

INTEGRATION: the sine qua non of CALL

Brian McCarthy (brian_mccarthy@uow.edu.au)
University of Wollongong, Australia

Introduction

Over the past two decades, the potential of computers to enhance learning has fired the enthusiasm and the imagination of educators in general, and language teachers in particular. This is hardly surprising. The technological fuel has come in the form of stand-alone and networked computers, seemingly endless configurations of electronic multimedia resources, email, the Internet, and increasingly powerful and versatile storage and delivery facilities; and the early sparks of teachers' initiative have been fanned into a blaze by a broad array of activities (drills, tutorials, simulations, games, problem-solving activities, and integrated learning systems) coupled with powerful and widely-accepted tools for the management of text and figures, vast data stores, graphics, animation, audio, video and authoring processes.

Why then, as one chat with colleagues in secondary and tertiary institutions, does one gain the impression that in most foreign language classrooms of the nation very little is happening with computers, that where it is happening it often does so spasmodically or peripherally, and that the 'wonder' of CALL is so often met with indifference, skepticism or scorn?

It is all too easy for those who have 'landed on their feet' with CALL to attribute the less happy experiences of others to some deficiency at the level of planning, initiative or energy; and for those who have had a bad experience to withdraw and nurse their burnt fingers with mutterings about the cost, the lack of support, or the poor quality of the materials available.

If we take computers to be analogous with textbooks or videos, in the sense that they are essentially a medium/technology plus content, it is hard to argue that computer-based materials are somehow intrinsically flawed in such a way as to be inappropriate for classroom use. The problem must lie elsewhere. Two teachers can have different experiences in using similar videos in similar classrooms. Their remarks, as well as independent observers, will reveal that it is the way they use it, the who, how, when, where, and why factors, that account for the differences. The same is true of computers. It is the way they are used, the way they are integrated into a given teaching and learning process, that accounts for much of their success or failure. And unfortunately, as computers are conspicuously more complex technologically than videos, there seem to be proportionally more problems surrounding their integration into the classroom.

There are in the literature repeated warnings of the type: "learning technology is rarely effective unless it is properly and thoughtfully integrated into the curriculum" (Bull & Zakrzewski 1997:19); "The integration strategy adopted by the lecturer is widely recognised within the learning technology community as being more critical in the success or failure of introducing a new resource into teaching than the quality of the resource." (Belton 1996:19). Sound practical advice, however, is not always easy to come

by. Most teachers are neither inclined nor in a position to give reasoned, thorough accounts of what they are not doing and why they are not doing it. If they try something and find it does not work, or if they are disinclined to give it a try because, rightly or wrongly, they suspect that it will not work, they simply move on, or bypass it, and focus on what does work.

Neither do the great majority of the authors of research articles devote much time to reflecting on integration. This may be because they are reporting on needs-driven software or IT developments whose 'integrability' into their teaching program is, in their minds, such an inherent, self-evident fundamental that explicit references to this consideration are fortuitous and rare. It may also be that their primary focus is on what the computer can do, or on software surveys, design criteria, programming, setting up a computer laboratory, research principles, etc, with the result that many questions of the 'but what about me and the obvious obstacles in my school' variety are never addressed. And yet there can be no doubt that there is much to be gained from the observations of practitioners as they grapple with the day-to-day concerns of implementing CALL projects and integrating CALL materials into widely different and constantly evolving education systems, institutional structures and real-life classrooms.

It does not seem possible to propose any simple taxonomy of the issues surrounding successful integration. Human factors such as government educational policy, institutional vision, departmental cohesion, the teaching philosophy and practices of individual teachers, student motivation and ability interact in such a complex manner with considerations relating to hardware, software, logistics, personnel and resources in both short and long term that any accurate analysis of all the possible permutations and combinations would be about as intelligible as a circuit diagram of the London underground. What follows should be viewed, rather, as an attempt to build a meaningful mosaic from the many insights reported by colleagues in published articles and in casual conversation, coupled with reflections prompted by the author's own experiences in CALL software development and integration.

The source articles report on work undertaken in a range of disciplines, including pharmacy, mathematics, medicine, physics, ESL/EFL, modern languages, geology, and management. And they use different labels to denote the use of computers in the delivery of academic material: CAL, CBL, IT, CALL, courseware, distance education, multimedia, technology-mediated teaching - 1 Their common inspiration is that they were produced by dedicated teachers wrestling with the issues surrounding the use of computers to enhance learning, and the common filter through which they were passed was the mind of a foreign language teacher (the author) seeking to better understand the factors influencing the integration of CALL into the classroom.

