how to research information on the Internet, but they do not know how to evaluate that information. (25)

Most of our incoming freshman students have average to above average computer skills upon entering (26)

## **Question #2**

**List the discipline specific information technology skills that *ideally* students completing your program should possess upon graduation.**

Ideally, we would like our students to have skills in probing large databases (such as the human genome databases), using various biological modeling programs, and in developing various algorithms for the above. (1)

A significant development in our department has been to teach our majors computer based instrumentation interfacing and algorithm development. With the majority of scientific equipment being computer controlled it is important for our students to understand how these measures are made. Signal transduction, analog to digital conversion and manipulation of data are all issues that we try to address. (3)

Analytic critical thinking skills, communication skills, and ability to analyze and design computer programs. (4)

In practice, all graduating students from our department will be familiar with at least one mathematical or statistical software package, like Matlab, Maple, SAS, Splus, or similar. That is a valuable skill in the job market, and we intend on deepening and improving

those skills by involving more software usage in more courses, where this use of software would be appropriate. Another use of information technology that is becoming more widespread in our upper division classes is the access to repositories of software, technical reports, and research papers on the web and their access over the Internet. (5)

Use of word processor, spreadsheet, AutoCAD, LabView and a programming language. (6)

Use of data analyzing and display software, such as MATLAB and Kaleidagraph. Ability to write, use and maintain programs for specific calculational purposes in a high-level programming language. Use of symbolic manipulation programs such as MAPLE or Mathematica is desirable. (7)

Ideally, the skills that our majors should possess upon graduate do not specifically include information technology skills (it's not an information technology driven major)! (8)

Principal skill for our majors is ability to make use of electronic resources for research purposes. (9)

Fluent with spreadsheets for manipulating, analyzing and displaying economic data; familiar with at least one econometrics or statistic program; able to locate appropriate economic data on the Internet; use of word processing software including creation of mathematical equations and tables. (10)

Students completing our certification program should be able to: access and manipulate computer files; use a word processor; use a web browser, use e-mail; use a spread sheet; create a web page; and use presentation software. The necessity of including further skills such as Blackboard is under discussion. (11)

Students should be able to use all of the programs contained in Microsoft Office Professional as well as use the WWW to find specific information. In addition, clinical track students should be familiar with clinical skills tracking data programs. (12)

Upon graduation, students majoring in English, or minoring in Writing, will have competence in the following skills:

- \* critically assessing the validity, relevance, currency, and quality of design for web source material
- \* writing for a specific user, at the appropriate technical level, with the content most beneficial and immediately useful to the reader
- \* assessing appropriateness of documents for specific cultures
- \* project managing collaboratively-constructed and/or conceived documents
- \* working with writing in various disciplines (in both linear and hypertextual form) as reader and as writer
- \* designing documents for an online audience to include aspects of web design and creating and sustaining online communities
- \* conducting textual analyses of various electronic communication forms to include email communiqués, linear texts published online, documents created in hypertext

- \* understanding, defining, and incorporating technical support in all online/technical communication settings
- \* developing an understanding of the basic tenets of graphic design, in particular as design relates to the merging of word and image in technical documents (both linear and hypertextual)
- \* analyzing, diagnosing, critically thinking about technology's impact on communication in all forms and on our culture
- \* developing a critical awareness of technological and visual literacies
- \* researching online source material, accurately citing online and print source material, incorporating source material from various disciplines within technical documents
- \* displaying technical data sets in most appropriate form
- \* developing documents for individual and multiple readers (13)

Ideally students should be familiar not only with computer-based cartography, Geographic Information Systems and digital image processing of remotely sensed data, but also with use of Global Positioning Systems equipment and software, presentation graphics, statistical software packages, and creation of web pages. Programming is not required for the major but would be desirable depending on a student's goals. The same is true with regard to the use of modeling packages, particularly those that rely on GIS as the source of data and the basis for organizing the data. (14)

Regular use of email; web-based research techniques. (15)

Word processing, electronic mail and other communication skills, facility in doing web based research (identifying appropriate sources), facility with statistical software applications to political science, ability to access and use "Blackboard". (16)

Basic ability to search the Internet for bibliographic and other information related to the knowledge and institutions that are relevant for psychology. Ability to enter data into a data base and manipulate the data base so that they can apply a statistical analysis program. Word Processing so they can write sophisticated reports and possibly grant applications (17)

