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Virtual Classrooms : Real, Accessible, User-Friendly

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NetFace: What is it?

NetFace (Network InterFace) is an evolving piece of computer software developed at Monash University's Gippsland campus which now provides on-campus, distance education and mixed mode students in some 50 semester subjects with easy access to a variety of online services. These services and the flexible architecture of the software will be considered later in the paper but first I would like to provide some background on how NetFace came to be.

The development of NetFace

This was a collaborative effort, involving three key groups of people;

- Academics from Applied Science, Education, Business and Humanities and Social Sciences
- Educational Course Developers from Monash's Distance Education Centre
- Computer programmers based at Gippsland campus.

These people came together in mid 1992 with the primary objective of developing a user-friendly piece of software which would

1. support remote learners (distance education students) in student-student and teacher-student interactions
2. facilitate information access, retrieval and transfer for those learners (1)

We were particularly interested in giving these students more control over their learning and shifting the focus of staff from teaching to moderation and facilitation of learning. We agreed that simplicity of design and effective help menus were crucial and wished to avoid the need to develop extensive manuals. We aimed for software which was easy to navigate for novice

computer users at remote locations without the necessity for training. NetFace was to provide asynchronous class participation, giving students opportunities to participate in on-line seminars and classes at times which suited their work, study patterns, domestic and other commitments.

An important aside

[I had an additional and more ambitious aim; to converge the on and off-campus student and mixed-mode populations in a 'virtual' classroom and believed NetFace could evolve to help implement the concept of a 'virtual University' based on group and collaborative, as well as individual learning. I had become convinced that there needed to be significant changes in curriculum design, pedagogy, access to resources, and trainings to approach and best utilise increased access to information. I had been particularly struck by a comment made by Jan Bruck (1991):

In the age of global communication what we need is *dialogue*, the free exchange of ideas based on mutual understanding, and, more importantly, what can be called *polylogue* - the ability to think together, to formulate thoughts and make decisions in communal interaction. (2)

I decided that 'dialogue' and polylogue' should be important components in my applications of NetFace to a converged class of students.]

Back to general planning issues. When we considered the situation in Australia in mid-1992, we recognised that the most popular home computer was the PC and that many of these machines were not as yet capable of running Windows software effectively, particularly when accessing NetFace via a modem, so we developed a DOS version for testing 1993/94 on a very modest initial budget of \$20,000. We progressively added to the features but even now the software fits on one double density 3.5" floppy disk. Current features include:

- Email
- Classes
- Forums (Staff, Student, Research)
- Student services (eg. Chaplaincy, Student Union)
- Library services
- Electronic assignment submission, marking and return of assignments
- Access to Internet via World Wide Web (Lynx version)
- Various upload and download options

The Lynx text-based version of WWW was chosen because we recognised that many home PCs could not effectively support the graphics modes in programs such as Mosaic and Netscape, particularly given the operating speeds of domestic modems and the official maximum 9600 baud rate for Telecom telephone lines. We were also concerned about the loads being placed on the UNIX system which NetFace accessed at Gippsland campus, particularly if transmission of graphics were to be made available to NetFace users.

The subjects (classes) in the 1993 NetFace trial predominantly involved distance education students from Computing (Applied Science), Education, Business and Mass Communications (Humanities and Social Sciences) at Gippsland campus. A small number of subjects from The Department of Social Welfare at Clayton campus and Faculty of Business at Caulfield Campus also went online. However, from the beginning of 1993 I began my project of converging the on and off-campus students in GSC2410: Public Relations and Mass Communications Technologies in a 'virtual class'.

By 1994 there were about 1000 students online in 20 subjects.

Current Situation

In 1995 there are some 50 subjects online in semester one with 120 first year students at our new Berwick campus also joining a 'virtual class' with on and off-campus students enrolled at Gippsland campus. A small number of Open Learning students (100) have also come on line, bringing the total in 1995 to 2000. This represents 5% of the University population of 40,000 staff and students, excluding Open Learning students.

