The anatomy of practice in the use of mailing lists: A case study

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This paper reports the main findings from a study of two mailing lists or listservs: Oz-Teachers and UK-Schools[1], used by teachers in Australia and the United Kingdom to communicate electronically with each other. Typically, communications were characterised by text messages that posed questions or offered answers; by 'threads' of discussion based around single or combined themes; and by statements of information. The content of these messages was almost always either technical or educational, the former centred on hardware or software issues; the latter on concerns with the use of technologies in teaching and learning.

The study found that there is a possibility in the use of mailing lists, to create vital, energetic and occasional communities for professional development activities, building curriculum and information resource libraries and facilitating informal communicative networks, serving the social, professional and personal needs of teachers. The type of lists investigated here were unmoderated, self serving and self censoring, and they appeared to work well for a majority of the list membership. Topics of postings and the willingness to engage them fluctuated as the list communities matured. In particular, some dialogue displayed elements of a critical dimension - a necessary precursor to developing serious, reflective, engagement with practices, theory and research that should accompany any professional development process.

The net effect

As a global communications network, the Internet provides a range of possibilities for educational use. These are summarised in Table 1. Email is a technology based on the Internet, providing for the sending and receiving of text–based messages as personal communications. A mailing list offers a facility for asynchronous email communications between members of a group connected by virtue of a common interest or affiliation, providing a means for public dialogue. The World Wide Web is a set of electronic protocols to access and publish information - in the form of hypermedia as well as text documents.

Table 1. Principal Internet functions

Internet function	Characterisation	Activity
Email	one-to-one messages	personal communication
Mailing Lists	one-to-many communication	public dialogue
World Wide Web	information resource	inquiry; publishing

The Internet is, paradoxically, both a physical and virtual embodiment of computers and people. In particular, it is a social construction, where people live, play and work. A listserv is a commonly available Internet technology that provides a computer–mediated forum ('mailing list', or 'list') for written dialogue in the form of messages or 'posts'. To participate in a list you need to apply to become a member; instructions for both joining a list and managing your activity once a member are similar across most mailing lists - in particular, there is a commonly shared but largely informal set of rules for participation (a 'netiquette'). These rules are generally learned by experience, observation and from direct advice; they can also be sighted, in some lists, by reference to an electronic archive set aside for such information by the list owner or originator. Such archives might also house all messages sent to the mailing list by individuals for later referencing. A list can function in either unmoderated or moderated forms - a moderated list is one where messages are subject to vetting by the list owner before being circulated on the list; whereas an unmoderated list allows all messages to be posted directly to members of the list from someone other than the list owner.

Practice of communication

The act of posting messages to Oz-Teachers or UK-Schools in the period of the study, fell largely into one of three major categories, corresponding to discussion or continuous dialogue between two or more list members (over at least four postings), the providing of information or the posing of a question. Within these categories, the content of messages was either technical or educational in focus: technical content typically addressed the operation, function or application of various technologies; educational content was related to the practice, theory and administration of teaching and learning. Table 2 provides a guide to the application of this categorisation.

The following are examples of postings or part–postings, that fall into one of six major categories described in Table 2. All postings occurred on either Oz-Teachers or UK-Schools over the twelve month period of the study. For some categories, two examples are provided, for clarification.

Table 2. A categorisation of postings in terms of content

Category	Technical	Educational
Dialogue	Four or more messages that address the same topic, usually using the same message header or title. Example themes include: the merits of web browsers; costs and availability of Internet provider services; programming strategies in HTML; the best Internet software; the merits of the Windows95 operating system.	Four or more messages that address the same topic, usually using the same message header or title. Example themes include: preferred pedagogies for computer use; government support for computers in schools; using computers for second language learners; teachers as technicians; the value of a computer curriculum; teaching keyboarding.
Information	Single messages describing information of use, either as an answer to a list question, or without premise. Examples include: how to optimise use of a software item, such as Netscape; how to set up an electronic communications network in a school; publicly directing a 'flame' to a commercial message sender who posted to Oz-Teachers.	Single messages describing information of use, either as an answer to a list question, or without premise. Examples include: educational resources available, such as an on–line project (eg. Bookrap) or Web site reference (URL); opportunities to get involved in educational (usually on–line) projects; lists for discussion of 'subjects other than IT'.
Question	Single messages which pose a question that may lead to a discussion thread, a single answer, or perhaps a set of discrete answers. Examples include: how to set up use of a single modem with a network of computers; how to decode ZIP files; choosing an appropriate laptop computer; choosing hardware to run Windows NT operating system; evidence to support a teacher's request for air conditioning a computer room.	Single messages which pose a question that may lead to a discussion thread, a single answer, or perhaps a set of discrete answers. Examples include: professional development opportunities for teachers in rural schools; survey questionnaires (eg. the number and type of amusement parks visited by teachers and students); government policy on on–line education.