Minimum skills for social work are manipulating computer files, e-mailing, web browsing to locate client-related resources, advanced library/journal searching, web page construction for electronic portfolio, using myUMBC, using Blackboard, presentation software, understanding and using examples of practice related software such as assessment and tracking programs. (18)

The ability to use a word processor, the ability to search online for information in resources such as Social Sciences Abstracts or Medline, and the ability to use SPSS. (19)

Little special that is required. (20)

The dance department is moving toward including more technology in the courses. I would like to see future graduates with the ability to scan and manipulate (basic) still images (photographs) and moving images (video). Current students are expected to graduate with some knowledge/experience in running a computerized lighting board for performances. (21)

They should be able to use a web browser to find and retrieve information in foreign languages, such as, foreign newspapers online and government reports from foreign countries. They should be able to use a word processor to complete papers for courses. Many of our courses are now listing materials and assignments ONLINE using Blackboard and WebCT. To complete these courses students need to use these platforms. (22)

Use of word processing and email programs, and web browsers. (24)

All of our majors should know how to do research by using the Internet and by accessing library catalogues. They should know how to determine the validity of the material they find. They need to know how to use email and they should understand the limitations and dangers of email as a form of communication. Design theatre majors need to be fluent in CADD, which we teach. (25)

This list is too long – look at the catalogue descriptions of our curriculum. Most classes require mastery of a variety of computer skills. Each of the 7 tracks in our department would have a long list of “idea” technological skills that they would possess upon graduation. (26)

### **Question #3**

**Does your major curriculum currently require specific courses where discipline specific information technology skills are taught? If so, please provide a list of courses and the information technology skills taught in those courses.**

We do not require any specific course (or courses) in information technology as such, rather, the students are taught (either in class or in special “help” sessions) the necessary skills they will need to master the various class projects. (1)

Almost all of the chemistry courses taught have significant web bases teaching aids incorporated in them. The current lists of courses with web-sites can be found at: <http://research.umbc.edu/~smith/chem/courses#ugcourses> (3)

CMSC201, 202, 203, 341 (4)

The only specific requirement is CMSC201 as a core class. We feel that the fields of mathematics and statistics are too broad to require one particular class from all students. (5)

Yes. ENES 101, ENME 303, ENME 471, ENME 482L (6)

PHYS 331L, 340L -- Use of data analyzing and display software, such as MATLAB and Kaleidagraph. (7)

CMSC 103 -- Ability to write, use and maintain programs for specific calculational purposes in a high-level programming language. (7)

PHYS 440, 480 (experimental) -- Use of symbolic manipulation programs such as MAPLE or Mathematica. (7)

Additionally, students doing independent projects with individual faculty in the context of PHYS 499. (7)

The closest courses requiring related information technology skills is my AFST201 course as it deals with statistics and statistical thinking (similarly, my AFST301 course deals with research design methodology and issues). However, here the emphasis is on thinking and conceptual skills, not the use of technology to carry out statistical analyses or the research design. (8)

No response (9)

No, although these skills are taught in upper level elective courses) (10)

In our new undergraduate program and in our post-baccalaureate program, two modules have been developed that focus on information technology skills, although these skills are applied in other courses as well. These courses are EDUC791C and EDUC300B. (11)

We offer EHS 352, which teaches students how to use all aspects of Microsoft Office 2000 Professional. Discipline specific examples and projects are provided. (12)

**If yes, please provide a list of courses and the information technology skills taught in those courses.**

Technical Writing -- ENGL 393  
Science Writing -- ENGL 383  
Technical Editing -- ENGL 394  
Advanced Topics in Rhetoric -- ENGL 488/688  
Composition -- ENGL 101T  
Advanced Exposition -- ENGL 391.