Institutional Policy and Commitment

Government reports and policy statements, and their subsequent manifestation in the initiatives of individual schools or tertiary institutions do not properly speak constitute integration. They do, however, have an important role to play. Not least because, in recognising the value of CAL, they create a climate conducive to 'affirmative action' or proactive behaviour on the part of senior personnel and a sense of acceptance within the system of individual teachers who devote time and energy to enhancing their teaching

with new technologies. They provide direction and challenge. They occasionally also provide resources. However, as Bouillier (1997:iv) cautions, in response to the Dearing Report (British National Committee of Inquiry into Higher Education), if recent technological advances are to fulfil their true potential, they 'must become an integral part of the way we teach and learn' - and if they are not to be perceived as 'yet another imposition at a time when many educators - feel under pressure and increasingly demoralised', teachers must be consulted and have a sense of ownership of the process of change, as it is 'the individual teachers who will ultimately realise these aspirations, not the undoubtedly expert constituency of - committees.' For Bacon (1996:40), integration of CAL materials into the departmental teaching policy can foster staff attitudes and administrative structures (e.g. timetabling) that allow the courseware to remain in use even when the key staff associated with its introduction move - a situation which Bacon flags as a 'touchstone of success'. In a similar vein, Harding and Quinney (1996:53) consider the continued momentum of a project after funding has stopped to be a positive indicator, and Allen et al. (1997:6) list a 'genuine departmental commitment and not merely the interest of a lone enthusiast' as one of the issues 'crucial to the successful integration of technology in a particular course.'

Resources and Physical Environment

Computer hardware no more creates good teaching than a piece of chalk does. Even the most well-conceived or appropriate software, however, and come 'unstuck' in a resource-deficient educational environment. The successful integration of any software presupposes an institutional infrastructure that provides sufficient appropriate hardware and IT link facilities inaccessible locations and available at times when students and teachers need or want to use them. Limited resources coupled with a tendency for traditional 'big-user' departments to claim priority on the use of those resources (and the often unquestioning acquiescence to these claims by colleagues and administrators alike) can mean that small departments such as modern languages find it difficult to obtain access. Winning computer facilities or access to them requires, as Hackett (1996:18) points out, 'time, money and a concerted effort by language teachers.' When an array of IT resources is involved, as, for example, in the Pharmacy Intranet at the University of Brighton, UK (Sosabowski et al. 1998), no matter how good each of the resources may be individual, there is a further requirement of a sound courseware management system. This is far more likely to occur in an institution where IT is widely embraced and embedded in the ethos than in one where it is the dada of an isolated devotee.

Support: Supervision and Value-for-Money

In a refreshingly frank 'cautionary tale about the introduction of multimedia PCs', Etherton (1995) recounts a litany of disasters arising from an optimistic laissez-faire approach to a self-access lab of PCs loaded with relevant CALL materials: computer-wise students of independent spirit taking advantage of their free rein to add messages, change passwords, alter settings, load games, work on sundry unrelated school projects, and do irreparable damage to CDs. Disturbed but undaunted, Etherton and his colleagues

assessed the situation, took remedial action (called in outside help to have the machines restored 'to health' and to install elaborate security in the form of passwords and disabling facilities), generally protected the school's investment, and drew appropriate conclusions about the need for close supervision and/or strict security. Successful use of CALL, then, has inescapable ramifications at the level of technical support (see also Johnson 1995:18 and Levy 1991:17) and teacher training - both of which come at a price. Institutions are more likely to remain supportive, and teachers likely to avoid excesses and disappointments, if a realistic assessment is made of time and money savings (or burdens) prior to embarking on a venture (Porritt 1997:20). As Davies and Crowther point out (1995:3), claims of the increased efficiency generated by multimedia technology can be 'somewhat exaggerated' if they ignore up-front development costs (often considerable) which mean that 'the courseware must be used a great many times before any efficiency gains are realised'. Stoks (1993:82) expresses the fear that computer labs, like language labs before them, will be discarded by the language teacher if we do not 'succeed in showing the added value of this technology; software must make a real contribution to better language learning'. A disillusioned, disappointed establishment would not find it difficult to put obstacles in the way of further plans to integrate CAL materials, regardless of their merits.