Discussion (technical)

Netscape on-line help tells you how to do it for a PC. It involves setting up several initialisation files, and having several netscape icons each with separate properties. It's quite straightforward for a PC so it's probably easy on a Mac also ..... Presumably Netscape's on-line help is smart enough to give help appropriate to the type of machine you are using. Give it a shot from your Mac.

Discussion (educational)

I think Charles McView's reply to Jenny's enquiry about SuccessMaker dwelt overmuch on the historical PLATO system than on the current ILS (Integrated Learning System) model. Or to put it another way, we are going to have to dig deeper to find a sound educational reason to reject all automated or independent learning systems. I have the 1994 National Council for Educational Technology (UK) report on ILS's, which was commissioned by the UK Dept for Education and conducted by the Leicester University of Education. These are not folks who willing publish lies. They investigated two ILS models - SuccessMaker, and the UK open-architecture version, Global Learning Systems. (I noticed that the Maths package from GLS is in the New Horizon catalogue this year)... In Maths, students using the ILS achieved 20 months progress within 6 months, compared with a control group. No difference in progress between the groups in reading was found. Learning gains were inversly proportional to children's own perceptions of their progress (an obscure result of the automated 85%+-achievement level the system adjusts for!). Students showed a higher time-on-task....... I won't go on. ILS's are not universal panaceas, but in _some_ areas, for _many_ students, they are demonstrably effective: and educational administrators spending public money are going to look long and hard at them.

Firstly, Karen Place, be not afraid to express your opinion in this debate. The day someone is strung up for expressing their opinion will be a sad day indeed. Heaven forbid. I know many people feel strongly about their point of view however I also think we are all intelligent enough to separate the issue from personalities. Thank you Martyn James for opening up such a lively debate which has evoked approximately 30 responses so far where people have been prompted to take fingers to keyboard over this issue. I'm sure we have all benefited from this discussion even if it has just made us think about the important issue of computer resource distribution and usage in schools. Having contributed my two cents worth earlier on in the debate, I have watched it See-saw between and even combine the two concepts. It has also added to my knowledge of the situations in schools.

Information (technical)

Corel has developed a new generation of personal digital assistants (PDAs) and is now seeking a manufacturer for the units. The Corel PDA will allow users to browse the Web, do e-mail, etc. (Ottawa Sun 10 Sep 96 p18). Meanwhile, the company will offer a public beta version of Corel WordPerfect for Java later this month. The new WordPerfect for Java is written entirely in Sun Microsystems' Java programming language and will be available at Corel's home page http://www.corel.com . (Information Week 2 Sep 96 p24)

Information (educational)

I'm Freddy Frome who looks after educational resources at The Courier-Mail and organises the Tuesday Headstart page for students. Just want to tell you about a resource that we are offering that could be of special interest to computer people. It's a kit of materials called net sites for the

classroom which teachers can purchase from The Courier-Mail for $15, which includes the cost of 40 Courier-Mails which come with the kit...

I have a group of yr. 9 students who are keen to work on an art project in collaboration with an Aussie school, via the INTERNET. We live in Europe so our experiences are quite different to yours. WE could perhaps develop art work on a common theme, scan in our picture, be critics for each other, and finally mount an internet ART GALLERY. INTERESTED? LETS HEAR FROM YOU

Question (technical)

I am trying to estimate the amount of data transfers per month for our proposed network (to assist in making a decision about which ISP to use, which 'package' to buy etc). I will have about 50 workstations with the network connected to the ISP by ISDN. Any estimates for data transferred per month?