In each of these classes critical thinking, analysis, the connection of reader and writer, audience awareness, correctness and style are taught. In the first four classes listed above, writing in the disciplines is used as subject matter. In all but the last course, sections of the classes are offered in an electronic classroom, taught as computer-assisted writing, and presented with technical support. (13)

GEOG 280 (Map Use and Cartographic Principles) and GEOG 386 (Intro to Geographic Information Systems) are required. Electives include GEOG 381 (Remote Sensing), GEOG 383 (Statistical and Thematic Cartography), GEOG 480 (Advanced Cartography), GEOG 481 (Digital Image Processing for Environmental Applications), GEOG 485 (Field Research), and GEOG 486 (Advanced Applications of Geographic Information Systems). Other upper-level courses will increasingly include more applications for analysis of digital spatial data sets, including modeling applications. (14)

Skills are listed either in the course titles or under item 2. above. (14)

History requires a “gateway” course for majors that has an increasing electronic/IT component. This spring, for example, students will be required to do some research exercises from the web, and will be required to keep up with the course via a web-based syllabus. (15)

None yet, but there are a few courses where it would be ideal to teach some IT skills, e.g., POLI 300 Quantitative Research Methods, POLI 400 Qualitative Research Methods, POLI 353 Governmental Budgeting and Financial Management. I would certainly like to explore integrating more IT into my IR classes. (16)

Psychology 331 teaches data analysis and the programs that can be used to do this. Often students have classes in the computer lab and TA's assist in teaching and problem solving. Psychology 332 requires more sophisticated data analyses programs and extensive report writing using the American Psychological Association format. (17)

SOWK 240 is a one credit required course for majors. Currently it teaches both basic skills and discipline-specific skills and applications, an unwieldy undertaking. Covered in the class are e-mail, word processing, file transfer, web browsing, web page creation, using myUMBC and Blackboard, presentation software. These basic skills are reinforced in other social work required classes. Under discussion and planning is the systematic introduction of practice-related software in the senior year methods classes and beginning level SPSS in the research class. (18)

SOCY300 and SOCY301 both teach SPSS. (19)

No (20)

Not presently, but planned for the near future. We have begun to have workshops in dance and technology. (21)

French, German, Russian, Spanish: 101-202: Using a web browser, Using electronic mail and mailing lists, using interactive video/audio software on CD-Rom. French, German, Russian, Spanish 301, 302: Using a web browser, Blackboard Course Info, WebCT, using electronic mail and mailing lists, using a word processor program to complete a paper (22)

No (24)

Many of our courses require research projects where they must use the Internet and research theatre productions at various other universities and find reviews from international newspapers. THTR 104 requires that they learn to use some software for costume design. THTR 202 develops a class e-mail list for class discussions. THTR 335 and 339 teach CADD. (25)

Yes. Almost every class – skills too numerous for this report. I refer you to the university catalog for course descriptions. (26)

#### **Question #4**

**Please identify any barriers (e.g. software/hardware/training, etc.) that keep your department from requiring discipline specific information technology skills. What action is needed to overcome these barriers?**

The major barrier is a lack of adequate funds for equipment, computers, personal and resource access. (1)

Our department continues to struggle with keeping current with hardware and access to modern equipment. The only solution to these difficulties is increased spending. (3)

Key barrier is that high schools are not teaching fundamentals, such as math and writing. I'd rather see a student well prepared in math and writing skills than one without these skills who knows how to program. It's easy to teach programming skills if the student has a good background in math and writing. (4)

We would like to incorporate the use of more information technology and software packages in all classes of our curriculum. To this end, we would need more instructional computer labs properly equipped for our needs; for instance, some labs with Linux computers would be very useful. Just as importantly though, the instructor will need to show by example how software can be used to improve the understanding of mathematics and statistic at any given moment; that would be greatly enhanced by having more classrooms (ideally all of them) with basic computer and projection equipment permanently installed. If one has to ask for delivery of a laptop system, this requires preparation and communicates the wrong message, since the students get to see the use of a computer only in an exceptional, planned way but not in an everyday kind of way as it really is. One particular example of this is the problem that a display screen often covers part of the board space, hence one has to interrupt the lecture in an unnatural fashion to use a computer, that must be avoided at all cost. This observations applies to absolutely all levels of teaching from freshman to graduate classes, hence more rooms of all sizes need to be equipped like this. (5)

There are no present barriers, but must maintain and continuously upgrade the engineering Computer Aided Engineering-CAD lab. Present computers are rapidly becoming obsolete. Specialized software licenses must be paid for annually. This is getting expensive. (6)

Although it is almost possible to assume that each student now has a computer of some sort, it is still not possible to assume anything about the level of performance, or of the speed or ease of access to the campus network. Perhaps each incoming student should be given a set of specifications that his or her computer should have at minimum. Also, it should be given for Windows, Macintosh, and UNIX machines. (7)