Teaching Philosophy

Any piece of CALL software represents a balance between the technology, linguistic content, and pedagogy (McCarthy 1994:11). The methodology of foreign language teaching has evolved dramatically over the past half-century, with emphasis at different times being placed on a remarkable array of philosophies and approaches under banners such as grammar-translation, audio-lingual, structuro-global audiovisual, inductive/deductive, functional, notional, situational, communicative, immersion, learning/acquisition, suggestopedia, directivist/constructivist ... Although each approach has seen its share of zealous purists, it would seem that viewed from a distance, the abiding lesson to teachers has been that no one approach is a magic wand capable of transforming any class of foreign language learners into near-native speakers of the target language and that each approach brings to the fore a previously neglected or forgotten facet. Most teachers seem to favour an eclecticism based on knowledge (formal or otherwise) of the different approaches coupled with other considerations imposed by student needs, motivation, aptitude, and resources. And it is unlikely that any two teachers will have reached the same definition of 'best balance' in their eclecticism or be operating under identical constraints. It is therefore not appropriate to make grand pronouncements or generalised value judgements about the pedagogical merits of a given piece of software. What is clear, however, is that software is not pedagogically inert. At one end of the CALL scale, tools such as word processing, concordancers, spell and grammar checkers, and the Internet, do not exist in a vacuum. They are used to perform tasks within a program proposed by a teacher (with or without direct consultation with students), and that program, by design or default, reflects a pedagogical stance. At the other end come integrated learning systems, where the designer's methodology is an indissociable component of the courseware. Successful integration of CALL requires that some consideration be given to methodology. General warnings from practitioners, such as

Bacon (1996:40) 'teaching staff must understand what the software is designed to achieve and agree with the teaching strategy being used', are common. So too are warnings specific to a type of material or a particular educational environment.

Hackett (1996:15), for example, found himself constantly weighing questions such as: 'Can the Net and e-mail be used effectively in ways consistent with the theory of language and language learning embedded in the High School French programme?'. Quantrell (1992:18) refers to the 'trap of using the computer as a stop-gap, a time filler or a reward', cautions against allowing software to dictate the methodology or objectives, and signals that 'it is difficult to sustain a teacher-directed approach and use information technology in the classroom'. Perhaps the best illustration of the need for intelligent integration at the level of pedagogy is provided by drill and practice courseware activities. As Roblyer et al. (1996:87) point out, such courseware is commonly dismissed out of hand by its critics, not because of its content or operation, but because its implicitly directive approach 'contradicts the trend towards restructured curriculum in which students learn and use skills in an integrated way within the context of their projects that specifically require the skills'. The fact that this type of courseware is open to such criticism, however, does not mean that it should be forever banished from the classroom. Purists of various schools of foreign language teaching would, in the past, have done away entirely with any explicit teaching of grammar, any use of translation, an encounter with the written code before full mastery at the oral/aural level, dictation activities, the use of anything other than the target language in the classroom, the notion of right and wrong in assessing the expression of foreign language students - Roblyer et al. reason that 'even the most motivated students do not always learn skills as expected' and suggest that directed instruction is usually the most efficient way of providing skills whose absence presents a barrier to higher-level learning (1997:74). The disparaging 'drill and kill' label may be no more than a reflection of the detractors' abuse of the material, either because teachers attempt to fit directive square pegs into the constructivist round holes of their preferred teaching philosophy; or because they make excessive or indiscriminate use of resources whose pedagogical pretensions are by design-focused and limited; or because they have bluntly refused to use drills even when they were readily available and offered a superior, more flexible way of delivery; or simply because they chose badly designed drills. Each of these scenarios could be considered indicative of inadequate consideration of integration at the level of the pedagogical approach. Problems of a similar nature were frequently encountered by strictly traditional teachers of the grammar-translation school in the seventies when they attempted to paste slabs of structuro-global materials into their classwork, oblivious to the immiscibility of the two approaches in many respects, and to the consequent confusion created in the minds of their students.