Question (educational)

I am a student at ATU, I am writing to both apologise for our lack of netiquette and to ask a question relating to Asian studies in schools. I for one fully understand your attitude towards us students, as I feel that I am not very confident using computers. Hopefully with more experience we will aquire netiquette in time for our teaching years. Now to my question: We have been undertaking an Asian studies course which I am finding very difficult. I am finding it hard to think about how I would relate my knowledge into the classroom. The information we are learning seems to be in an adult perspective. How do you, as teachers, incorporate Asia into classrooms?

Of course, in a number of cases a posting could have been classified across more than one category - an example of this is given above (see, *Question (educational)*. In these instances, messages were categorised in terms of their main purpose, rather than subsidiary ones - although such an interpretation can never be entirely satisfactory, it does allow for building a reasonably robust framework for understanding the purpose, nature and content of messages posted to Oz-Teachers and UK-Schools. An example of this method of analysis in practice, can be found in the second example given above, for *Information (educational)*: although this posting ends with a question, the purpose of the message is clearly to describe and offer an opportunity for collaboration in a curriculum project.

Research methods

Investigation into both Oz-Teachers and UK-Schools has been conducted by the collection and content analysis of postings made to each of these lists. To undertake this work, the author became a member of each list and collected postings made over a 12 month period, ending July 1997. A purposeful selection of these postings was then analysed using a content

analysis methodology, providing data on numbers of postings, their authorship, and their 'thread' - that is, the discussion they may have initiated or contributed to. In addition, a number of interviews were conducted, by email, with a selection of members who had made at least two meaningful postings to the list, to obtain data such as reasons for membership, how the list is used, and perceived value of the list. A smaller number of members who had not sent any messages to the lists, were also interviewed. 15 members of UK-Schools (2.6% of total current membership), and 12 members of Oz-Teachers (1.1% of total current membership) were interviewed in total, including 4 from UK-Schools and 4 from Oz-Teachers, who had not posted messages to their respective lists. Documentation relevant to the lists was also collected, as residing on associated Web sites:

> http://rite.ed.qut.edu.au/oz-teachernet/
> [previously at http://owl.qut.edu.au/oz-teachernet/]
> http://www.mailbase.ac.uk/lists/uk-schools/

These Web sites also provided access to archives of list postings.

List contexts

UK-Schools and Oz-Teachers are localised approaches to the use of global communications networks for professional development of teachers. Both lists are examples of early attempts to bring teachers into a growing debate centred on the practice and to a lesser extent, the theory of using new technologies in school education. The lists are by their nature, dynamic - membership and topics of discussion change constantly, and their development reflects something of a maturation process. In particular, membership to Oz-Teachers reached something of a plateau over the period of this research (at about 1050 subscribers), whilst the number of postings made to both lists fluctuated in the same time–frame (see Table 4). Indeed, a maturation process in both UK-Schools and Oz-Teachers was probably the defining influence in the amount and type of postings carried over this period, rather than a growth, or lack of growth, in the numbers of list members.

It would seem that the maturation process in these lists have certain identifiable aspects. For example, maturation included a growth in the core of membership - those members who maintained an active interest in the list, by either making postings to the list on a regular basis, or who repeatedly used the list for professional activities, such as resourcing teaching, or for references to curriculum projects or for posing questions. At the same time, one witnessed a constantly changing peripheral

membership - those who joined for a short time and then left, or those who joined but made little on–going use of the list. Some of the latter included university students who were pursuing studies in education, and who were evidently encouraged to join by their lecturers (who were presumably members of the relevant list), or perhaps by fellow students, but who made little or no use of the lists thereafter. This phenomenon seemed to be especially true for Oz-Teachers.

Furthermore, maturation also included developments in the so–called 'lurker' population. Lurkers were members who made use of the lists by reading postings but who did not make postings themselves. The act of lurking was really a passive use of the list, with lurking apparently being a preferred way of working with or using lists for large numbers of members. Whilst not all list members wished to post messages to the list, most of these still used the list for professional reasons - obtaining information, keeping abreast of issues and dialogue and using references to projects, ideas and literature given in postings. Lurking was not necessarily a mark of immature members (ie. those who didn't yet have the necessary confidence to make a posting) but rather a preferred approach to apprenticing oneself to the culture of a list; and whilst some members remained lurkers for prolonged, even indefinite, periods, others perhaps began to make postings on a regular or occasional basis. Importantly, however, lurking was not to be seen simplistically as a behaviour of naive list members; and neither was the dichotomy between active and passive users of a list a static picture - it was dynamic, and movement between activity and non–activity for many individual list users was very fluid.