The barriers preventing the department from requiring discipline specific information technology skills are mainly disciplinary, and secondarily training. However, with a few exceptions, faculty in the area do not seem to think that information technology is a necessary prerequisite for courses in the area at this time. (8)

Have not yet determined necessary software/support. (9)

Lack of access to econometric software (SAS, Stata, etc.) Campus or system-level software licensing agreements (like the current Microsoft agreement) to provide low-cost econometric software to students and faculty. (10)

There is a need for at least six new computers in our Learning Resource Center to allow teacher candidates to gain experience in the use of technology and to evaluate much of the learning software that was donated to the department last year. Currently, there is only one of the computers that can run many of the new software programs. (11)

We would very much like to have discipline specific software available for our clinical students in a departmental lab. However, we have no SPACE for such a facility. In addition, we require clinical students to participate in a nationwide clinical skills tracking database called FISDAP. Although participation is required, we cannot provide students with computer terminals to access the database while in the department due to lack of SPACE. There is also an institutional cost associated with participation in the program that is covered by limited departmental funds. (12)

In terms of future needs, as is true across the university, we need more electronic classroom space. Otherwise, we require faculty support for continuing education and support of our faculty, as does each department. As our program grows so will our need for additional faculty lines. However, for the present, our courses and faculty for our major are currently in place, and we do have sufficient resources to provide a well-developed major with an emphasis in acquiring technological literacy skills. (13)

Even classrooms with IT and network connections are not always well-maintained; data projectors are not as universally available as they should be, although Audiovisual Services employees work very hard to provide good service; even when projectors are available, the screens are sometimes poorly placed so that many students cannot see them clearly.

UCS is unable to support site licenses for the large number of software packages that may be important to our discipline or other disciplines. There is a need for in-service professional development training of faculty and staff who may have reason to use new software (i.e. specialized software with a steep learning curve, not just the most widely used packages on campus). Most importantly, there is a need for more staff to support teaching labs, staff who have strong technical skills and who can help with maintenance, setup, and provision of basic services to support classes. (14)

Training, mostly, For example, several professors wish to develop their own web pages for instructional use; in the absence of training, there's a lot of hit-or-miss experimentation, which is not efficient. Pedagogical training – PowerPoint, use of digitized images – needs to be strengthened. (15)

Faculty require training in IT applications that could enhance their teaching; software/hardware: Not all faculty have office computers that are capable of running sophisticated applications efficiently. In addition, the existing computer lab at our disposal is equipped with computers that can do little more than word process, so if we want to use a computer lab as the site for instruction, we do not have a convenient one. (16)

We could use more training in statistical analyses programs, better access to computer labs, and more technological assistance from the computer center on several of the data analysis packages including SAS and SPSS. (17)

Additional hands-on training for department faculty. The available sessions (and trainers) have not worked well for us, and some faculty members are quite frustrated. Too much of the training is stand-up show and click, with no opportunity for faculty to master or remember. Also, conceptual underpinnings of the different applications are never presented. While we agreed to participate in FACT this year, we found the experience unhelpful, largely because the training in Blackboard was so ineffective. The report from SOWK 240 is that there are some significant hardware problems blocking utilization of some software packages. There has been difficulty in accessing needed systems during class time, too little memory storage, for example. (18)

The faculty resources are too limited to create a situation where all majors can be expected to learn specific skills. (19)

Not of great relevance to discipline (20)

Faculty need additional training in new dance/technology software, and the department needs to have a small computer lab for students to work with these technologies, possibly in conjunction with the music department. (21)

Training is our biggest obstacle. We need money in our budget to pay a part-time technical assistant who can assist our part-time instructional systems consultant. We need to reduce the workload of faculty in order to give us time to train in Blackboard Course Info and WebCT and using a web browser and in putting video and digital images ONLINE. One course off per semester to individual faculty members in rotation (e.g. 3 faculty members per semester) would allow us to train better. MLL is currently participating in FaCT, which is an excellent endeavor, but faculty volunteers are finding the project very time-consuming and too much work along with their regular workload. Also, IT is using Marie de Verneil, our part-time instructional systems expert, to train faculty and help them put courses on line without any remuneration to MLL. This is indeed part of her job description, but in agreeing to participate in FaCT, it was my understanding that we would receive additional support from IT to train faculty. (22)