In the case of self-contained tutorials, where the designers have had to commit themselves concerning the content, methodology, and sequence, courseware with a sound instructional sequence may be rejected by a teacher 'because it does not cover a topic the way he or she presents it' (Roblyer et al. 1997:91). It is because of the high probability of mismatches between designers' concepts and the styles and circumstances of teachers who use them in real-life classrooms that tutorials, particularly in the world of foreign language teaching, are something of a rare commodity. As Roblyer et al. point out 'Not surprisingly, courseware companies tend to avoid programs that are problematic both to develop and to market' (1997:91) Teachers must learn to look through the technology to the pedagogy and be prepared to make frank, pragmatic admissions of the type: electronic

page-turning can be 'particularly tedious and dull' (Davies & Crowther 1995:4); or 'most network tools do not support a collaborative style of working' (Chang & Chen 1997:3).

Courseware Content

Irrespective of matters relating to teaching philosophy, satisfactory integration requires a good fit between the academic content of 'off the shelf' courseware and the point at which it is used in the syllabus. Most teachers' resource files contain a mixture of activities they have created themselves, or that have been passed on to them by colleagues, 'borrowed' in the form of photocopies from textbooks other than those serving as the core of their program, or retained from earlier published courses they have taught with success but which are no longer in print. It is relatively easy to slip a slide, overhead transparency, a printed page, a picture, or even an audio or video segment into a file (and into a lesson). And it is not at all unusual for teachers to modify such activities each time they use them, in response to developments in their linguistic awareness, modified pedagogical principles, or different class composition. It is, on the other hand, very hard to use snippets of packaged CALL activities or to personalise their content or delivery.

Most often it is all-or-nothing. Teachers therefore have a responsibility to be fully acquainted with the scope and depth of the CALL materials they plan to use. It is only the medium that is new here, not the principle. For material appearing in textbooks, it is normally safe to assume a close correlation between the order of presentation and degree of difficulty. But teachers have always had to exercise professional judgement in the selection of support documents used in class, and particularly since the conjunction of the emphases on the functional, the valuing of the language acquisition process that parallels that of language learning, and the ready availability of authentic materials in the target language. The magic of the Internet, for example, unfortunately, does not extend to filtering and editing material in such a way as to make it more appropriate to the interests or linguistic capabilities of a particular group of students. Moreover, as Hackett (1996:18) states: 'the Net does include materials unsuitable for High School classes. Too much freedom to explore could lead to students' accessing inappropriate sites'. His solution for controlling content was to use software that limits 'surfing' to prescribed sites or to create 'safe' mini-websites by downloading selected pages on to disks. Hackett is also frank in concluding of French chat sites that the argot and the speed at which conversations move make them inappropriate for use with secondary students.

Fit with Course Structure

It may be a reflection of a broader malaise in the tertiary education system of the nation, or of a student population more than ever under pressure from preoccupation with employment prospects and with life in a fast-moving, stressful society, or just a teacher looking piously back at his student days through rose-coloured glasses and the cynicism of middle age to make comparisons that are less than favourable - but it would seem that the increasing emphasis on rights, responsibilities, accountability, and accounts has created a situation in which work that does not demonstrably contribute to the marks on which end-of-semester grades are based is work that need not be taken seriously. It would

also seem that this view, expressed by the author on previous occasions (e.g. McCarthy 1996:21) is one shared by many colleagues. The words may differ, but the sentiment is constant: 'if a learning experience is not assessed, students may treat it lightly' (Bull & Zakrzewski 1997:17); 'In cases where CAL has been presented to learners as an optional extra resource, the take-up and success rates have frequently been poor' (Gunn & Brussino 1997:21). Bull and Zakrzewski astutely add that students do not take voluntary add-on material seriously because 'if it is not worthy of lecturer attention it is not considered worthy of theirs' (1997:17).

Successful integration of CAL requires teachers to answer the question asked by Porritt (1997:20) at his workshops: 'Do you want the package to be used for computer marked assessment? Why?' And if it is not to be used for assessment, to have a very clear idea of when and how it is to be used (e.g. in a classroom presentation, in remedial work where students can see a clear relationship between successful mastery of the work and measured performance in their course). Quantrell's observation (1992:29) to the effect that the less ad hoc the use, the greater the implications for departmental organisation and planning hints at a potentially serious obstacle. There are also occasions on which non-integration at this level can be a plus - CAL tutorials, for example, can allow instruction to continue when teachers are unavailable, and provide alternative learning strategies and self-paced review of instruction (Roblyer et al. 1997:91,93).