Interestingly, in both UK-Schools and Oz-Teachers but especially in the latter, members were actively encouraged to make postings. Active members appeared to assume that passive use of a list was a sign of immaturity and that all list members should become active - in fact, the list owner in Oz-Teachers advised all new members that an introductory message was expected of those joining the list. There is it seems, no justification for this: the passive members interviewed from both lists indicated, without exception, that they gained value from their membership of the list without feeling it necessary to make postings. Further, all admitted to feeling anxious about making a posting but said that they were likely to do so. Interestingly, a majority of interviewees felt there was some pressure from other list members to make a posting and that this heightened their anxiety about doing so.

Maturation in list activity could also be seen in the content of list postings, where messages of a trivial nature were tolerated less and occurred less; and the form of messages increasingly followed the conventions dictated in general rules of 'netiquette' (see Table 3), or those created by the list members or owner themselves, both through practice and sometimes as part of a policy statement. Maturation was also marked by the establishment of a list archive (which both Oz-Teachers and UK-Schools had), together with a Frequently Asked Questions (FAQ) database, to which new members could be referred, to obtain information on subjects that have already been discussed or referenced in the course of various postings.

Table 3. A summary 'netiquette' posted to UK-Schools

About the Content of your Message	About the Format of your Message
Use a meaningful subject line	Always sign your message
Write relevant messages	Don't send large messages
Don't flame	Don't overdo signatures
Respect copyright when forwarding messages	Don't send attachments to lists
Respect people's privacy	Keep your lines short
Don't quote an entire message when replying	
No unsolicited commercial email	

UK-Schools and Oz-Teachers had been born out of a personal commitment to the use of technologies in education. In the case of UK-Schools, this commitment was much in evidence in many of the list owners' own postings to the list, which periodically reminded list members of the nature, purpose and 'rules' that governed the use of the list. These postings left in no doubt as to who was the final arbiter in members' disputes or the final authority in deciding errant uses of the list by outsiders (eg. commercial advertisers), or by list members who might 'misuse' the list by, for example, posting messages which lay outside 'legitimate topic areas'. In this sense, UK-Schools did not appear to transcend its origins, and there was a real sense in which the boundaries of the list continued to be set by the ideals and values of one person - the list owner. This fact sits uneasily with the nature and rhetoric of the Internet, which operates against control and boundaries, whether by individuals or systems (such as governments). It is difficult to determine how far the stamp of ownership dictated the actual practice of dialogue on UK-Schools (ie. would the nature of use of the list have been different if there was a less interventionist owner?); but nonetheless, the characteristics of that stamp were very much in evidence, and often echoed by the sentiments of vocal list members: that is, there was evidently no dissent to the values

imposed by the list owner, or if there was, the list didn't seem to get to hear about it. Indeed all interviewees were positive about the management of the list, with one member referring to the list owner as a 'benevolent autocrat'.

Oz-Teachers, unlike UK-Schools, did seem to outgrow the immediate control of its owners, despite or perhaps because of, a greater amount of direction in list policy, establishing the list as part of a wider approach to investigating the use of the Internet for professional support and development. From an examination of postings, the list owner rarely involved herself directly in moderating dialogue or messages. The exceptions to this included protracted periods of dialogue which over a period of several days, deteriorated to adverse personal comments; and again, where there emerged a wide–ranging disagreement amongst list members as to the value or appropriateness of student postings[2].

List membership as of July 1997, was 560 for UK-Schools, and 1071 for Oz-Teachers. The majority of members for Oz-Teachers originated in Australia, with a small number coming from Denmark, France, the United Kingdom, Canada and America - altogether less than 1% of total members appeared to have originated outside Australia, with surprisingly none coming from New Zealand. Moreover, a large number of list members appeared to be students, although it is almost impossible to quantify this assertion by simply viewing a listing of members' email addresses[3]. Conversely, there was a much greater spread of countries represented on UK-Schools, including Norway, Canada, America, Portugal, Italy, Finland, Denmark, Netherlands, Japan, New Zealand, Australia, Hong Kong, Brazil, as well as many eastern European and African countries. Up to 15% of members originated in non–United Kingdom countries. Understandably, there was also a greater representation in individual postings of non–United Kingdom content material, although most of these were usually concerned with providing information (on, for example, curriculum projects and European funding opportunities) or inviting participation in school–based project work, rather than initiating or contributing to dialogue.