None that I can think of. But there seems to be no need to add these requirements. (24)

I am not aware of any barriers. Many of our courses are taught in the studio and would not benefit from more sophisticated computer skills. Some of the design courses could use more software, but the faculty would need to be taught how to use it first. (25)

Number of workstations per student. More realistic budgets for software. Longer hours of Access – better SECURITY for labs. University labs could provide more software that we utilize (26)

## Appendix

# interoffice

## MEMORANDUM

Date: January 31, 2001

To: Department Chairs/Program Directors

From: Arthur T. Johnson  
Provost

Subject: Survey on Technological Fluency

Information technology (IT) represents one of the key components of the strategic planning activities being addressed by the various task forces and leadership groups on campus. The IT infrastructure and systems in place at UMBC will profoundly impact our teaching activities, our research and our business processes.

While IT planning has always been an on-going activity for the campus, a major effort has been initiated recently, including the following initiatives:

- a) An IT Strategic Plan has been prepared under the leadership of the IT Steering Committee.
- b) The principle of Assured Access was approved by the Faculty Senate and implementation is on-going for Fall 2001.
- c) The FaCT program to support faculty training and development in IT areas has been initiated.
- d) A decision has been made to move the campus to a PeopleSoft platform and the project has been initiated.
- e) Significant enhancements to our Computer Replacement Initiative for faculty and staff were implemented in the last year.

Recommendations concerning IT issues for the campus have also been included in the Honors Task Force and Research Task Force reports.

It is also important to highlight that the Board of Regents (BOR) has recently established a mandate for a minimum IT standard to be achieved and maintained by all USM campuses. In a February 2000 resolution, the BOR directed the presidents and faculty leadership of the USM institutions to develop plans for ensuring IT fluency by their graduates. Subsequently, the USM developed a reporting format for the institutional responses to the Board of Regents Technology Fluency Resolution. I am attaching for your information the BOR resolution as well as the Institutional Reporting Process for USM. The initial institutional reports are due to USM by March 1, 2001.

When discussing IT fluency with the Deans last year, they reported that about 80% of the departments at UMBC meet the IT fluency requirements. In order to continue our IT planning for the campus and to be sure we know with accuracy the status of technological fluency within your program, I have also attached a brief survey form which I ask you to complete and return to Vice Provost Tony Moreira by February 12, 2001. An electronic format of this survey also will be sent to you. We will summarize the results of this survey and share those with you as well.

Thank you for your attention to these matters. I look forward to continue working with you and the Deans on these cross-cutting IT areas.

Cc: Dean Carmi  
Dean Welch  
Vice Provost Moreira

**TECHNOLOGICAL FLUENCY SURVEY**

**Below is a list of basic conceptual IT skills edited from previous USM documents. For each skill, list “yes” if it is a prerequisite skill for students to acquire in their freshman and sophomore years before majoring in your discipline.**

| <b>Basic Skills</b>  | <b>Yes or No</b> |
|--|------------------|
| Accessing and manipulating computer files at UMBC                |                  |
| Using a word processor program to complete a paper or lab report |                  |
| Using a web browser to find and retrieve appropriate information |                  |
| Using electronic mail and mailing lists                          |                  |
| Using a spreadsheet  |                  |
| Creating a web page at UMBC                                      |                  |
| Using <i>myUMBC</i>  |                  |
| Using Blackboard or WebCT  |                  |
| Using presentation software                                      |                  |
| Any others? (specify which)                                      |                  |
|  |                  |
| <b>Conceptual Skills</b>   | <b>Yes or No</b> |
| Understanding how a computer works                               |                  |
| Understanding the limitations of information technology          |                  |
| Evaluating the quality of electronic information resources       |                  |
| Any others? (specify which)                                      |                  |

For students majoring in your program of study, please answer the following questions.

1. Do you feel that students entering the major program have the basic skills necessary for you to teach more advanced discipline specific information technology skills? If not, what basic information technology skills are most often lacking?
2. List the discipline specific information technology skills that *ideally* students completing your program should possess upon graduation.
3. Does your major curriculum currently require specific courses where discipline specific information technology skills are taught? If so, please provide a list of courses and the information technology skills taught in those courses.
4. Please identify any barriers (e.g. software/hardware/training, etc.) that keep your department from requiring discipline specific information technology skills. What action is needed to overcome these barriers?