Lesson Planning and Classroom Management

Assuming that a teacher already has clear objectives, a comprehensive grasp of subject matter, appropriate materials, and the ability to communicate, the key ingredient to successful use of CAL is the capacity to anticipate and prevent disaster both at a physical level and at the level of the class dynamic.

Explanation for Students

The very fact that they are integrating new technology-based materials into a course should provide some incentive for teachers to specify shifts in principles, objectives, and processes (both CAL and non-CAL) to their students - a procedure which their routine over the years may have lulled them into taking for granted. McGlade et al. (1996:45), whose use of an electronic learning diary for medical students also involved electronic access to course structures, aims, and objectives, note that it was the latter that students found to be the most appealing feature - a finding they take as a reflection of 'the current inadequate state of information supplied to students'. Such information should be delivered to students in language intelligible to them - not necessarily an easy task in the case of an ESL class (for example Waldrop 1996:10). Thornbury et al. (1996:20) list 'regular, structured advice for the students on which material to use and to what depth it should be covered' as the first of their 'key features of successful integration strategies'. This need for explanation is not limited to the course structure or the relevance of the exercise. Because all the information and processes they will be operating with are concealed in non-linear fashion behind a single screen, students, particularly those lacking the confidence or inclination to explore, can be greatly helped by having a mental

picture of the territory into which they are about to venture. Emery (1998:73) states 'If learners are to take advantage of the autonomy offered by the computer, they need to acquire a cognitive framework, a mental map of the system, before they can make effective use of it'.

Student Skills

Most CALL activities require students to type. Keyboard skills are therefore an important factor in the success or otherwise of many initiatives. Snookes, reporting on his use of the Internet in interactive text-based communication and learning activities (1995:16) sees the keyboard as a barrier to students with poor typing skills - it can reduce their response time considerably, and allow those with good typing skills to dominate the discussion. But keyboard skills are not the only ones required - navigation skills and general IT awareness come into play at almost every level. Many language teachers may well feel that it is not their responsibility to be teaching these skills to students, and may resent the time it takes. Their inclination to take up the challenge will no doubt be a function of their perception of the language learning benefit to their students. General IT skills are increasingly part of the culture acquired by contemporary youth, but Sosabowski et al. (1998:23) found somewhat surprising that 62% of the students beginning the course reported having had no previous experience with the Internet, and only 8% had used it routinely. They also found that the use of the resource increased steadily over the semester (ending with 99% of students using the Intranet at least once per week) as users became familiar with the processes and the study benefits. At a less mechanical level, students will require guidance on how to organise their work to incorporate independent use of CAL into their study habits, particularly in the early stages (Gunn & Brussino 1997:21), and, because of the different demands a computer-based approach places on them, they have to be more proactive in their approach to learning (Thornbury et al. 1996:19).

Computers add new dimensions to the already complex personnel and activity management skills required of the teacher in the classroom. Waldrop's (1996:10) 'Imagine, if you will, thirty freshman college students in a computer room with a console in front of them, all talking at the same time and punching keys at random ... all speaking Chinese at a decibel volume ten times that of a jumbo jet in heat' could well serve as the introductory line for a pedagogical horror movie. Typical 'coal-face' problems include:

- Determining a workable relationship between computers and other electronic and non-electronic technologies. Once again, Waldrop (1996:10) gives a succinct but uncomfortably easy-to-identify-with example: a teacher (himself) at the front of a class in the computer lab equipped with a minuscule whiteboard endeavouring to write up the commands students will need (immediately) to access email, discarding two dry felt pens, then having to resort to spitting on the tip of the third to get it going.
- Deciding on the extent to which CAL is to replace the textbook or lecture. This includes using computers for what they are good at, and not using them when something else will do the job better and/or more simply.
- Timing. If computer work is one of several activities going on in the classroom at the same time (either by design or because only one or two computers are available), timing becomes an important issue - catering for fast/slow students and the

idleness/pressure created by finishing ahead of time/not finishing (Quantrell 1992:18). Timing is also important when email activities are conducted across time zones (e.g. Australia-France).

- Planning and supervising preliminary activities.
- Finding ways of ensuring that students work methodically through designated materials.
- Establishing rules for the use of computers - e.g. stopping any group (for Etherton (1995:13), it was boys) from dominating use.
- Allowing for the possibility of students helping each other (and the teacher!).
- Keeping textbooks and software in-phase (Harland 1995:170).