It is difficult to determine why Oz-Teachers was particularly insular and UK-Schools more global in membership over the period of this research, although one reason might be found in a policy of use statement for Oz-Teachers (part of a 'welcome' message that appeared in the first posting to the list, on 28 February 1996, and subsequently posted to all members on

joining), where the list was clearly described as being intended for Australian teachers:

> The list is open and not moderated at this stage, though a list manager checks addresses and traffic in case school students accidentally use the list. An online community of Australian teachers will reach its potential if many teachers contribute to the dialogue and post regularly to the list. Please use this list to talk with Australian teachers.

UK-Schools also had a longer heritage, with the first posting being made on 10 December 1994 - this might also help to explain the more global nature in the spread of its members.

Lists as culture

Part of the conceptualisation in this study of Oz-Teachers and UK-Schools has been that lists operate as communities or groups of people who have come together by virtue of an interest, affiliation or a more basic need or want. The notion of lists as communities is not new - indeed, it has been the basis for a range of studies of computer mediated communications (CMC) and is perhaps an obvious characterisation to infer (Lawley, 1994). Indeed, some of these studies have moved beyond the view of CMC as communities to describe them as cultures (Rheingold, 1993) but without a satisfactory exploration of what is meant by the use of the term, so that a culture can be seen to be different from a community.

What has clearly emerged from this study into Oz-Teachers and UK-Schools, is the notion that these lists do operate as cultures, where culture is something that is collectively created and resides, dynamically, in the constructed meanings of a particular community. In this sense, the culture of a list is generated by its membership through the meanings given to collective practices - the practices of a community. In another yet related sense, it was possible to discern in both Oz-Teachers and UK-Schools, but particularly in the former, the operation of 'cultural capital', a term coined by Bourdieu (1988), where the capital of a culture is perceived to be that which is held to be of value, and which can be accumulated, earned and exchanged (Bourdieu, 1988). The capital within the cultures of Oz-Teachers and UK-Schools was that of expertise, experience and knowledge, and in the context of a variety of postings and dialogues on these lists, one was able to witness the negotiation of cultural capital, and the clear divisions that occurred between those with capital and those without.

List activity

The activity of a list can be readily measured by accounting for the number of messages that it carries. The greater the volume of postings, the greater the activity of the list. More importantly, the more threads[4] that occur in a list, the more opportunity there is for reflective and critical dialogue to occur - and it is in this type of dialogic activity that deeper involvement with knowledge can be found, where 'apparent conversational immediacy' is blended with 'tempered thought' (Haley-James, 1993, p. 9), giving rise to what Haley–James has characterised as a 'metacommunicative' event (Haley-James, 1993, p. 10).

Table 4. Oz-Teachers and UK-Schools: List activity

Period	OZ-Teachers		UK-Schools	
	Messages	Threads	Messages	Threads
Jul-96	221	10	69	3
Aug-96	272	8	16	0
Sep-96	489	23	43	0
Oct-96	237	6	65	2
Nov-96	342	20	54	0
Dec-96	133	4	20	0
Jan-97	103	2	69	2
Feb-97	241	11	51	2
Mar-97	478	26	51	1
Apr-97	499	31	48	0
May-97	661	29	49	1
Jun-97	487	17	45	0

However, this is not to suggest that in all threads or dialogues, reflective and critical perspectives arise; indeed, an analysis of postings which constituted such threads on Oz-Teachers for example, quickly demonstrated this was not the case. But there is an increased chance that these perspectives will be found, as part of a 'conversation' between two or more participants, and where there is an interaction between views, understandings and ideas on a single topic or theme. Indeed, this notion characterises previous findings from research into computer conferencing (Henri, 1992; Riel & Harasim, 1994), and underpins current assumptions about appropriate models of learning, especially for professional development (Schon, 1987), and teacher education (Hatton & Smith, 1995); and also for adult learners (Laurillard, 1993).

