



Authoring, Pedagogy and the Web: Expectations *Versus* Reality

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ABSTRACT

The Internet has stimulated enormous expectation in many fields of learning, including language acquisition. From a position in which technology enhanced language learning was at the forefront of pedagogic development, we now see a situation in which good design — both pedagogic and instructional — is all too often sacrificed for the sake of technological convenience. Some of the techniques which were possible using multimedia on a CD-ROM platform have all but disappeared as end users expect to find good learning experiences from the Web.

One major reason why good design principles are often ignored in web-based learning design is the lack of sufficient, easy-to-use authoring tools, leading to an over-reliance on simple hypertext routines (though even with these there is no excuse for the woeful neglect of feedback techniques so often encouraged), or the need to rely on technically trained personnel with an insufficient understanding of clear instructional design principles.

Help is beginning to arrive with some good authoring systems, and this work looks at *Hot Potatoes* and *MALTED*, whilst at the same time postulating that a clear approach to pedagogic issues and, above all, instructional design work, can still create sound learning programs with even simple hypertext tools. The work concludes with a practical check-list of advice for the would-be author of language learning programs.

KEYWORDS: Authoring, authoring systems, e-learning, feedback, interactive video, instructional design multimedia, pedagogic design

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I. INTRODUCTION

The massive growth in the provision of web pages, together with the vast increase of user access to them, has, of course, caused a revolution in the use of information, with personal, social and even political consequences never dreamt of when the Internet and the World Wide Web first began. As the Internet has developed, it has become more sophisticated, and new possibilities abound. The terms Internet and WWW are not synonymous: the Internet offers us more than the Web — including email and file transfers via FTP. The arrival of so-called “e-commerce” has been marked by a few notable events. These include the failure of many companies to return a profit, but alongside this the enormous “hype” which has led to over-high expectations.

And this is where language learning comes in. Alongside the over-hyped arrival of e-commerce, we have seen the term “e-learning” being increasingly used. There has never been a completely satisfactory definition of that term. All that can be said is that it is infinitely preferable to “webucation”! There is another term, which is “web-based learning”, which is equally suspect, since it often means *internet*-based learning, involving (as it often does) e-mails and file transfers. This may seem like an exercise in hair-splitting, but in fact it has important consequences. The purpose of this work is to demonstrate that the enormous expectations of what should be delivered over the Internet in terms of language learning does not begin to be matched by the reality of what actually can be delivered. It will explore the reasons for this, which are complex, and which cover pedagogic and technical issues, and offer suggestions for a different approach which will both exploit the enormous potential which the Internet can offer, both now and in the foreseeable future, whilst being realistic about its limitations. Not least, it will mention the thorny subject of whether all this is value for money!

II. THE SCOPE

The Internet, as we have stated, can be used for many purposes. A work such as this cannot hope to cover all aspects. Therefore we will concentrate on the issue of second language acquisition (rather than cross-cultural training, etc.) and on the mechanisms for computer mediated learning for language skills. Furthermore, we will not attempt to address the use of email, chat-rooms, student management systems, video-conferencing, and the like. No inference should be made that any or all of these do not have value. But it is the pedagogic aspects that we will be exploring in terms of the synchronous learning environment that has been developed over the years.

III. THE BACKGROUND

Computer Assisted Language Learning (CALL) covers a variety of areas, and the term "technology enhanced language learning" (or TELL) might be a better title. The reason for this is that many, rightly or wrongly, still associate CALL with text-based drills and exercises. But CALL, (we shall continue to use the term) has progressed beyond measure over the years. The problem is that it is still largely viewed as experimental, or innovative, even though there has been enormous acceptance of its value and effectiveness. It is hard to see exactly why this should be so. Quite possibly it is that the language learning community was at the vanguard of computer mediated instruction for many years and in many ways — one only has to think of the way in which multimedia, and above all its sound facilities, has been embraced as being of very special benefit for our needs, rather than a useful extra aspect, as in many other learning disciplines.

But now, and rather suddenly, the agenda has changed. The explosion in Internet use, and along with it the establishment and growth of "e-learning" sites, has kindled an expectation and a demand which is hard to satisfy. In spite of some embryonic disillusionment¹, training over the Internet is a fact and looks like being here to stay. So why is language learning not out there with the best of them — showing the same levels of maturity and market penetration as other disciplines — notably those in management and business learning?

Our contention is that there is one prime reason for this — the special nature of language learning itself — and that there are two obstacles to overcoming the problem, the first of which is technical, the second a design issue.

IV. CHOPIN DIDN'T USE THE WEB

When making comparisons with other disciplines, one has first to realise the contrast between skills-based and knowledge-based learning. Would you really expect to learn to play the piano from an Internet course? A search of the web revealed that such a web site does indeed exist², but cannot get much further than displaying pages from a tutorial, seeming to forget the lesson most of us learnt long ago — that if it can be done better another way, then don't do it!