Time

The constraint of time surfaces repeatedly and in a variety of guises as a significant factor in the effective use of CAL resources. The most conspicuous of these, at least for the present, is in the need for teachers, most of whom are of the pre-computer generation, to become acquainted with the medium - developing their computer skills, keeping abreast of technology, reading manuals, examining critically the available software. The task is all the more demanding because language teachers are almost by definition, not IT specialists. Johnson (1995:18) portrays the situation in the following terms: 'Yes, some of us are starting to play the game, but the vast majority are merely looking at the ball, through the window - the fundamental problem is that the Internet, at first sight, simply looks like a system without a system - a disorder of electronic communication'. Sibbons (1995:17) uses a different image to express the quandary: 'When it comes to jumping on board the Computer Assisted Language Learning (CALL) train, so many people I meet liken it to running after that train you're 2 seconds late for; the faster you run the faster it rolls out of the station. The more you think about getting to grips with CALL, the quicker the technology changes'. The picture is not always different in non-humanities disciplines - for Sosabowski et al.'s Pharmacy Intranet project (1998:22), only 21% of the staff responding to their questionnaire were in the under-36 yrs age group (i.e. would, by their reckoning, have had some exposure to computers during their schooling).

Lesson planning, too, requires time: the location of relevant and interesting Web sites (Tillyer 1996:14), scheduling and assessing CALL exercises and tutorials, planning how they fit into the program and disseminating this information to students. So too do virtually all of the other key integration factors mentioned earlier - establishing, modifying and upgrading facilities, informing colleagues, liaising with administrators, and competing for resources.

If the software or IT system to be integrated is of the teacher's creation, the time component can assume Gargantuan proportions (many times that required for the preparation of traditional print materials) involving collaborative ventures that call on collective expertise from the fields of linguistics, pedagogical theory, graphics, sound, video, programming, and new dimensions of design for interactivity and navigation ... with all the associated resource implications. The prize, of course, is an item of CALL software or a multimedia configuration tailored to the needs of the teacher-designer and of potential value to any like-minded colleague.

Although constant improvements in processing speed have meant that the rate of delivery of information from freestanding systems now rarely creates time lags that detract from the educational merit of courseware, the same is not yet true of Web-based activities. The cynicism that causes users to refer to WWW as the World Wide Wait is not entirely without foundation. There are some frustrating speed humps on the information superhighway. Snookes (1995:16) mentions that the occasional lengthy delays on the Internet 'can be very disconcerting', and Hackett (1996:18) leaves little room for illusion in stating that 'if direct access is to be used, carefully prepared activities may collapse if connections are too slow or fail altogether'.

CALL materials may provide increased returns for the time invested by students and teachers, but they do not in any way alter the number of hours in the day or the amount of time available. 'If a new activity is to be introduced then another activity will need to be dropped' (Bacon 1996:40). There is a time equation in any teaching program that could be written ($t_1 + t_2 + \dots + t_n = T$, where t = the time for an individual activity, and T = the overall time available; and T is, regrettably, constant - or even a value whose reduction is the key factor motivating the support accorded to CALL by administrators bent on the long-term budget reduction). The limited capacity of language programs to absorb CALL materials (no matter how well designed) is also raised in McCarthy 1996:27.

Because CALL is still in its infancy, there are relatively few established and widely-accepted models of use, and the type of accumulated personal experience that enables teachers to give a quick and accurate appraisal of quality and appropriateness of a speaking activity or a video, for example, is for the time being very thin. As with any process that is not yet 'routine', the use of CALL, at least for the time being, is accompanied by deliberation that requires effort and time. Porritt (1997:20) refers to 'day-to-day pressures' that prevent teachers from engaging in reflection on 'fundamental and difficult questions about new ways of teaching'. And in a similar vein, referring to their work with collaborative learning activities for distance CAL, Chang & Chen (1997:4) point out that 'a teacher wanting to know what is going on in collaborative learning activities must make a great effort to find the necessary information in a large volume of generated data'.

One must also be careful to take account of the student's perspective of time in the implementation of CAL. Davies and Crowther (1995:4) signal very appropriately that 'efficiency defined solely from the educator's perspective fails to recognise students' involvement in the learning process. For example, a one-hour lecture which is replaced by a poorly-designed CAL or multimedia product that requires four hours of work per student to achieve a similar level of understanding should not be regarded as efficient learning. In other words, efficient teaching is not necessarily efficient learning'.