The relative activity in each of the lists, Oz-Teachers and UK-Schools for the period of this investigation is summarised in Table 4. The activity of Oz-Teachers was considerably and consistently greater than that of UK-Schools, a difference that was not adequately explained by the discrepancy in relative memberships (ie. more members do not necessarily mean more postings). Even turning to an analysis of the relative proportions of total messages that occurred on each of the lists as threads, or extended dialogue, the differences remained noticeable (see Figure 1): dialogue occurred more frequently and in greater proportions on Oz-Teachers than on UK-Schools. It is possible then, although possibly dangerous, to suggest that Oz-Teachers worked better as a community of learners within a professional development context, as a direct result of its heightened activities, but more importantly, because of the greater number of threads or dialogues that occurred therein. However, this is a theme that I shall return to in the conclusion to this paper.
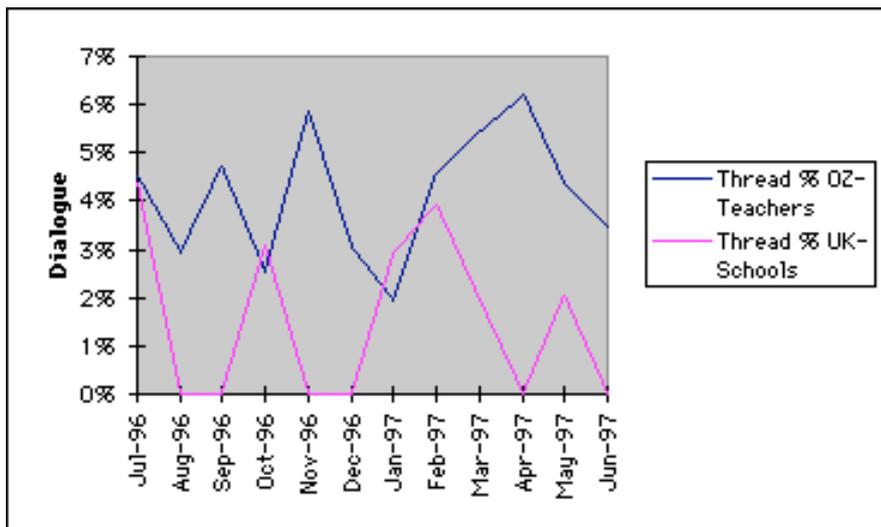

Figure 1. Dialogue represented as a proportion of total list activity

Practice

There were a number of perspectives from which it was possible to make sense of postings to Oz-Teachers and UK-Schools, tracked over a 12 month period (ie. 1 July 1996 - 1 July 1997), although a systems perspective or orientation (Patton, 1990 78) suited the subject and the data well. Mailing

lists generally appear to operate as systems - contributions made by individual participants have an impact on the shape and functions of the list, and the list as a whole takes on a momentum of its own. Lists also, paradoxically, have the capabilities of amplifying and reducing the experience of individual participation, and in this sense adhere to Bowers' framework for analysing the effects of technology on human experience more generally (Bowers, 1988). Amplification occurs in the sharing and confirmation of ideas, notions, arguments, views, amongst list members - for example, reflections on some aspect of a teaching practice that originate with one list member, once published and thereby shared and perhaps confirmed in commentary by others on the list, become more powerful and gain greater legitimacy for many list participants, particularly the originator of the message. Conversely, a message that invites commentary or poses a question, and receives no response, direct or otherwise, can have a deflationary or reducing effect on its originator. At the same time, reduction is clearly at play in other aspects of list activity - communications in postings are stripped of context, sometimes losing the intent, attitude and meaning that the originator wants to convey in a message. 'Strip away the additional meta–information and the words are naked, subject to ambiguity and misinterpretation' (Brouwer, 1997).

Oz-Teachers and UK-Schools operated as computer–mediated communities in the making, being shaped and led by the individual members of those communities. These virtual communities operated at a number of different levels - at the level of professional development, social grouping, resource and advice centre, political movement - and overarchingly as a Discourse, in the sense that Gee (1990) writes about discourse:

> A Discourse is a sort of identity kit which comes complete with the
> appropriate costume and instructions on how to act, talk, and often write,
> so as to take on a particular social role that others will recognise...
> Discourses are ways of being in the world, or forms of life which integrate
> words, acts, values, beliefs, attitudes, social identities, as well as gestures,
> glances, body positions and clothes. (Gee, 1990 142)