In a major step to test interest in Computer Mediated Learning and in the NetFace project, the Distance Education Centre has offered NetFace to all University Schools and Departments. To move to a more 'universal access' will require significant computing system upgrades for the University across its six campuses. This has been recognised at the policy level within the University, particularly in development of the most recent campus at Berwick (currently being built and which is seen as an electronic campus). NetFace allows Berwick students to participate in collaborative learning tasks with both students at Gippsland campus and with distance education students. A key delivery method at Berwick campus from 1996 will involve use of a combination of microwave and optic fibre technologies. Students will participate in real-time lectures and seminars at other campuses via video conferencing. NetFace will provide opportunities for asynchronous participation as well as remote searching of University and other libraries, electronic library ordering, and a variety of on-line student support services.

NetFace then is still in a prototype stage of implementation but has proved to be a flexible and functional platform on which to build future services, not only in DOS but in the Windows environments. the two most popular software platform's with students' home systems. Home systems are increasing in processing power, telephone delivery systems are able to handle higher throughput of data and the University is planning to increase its delivery capacity to service increased usage of enhanced versions of NetFace. Incidentally, the University has adapted the Windows environment for campus microlabs and

staff terminals, a choice driven in part by the inclusion of Windows software packages in new domestic machines. We are currently trialing a NetFace offline news and mail processing program in the Windows environment. Another important factor is the growth in numbers of computers in Australian households. A Bureau of Statistics survey in February 1994 found that domestic ownership of at least one computer was at 23% (3). Sue Ashton of IDG Communications estimates that 30% of households currently have a personal computer and that two adult/two children family figures could be as high as 50% (4). The issue of mandatory student ownership/leasing of personal computers is being increasingly discussed at the University.

Flexible Architecture

NetFace has been designed as a flexible piece of software. Services can be added, modified or deleted with ease. Essentially it is a 'shell' which makes accessible a range of UNIX - based programs which would otherwise only be accessed by UNIX commands (not at all desirable for other than computer programmers and UNIX-literate users).

Another way of describing NetFace's flexibility and adaptability is to regard it as 'tailorable' software. The same software is capable of serving a variety of academic requirements in delivering distance education, or combining on - campus, off-campus and mixed mode students.

This concept can be further extended to the concept of 'tailorable' groupware as Hanley, Hassan and Wood report in their forthcoming paper 'Virtual classrooms: perspectives on design issues from online teachers'. In this paper we draw attention to NetFace as an example of 'tailorable' groupware, as conceptualised by Johnson-Lenz and Johnson-Lenz (1993):

...Effective groupware is designed in response to the needs and purposes of those using it. It responds to, supports, and even evokes human potential rather than force-fitting the group into what the computer has been programmed to do. The

required 'tailorable' software which can be adapted to embody appropriate patterns of organisation, easily modified in response to evolving group needs, and ultimately tailored by managers, facilitators, and even users - without programming.
(5)

While I would remove the 'even' and place users on an equal footing with all others involved in the uses of groupware in educational processes, I think the crucial points are that specific computer knowledges, such as the capacity to program are not required, and that the fundamental design principles embrace flexibility, ease of access and utility, and facilitation of learning.

GSC1901: Introduction to Communication Studies - A Case Study

The earlier **Important Aside** identified my interest in developing a 'virtual' classroom as a step toward a 'virtual' University. GSC1901 has students on-campus at Berwick (120) and at Gippsland (80) with an additional distance education cohort (60) spread across Australia (with several overseas students as well). Fundamental to the design and content of this subject was the convergence of these student populations into one 'virtual' class. All students were given the same printed materials and access to NetFace through on-campus microlabs, study centres or software supplied for usage from home.

Of the 260 students, 230 have been part of the 'virtual' class on a regular basis (making at least weekly contributions), with the lowest usage being by distance education students (some 40 of 60). Since this is a first semester, first year subject, the take-up rate for distance education students is most encouraging. (In a second year subject, GSC2410: Public Relations and Mass Communications Technologies, almost all distance education students are on-line.)