Motivation and Attitude

To assume that students are automatically 'turned on' by the prospect of using CALL activities can be a serious strategic miscalculation on the part of the teacher. 'Playground-wise' students - the type who know 'just what to do' in classes where the lesson is replaced by a video - will, if left to their own devices, quickly find ways of remaining physically present in front of the computer while enjoying themselves quite unproductively (in terms of the teacher's lesson objectives) in some intellectually parallel

universe. Clearly, one key factor in generating a positive student attitude towards CALL is to ensure that it is intellectually stimulating (Davies & Crowther 1995:4) and leaves students confident that they have improved or made good use of their developing mastery of the language. It is not hype or naked enthusiasm, but the teacher's preliminary efforts in locating (or devising) sound CALL materials, and careful planning of their place in the overall program that is critical in establishing the academically motivating environment on which student acceptance, and hence successful integration, ultimately depend. In academic terms, entertainment (and its associated pleasure), while 'acceptable', does not constitute learning, but learning (and its associated sense of achievement) does generate pleasure and acceptance of the processes. Teachers must consider the putting of students at ease with the technology and the learning style (through information and guidance) as essential motivational groundwork in the process of introducing CALL materials. Practitioner warnings are not hard to find: 'learning how to operate this [Internet] software can be quite daunting' (Snookes 1995:16); 'The learning curve associated with the acquisition of new study skills required when introducing any new learning method can result in student alienation. Thus the integration process must be carefully managed to reduce these effects' (Thornbury et al. 1996:19); 'students are not ready - use slightly new or unconventional methods and tend to fall back on what they know and seem to trust, even if they may be their own worst enemies' (Harland 1995:171). When students perceive searching out information or performing a learning task to be important and relevant, they generally make a serious attempt to do it. In Sosabowski et al.'s (1998:23) Pharmacy Intranet project, 96% of students downloaded notes at least once, and two-thirds of that number did so at least once as a preparatory step (i.e. before the relevant lecture).

If teachers see the CALL component of a course as an imposition by colleagues or bureaucracy, there is every chance they will respond negatively - a reaction born of what Bouillier (1997:iii) refers to as 'a common reluctance to accept the inevitability of change' and 'a sense of bewilderment and fear of the unknown'. As Gunn and Brussino (1997:21) put it, 'teachers with full workloads and satisfactory outcomes from existing methods of course delivery are not necessarily motivated to venture into the uncharted waters of technology-based developments'. There is a not uncommon suspicion amongst colleagues that in making room for CALL activities they may be accommodating a cuckoo's egg in the hitherto well-adjusted reed warbler's nest of their established practice. The most obvious ways to overcome such attitudinal problems, apart from a non-confrontational approach, are through training, information, and a clear demonstration that the proposed use of software enhances existing teaching by leading students to better understanding, manipulation, or use of language (Quantrell 1992:18).

Concluding Remarks

Choosing and using CALL materials is a complex process. It involves awareness, effort, liaison, time, and resources; it requires a synergy between administrators, teachers, and students - with the main workload and responsibility inevitably falling on the teacher. And for the time being at least, it requires an honest appraisal and a willingness to engage in the responsible experiment - because information technology is still in a transitional stage. Most teachers, particularly in tertiary institutions, and notably in humanities

faculties, are not children of the computer generation. Computers, however, are not going to go away - and they will ultimately be accepted as a girder whose value in underpinning foreign language learning is at least the equivalent of the printed page or audio/video recordings. For the time being it is necessary to talk in terms of integration as a process to be achieved rather than as a state to be analysed - because although the technology is increasingly pervasive, its applications in all areas of society, including education, are still being explored.

It is perhaps appropriate at this point to return to Sibbons (1995:5) likening of catching up with CALL to running after a train that is picking up speed as you chase it along with the platform. As with most nightmares, the reality is considerably more reassuring, because as we pant and flag and look down at the platform, we notice that it too has begun to move - and in the same direction as the technology train. The platform, it turns out, is the broader community awareness and acceptance of computers in everyday life - and its increasing momentum is generated by a twin thrust: on the one hand, the computer-literate kids who carry their awareness, with enviable insouciance, into the phase of computer-literate studentship, and are already beginning to fill the lower echelons of professional structures; and on the other hand, the visionary academics of an older cohort whose early recognition of the potential of the medium has enabled them to establish a tradition of communicating their recognised scholarship and mature, experience-based understanding of the sound educational practice through a medium which their generation has left as a legacy rather than received as an inheritance.