The lists were both ostensibly about professional development, about teachers learning about aspects of teaching centred on the use of new technologies. But of course, they were much more than this - they operated by virtue of their membership, as communities, both in a sociological and a situated sense. Both Oz-Teachers and UK-Schools had their owners, key members (the ones most visible and active, through frequent postings),

moderating influences, power–plays, politics, rules (tacit and explicit), rule–keepers, core members, peripheral members and silent (passive) members. However, although these lists operated sociologically, they were more readily identifiable as communities of situated practice. For example, both lists had the indelible mark of practising teachers - they were used by teachers to talk and share with other teachers, issues fundamentally (but not always) concerned with using new technologies in classrooms. The culture created in these lists was the culture of teachers as professionals. But the two lists also had cultures of their own, each different to the other in small yet important ways, defined by the practices evident within each list. First time membership of either Oz-Teachers or UK-Schools clearly involved an apprenticeship, gradually acquiring the knowledge and skills of the particular practices within the list, using strategies such as observation, participation (interaction) and role playing, and finally becoming completely enculturated within the adopted practices. So, in this sense, we find in both lists the 'communities of practice' that Lave and Wenger (1990) describe in their conceptualisation of situated cognition.

By and large, discussion and information posted to both Oz-Teachers and UK-Schools had the effect of legitimising and informing, operationally, what occurred and what didn't occur, in the name of technology use, and especially Internet use, in schools. In this sense the lists worked well, providing useful communities within which teachers could work and play. They also functioned to induct teachers into the practices of computer mediated communication. In addition there were a range of postings where questions were raised regarding applications of educational technologies, from perspectives outside the immediate 'how–to' or 'what-to' pedagogical culture established in the list. This suggests the lists provided the means for reflection and reflexive practice - indeed, many of the teachers interviewed suggested this was a strength of the lists, particularly those who were part of Oz-Teachers.

In addition, however, some postings, usually those belonging to a thread, served to reorientate the operational dialectic in the list, and established a more critical perspective. Messages A and B, below, provide an example of this process, where the first posting (A) re–focuses a 'how–to' discussion that has previously occupied the list (ie. 'how–to' use computers with students with learning disorders), a discussion which gathers momentum and is the impetus for new, critical, views to emerge on an old topic. Message B is an example of one direction in which this debate

subsequently moves, where a personal reflection on the writing process is linked to wider literary practices. However, these types of postings were certainly in a minority and sat somewhat uneasily amongst the majority.

Message A

> The discussions about how to use computers with various learning disorders has been really interesting, but my question is even more basic. How do we _best_ use computers to improve student learning? I have spent all evening marking year 7 essays and have a gut feeling that, if you encourage students to rework / edit/ redraft work several times, their essays improve significantly when they are able to use a word processor. I have heard a number of teachers comment, almost disparagingly, about other teachers who use computers only for word processing. Seems to me that if we could work out some guide lines to make it a really valuable experience in terms of learning, as opposed to just presenting, that we would be making headway! The same applies for other aspects of computer use- like spread sheets, data bases..... We are _trying_ to plan a National Schools Network project investing this area and I know what I want to investigate but am having trouble coming up with the right questions!

Message B

> In the end, there is never a rough draft (which they tell me is so beloved by English teachers) to see, because it gets absorbed into the text, or when I am being really buttoned-down, the rough draft paragraphs are not absorbed, but are deleted after I have finished. But while the process is under way, there will be notes to myself all over the file, reminders of cross-links to be made, scaffolding, under-props. This is NOT what students are taught about writing in English, so far as I know. It is certainly not the way that I was taught. The moral: productivity with a WP probably depends on personal style, and I doubt very much that this has ever been investigated to any great extent. I know that Christopher Koch, the novelist, refuses absolutely to use a WP, and I seem to recall that most members of the Australian Society of Authors say they rely on a WP. Perhaps the answer to Susan's question is to survey some more practising writers and see what they do with the Dark Satanic Wordmills that are their playthings.

Conclusion

There is a possibility in the use of mailing lists, to create vital, energetic and occasional communities for professional development activities, building curriculum and information resource libraries and facilitating informal communicative networks, serving the social, professional and personal needs of teachers. The type of lists investigated here were unmoderated, self–serving and self–censoring, and they appeared to work well for a majority of the list membership. Topics of postings and the willingness to engage them fluctuated as the list communities matured. In

particular, the lists appeared to generate some limited dialogue which displayed elements of a critical dimension - a necessary precursor to developing serious, reflective, engagement with practices that should accompany any professional development process.