One of the early topics in GSC1901 is about online communication and provides critical frameworks to support

training in the use of NetFace in microlabs on campus and at Weekend Schools for distance education students. Distance education students who cannot attend campus are sent the software, manuals and lists of other students in the subject. We also provide a NetFace telephone help desk. The software also has extensive Help Menus and most students who cannot attend a training session get online with little difficulty if they can operate their PC and modem.

Students are supplied with lists of all other students and are encouraged in the first weeks to make email contact with on-campus students in the subject at a different campus and with distance education students. In microlabs or at home they work through weekly topics with questions based on lecturers' commentaries and readings in the Subject Book. They are encouraged to send their responses to activities and questions about the commentaries and readings to other students and/or the subject adviser. They can engage in either or both dialogue and polylogue. Contributions can be in microlab sessions or when convenient. Students appreciate the chance both to chat and make considered responses.

Once confidence in using email and communicating with others about issues raised in the subject is established, students are asked to contribute publicly to the Class part of NetFace. Here I post topics as subject adviser and ask students to formulate considered responses to be posted to the whole group as part of a polylogue. Any student can join the discussion by replying to the posted topic or introduce another angle on the topic for further group discussion. This is where the lecturer's role moves from teacher to facilitator. Direction is only provided if the focus on a topic is drifting beyond the bounds of subject objectives. All email and Class electronic activity is explicitly linked to assignment and examination preparation. Additionally, students can form class sub-groups to pursue particular issues by setting up their own mailing lists. They can choose to include or exclude the lecturer.

It is my view that the integration of students across campuses and by on campus and distance education modes has created a dynamic learning environment based on discussion, debate, sharing of ideas, and supportive contributions. The keys are common access via NetFace and common curriculum materials integrated with the software. The campus Library has proposed that the readings in the Subject Books will go online in 1996 for students with computer access. This will result in significant reductions in print resources. Indeed, the whole subject content could be delivered via PC if people had access to the appropriate technologies.

NetFace and the Internet

One of the most exciting parts of giving NetFace to students has been to see them develop skills to grasp the Internet and use it to explore topics. For example, during the week we considered the topic **The Body as Text** I showed students how to access the Body Art part of the Internet and asked them to consider the various positions being offered on tattooing and body piercing in relation to the frameworks offered by the lecturer on this topic.

When all students can access the graphic power of the Internet (beyond the Lynx version of WWW which NetFace currently offers), when they can retrieve (cut and paste) information electronically, when they can search the information universe for what they wish to know, then the virtual classroom will be a reality and we academics, course developers and programmers can pause for a timely tea or coffee break (and read our email/visit our 'virtual' classes with more time and renewed enthusiasm).

What follows is a brief online demonstration of some of the features of NetFace. Various NetFace screens have been captured and included at the end of this papers under the following headings:

1. Main Menu
2. Electronic Mail - Read Mail Box
3. Electronic Mail - Send Mail
4. Electronic Mail - Read Folders and Files
5. Classes & Forums
6. Library Services - Search Library
7. Library Services - Search Materials
8. Other Facilities - Assignment Submission
9. Other Facilities - Internet Services
10. Other Facilities - Configure NetFace
11. Other Facilities - Who's Logged On

Endnotes:

1. Hanley, N., Hassan, M., and Wood, J., **The Virtual Monash: case studies from online Classrooms**, Higher Education Research and Development Association Conference, Canberra, July 1994, p.1.
2. Bruck, J., 'For an ecology of communication', **Media Information Australia**, No.62, November 1991, p.79.
3. Australian Bureau of statistics, 'Household Use of Information Technology', January, 1995.
4. Telephone interview 30 May, 1995.
5. Hanley, N., Hassan, M., and Wood, J., **Virtual Classrooms: perspectives on design issues from online teachers**, (forthcoming) 17th International Conference for Distance Education, Birmingham United Kingdom, 26-30 June, 1995.

1. Main Menu
Screen A

2. Electronic Mail - Read Mail Box
Screen A

2. Electronic Mail - Read Mail Box
Screen B

2. Electronic Mail - Read Mail Box
Screen C

2. Electronic Mail - Read Mail Box
Screen D