It is difficult to speculate on just how, and how successfully, computers will have been integrated into language education even twenty years from now. What is certain, however, is that the quality of the role they play will be heavily influenced by the capacity of those who carry their use forward to heed the warnings and absorb the experience of those who have worked as pioneers in the field.

Notes

1 This article would not have been possible without the excellent resources of the library of the CTI Centre for Modern Languages at the University of Hull, U.K.

References

- Allen P., Booth S., Crompton P. & Tims D. (1997). *Integrating Learning with Technology: Case Studies II*. Varsetile, University of Sterling.
- Bacon, R. (1996). The effective use of computers in teaching physics. *Active Learning*, 4, 37-41.
- Bouillier, B. (1997). Individual response to the Report of the National Committee of Inquiry into Higher Education. *Active Learning*, 7, iii-iv.
- Bull J. & Zakrzewski (1997). Implementing learning technologies: a university-wide approach. *Active Learning*, 6, 15-19.
- Chang C-K. & Chen G-D. (1997). Constructing collaborative learning activities for distance CAL systems. *Journal of Computer Assisted Learning*, 13, 2-15.

- Davies M. & Crowther E. (1995). The benefits of using multimedia in higher education: myths and realities. *Active Learning*, 3, 3-6.
- Etherton P. (1995). Teething troubles with self-access CALL: A cautionary tale about the introduction of multimedia PCs. *CALL Review*, July, 13-14.
- Gunn C. & Brussino G. (1997). An Evolutionary Approach to CAL. *Active Learning*, 6, 20-22.
- Hackett L. (1996). The Internet and e-mail: useful tools for foreign language teaching and learning. *On-CALL*, 10(1), 15-20.
- Harding R. & Quinney D. (1996). Mathwise and the UKMCC. *Active Learning*, 4, 53-57.
- Harland M. (1995). De Tudo Um Puoco - 'A Little Bit of Everything - ' A year piloting integrated text and computer courseware for Portuguese. Proceedings of EUROCALL '95, Technology Enhanced Language Learning, Focus on Integration, Servicio de Publicaciones SPUPV N 3029 Universidad Polit_cnica di Valencia, 163-172
- Johnson E. (1995). Telematics and EFL Instruction. *CALL Review*, July, 18-19.
- Levy M. (1991). Integrating computer assisted language learning (CALL) into a communicative writing course. *On-CALL*, 6(1), 11-18.
- McCarthy B. (1994). Language system, computer constraint and pedagogy: three-cornered contest or three-part harmony? *On-CALL*, 8(3), 11-20.
- McCarthy B. (1996). Fully integrated CALL: Mission accomplished. *ReCALL*, 8(2), 17-34.
- McGlade K., Toal C. & Kernohan G. (1996). An electronic learning diary. *Active Learning*, 4, 42-45.
- Porritt N. (1997). Managing to learn with technology. *Active Learning*, 7, 17-23.
- Quantrell C. (1992). In Atkinson T. *Hands off - it's my go! IT in the language classroom*. London: CILT, NCET, 17-29.
- Roblyer M., Edwards J. & Havriluk M. (1997). *Integrating Educational Technology into Teaching*. New Jersey: Prentice-Hall.
- Sibbons T. (1995). CALL and the art of catching trains. *CALL Review*, November, 17-18.
- Snookes P. (1995). Using the Internet for Interactive Text-based Communication and Learning Activities. *CALL Review*, November, 15-16.
- Sosabowski M., Herson K. & Lloyd A. (1998). Enhancing learning and teaching quality: integration of networked learning technologies into undergraduate modules. *Active Learning*, 8, 20-25.
- Stoks G., (1993). Integrating New Technologies into the Modern Languages Curriculum. *CALICO Journal*, 11(1), 76-93.
- Thornbury H., Elder M., Crowe D., Bennett P. & Belton V. (1996). Suggestions for successful integration. *Active Learning*, 4, 18-23.
- Tillyer A. (1996). Caught in the Web. *CALL Review*, March, 12-14.
- Waldrop J. (1996). Getting students going on email: John Waldrop describes how not to do it. *CALL Review*, March, 10-11.