In order to be able to participate effectively and productively in any social practice, including that developed in mailing list communities, it is necessary to be socialised, or encultured, into that practice. But social practices and their meaning systems are always selective and sectional; they represent particular interpretations and classifications. Unless individuals develop the grounds for selection and the principles of interpretation they are merely socialised or enculturated into the meaning system and unable to take an active part in its transformation. The critical dimension in mailing list activities is reached when participants do not only participate in a practice and make meanings within it, but rather in various ways, transform and actively produce it. It is at this point that the list is operating at full potential, and when the opportunities for growth in the context of individuals' professional development is maximised.

In terms of a conceptual learning model, the critical dimension is a second–order phenomenon, that can only occur after learning experiences in both the operational and cultural dimensions (see Figure 2). Moreover, learning in the critical dimension has an effect on learning in both operational and cultural dimensions, fully contextualising the relation-ship knowledge has to a particular culture or context, thereby leading to an understanding of its appropriateness. Without a critical dimension, knowledge cannot be transformed to have a wider or more universal application.
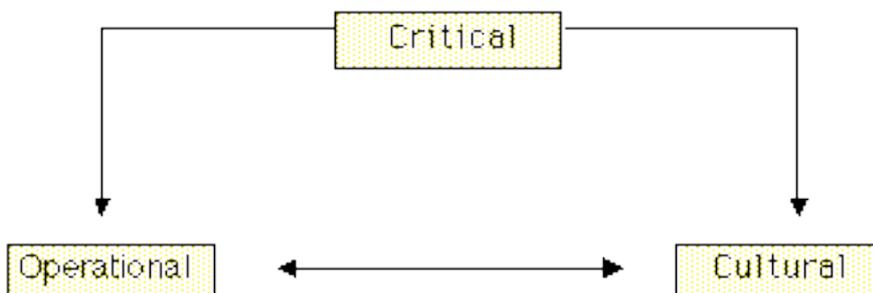

Figure 2. A conceptual model of the Operational,
Cultural and Critical modes of learning

Oz-Teachers and UK-Schools work well, for the most part, in their current form. However, there are other list formats that have been used to engender dialogue, particularly dialogue of critical dimensions, more purposefully. For example, lists have, for some time, been used as 'institutionally sanctioned spaces' as a component of undergraduate and graduate level university courses (Bakardjieva & Harasim, 1997, p. 1121). Similarly, IT–Forum[5] is a list which periodically publishes formal papers, specially written by leading academics in the field of instructional technology, to create a forum for discussion between members of the list and the author of the paper, over a (usually) two week period (Reiber, et al., 1997). In these contexts, dialogue is more structured and arguably provides for greater critical dialogic engagement with the texts of postings (Bakardjieva & Harasim, 1997; Harris & Wambeam, 1996). In this sense, it is reasonable to suppose that as a supplement to Oz-Teachers, one or more lists could be created that provide for more structured discourse. Certainly, this presents a promising professional development model to develop purposeful, new and virtual communities, that bridge the professional gaps that exist between traditional communities of practice.

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EndNotes

[1] The full study, including complete data analysis and data examples, is at:
http://www.bs.ac.cowan.edu.au/Listserv/Part1.html
http://www.bs.ac.cowan.edu.au/Listserv/Part2.html

It is also published, in full, in: Lankshear, C., Bigum, C., Green, B., Wild, M., Morgan, W., Snyder, I., Durrant, C., Honan, E., & Murray, J. (1997). *Digital rhetorics: Literacies and technologies in education—current practices and future directions: Issues and innovations*. (Vol. 3). Canberra, Australia: Department of Employment, Education, Training and Youth Affairs, Federal Government of Australia.

Also see http://www-business.cowan.edu.au/rhetorics/

[2] This is a reference to a situation where a number of messages were received on Oz-Teachers, all originating from students in one university and of questionable relevance to the list. Both adverse and supportive comments were made by members of the list, based on the students' rights to use the list for what was perceived to be ill–directed research on very general questions concerned with educational practice.

[3] It is possible to obtain an approximate idea of the numbers of list members who are students, by tracking multiple–institution email accounts which appear to possess non–personalised, automatically generated email addresses.

[4] For the purposes of this research, a thread is defined as a series of four or more postings, each on the same theme or topic.

[5] See: http://itech1.coe.uga.edu/ITForum/home.html