But in spite of this, it seems that the expectations (and not always from non-linguists, it has to be said) are high that the impossible can be achieved. Our "piano" is, of course, communication, and above all oral communication, and this means that we are in skills-based territory. It will take just a cursory glance at a few learning programmes on the Internet in disciplines other than language learning to show that the majority of them are knowledge-based, and require much simpler techniques — techniques in which the use of multimedia is *incidental* to the learning process and a part of the instructional design solution, whereas for language learning we have a different imperative — the need to have access to the sound of the language

and, ideally, realia in terms of graphics and/or videos in order to put the language skills into context. For us, multimedia is the end as well as the means. After all, since we do this in the classroom as a matter of course, why should it be that different on the Internet? Ask yourself this question of many offerings on the Web — how much more does it offer us than a book? Because many web sites offer little more than a book enhanced by hyperlinks, accompanied by (often) poorly designed tests.

V. WHAT WE KNOW WE CAN DO

Technology frightens us by its ever-accelerating rate of change. This has enormous implications for pedagogy in general, and for language learning in particular. The introduction of sound and superior graphics opened up a world of advantage for us, and enabled the design of computer-aided routines that arguably put language learning in the forefront of the computer-aided learning field. But technological advance is not always the best thing — those who have been around CALL for a long time will recall that in the late 1980s we had access to full-screen, full-motion video through the use of the analogue interactive video system⁴. The quality of this system is only just beginning to be matched by digital systems such as DVDROM, and the Web is a long way from achieving such quality at the current transmission rates.

But the real problem has always been that of design and program creation. Good (and we emphasise the word) pedagogic design and sophisticated multimedia creation are both difficult and time-consuming. A major program or course could easily take two years to develop, by which time the technical platform may well have changed. In spite of all the experiments, evaluations and information exchange in this field (and CALL is one of the most openly collaborative disciplines there is⁵), we only just begin to scratch the surface of what is possible before new techniques and new skills are required.

Nevertheless, CALL has achieved a considerable respect as a discipline in its own right, and as a result of this, there is much consensus as to good practice and design of materials with respect to the computer itself — leaving aside the Internet for the moment. Such consensus is not restrictive, and different pedagogic approaches can be catered for — including many degrees of constructivism. Above all, one could cite the question of feedback as being the most important factor of all, and one to which we shall return later. It is not our intention to try to describe in any detail here the various components that go to make up good pedagogic and instructional design for language learning, and there are other places where one can receive support⁶. The point is that we have just reached what could be described as a “plateau” where we might in theory draw breath and take stock — create a wider range of sound programs and routines, develop good authoring techniques and platforms, work out global parameters for instructional design and so on. The plateau has occurred because of a momentary (and relative) stabilisation of our platform

— ubiquitous CD-ROM and multimedia hardware, cheap niemory, speech recognition potential not yet fulfilled, etc. — but we have been unable to take advantage of the situation and perfect our tecliniques. Why? Because cveryone wants the Web!

Before we niovc on to discuss tie Web itself, it would be apposite just to refer to a few of the techniques we can accept as “standard”. These techniques refer to the level of interactivity that we can use to support language learning. We are now very used to txt-entry routines, although thiese are becoming rarer and tend to be used at the lower levels. Drag and drop, click to match, clicking oii options, all spring to mind. In fact there are relatively few things a computer can do in terms of coniputer interactivity — it is the way in which these routines are incorporated into instructional dsigns that distinguilies different usage. To give an example, one of tic things that a computer does best is to branch — in other words to do something different according to differing user input. The classic way in which this is used is for niultiple cloicc routines. But branching can be used in a variety of ways — niultiple choice questions (MCQs) can be of tic “classic” style, but there is no reason why the same computer interactivity cannot be used Sor a variety of different instructional design set-ups. MCQs could have more than one, or every answer, rigit, or all wrong. and could offer feedback to assist the progress of the learner. Instead of the more conventional choice-niaking routines, learners could make choices that lead to a further “branch” to enable them to vicw the consequences of their choices — a different form of intrinsic Seedback known as “conditional branching”. All these stem from the same basic coniputer Sunction.

But in addition, the advent of multimedia has given us a new dinension in terms of interactivity. Not only can we listen to sound (which of course was always possible with a tape recorder), but we can ally sounds to otlier routines (such as multiple selection) and get feedback from discriminatory cloiccs involving sound, sonietliitig which is only possible with a cornputer (or with that other computer, tie human being!). We can interact with video clips in the sarne way. We can also input tic hunian voice with sound capture techniques. role-play and get the user to perfect his/her utterances, and so on.

All thiese are now accepted as standard techniques and there are many authoring systems, of various levels of quality and necessitating various levels of technical knowledge, to enable us to create courseware that is teclinically and pedagogically sound.

VI. WHAT WE (ALMOST) CAN'T DO AND WHY WE ARE REQUIRED TO DO IT

But the well-known principle we should apply to computer-based materials: if it's better done oii paper, then do it on paper; or if it's better done in tie classroom then do it there..... seems to get thrown out of the window when it comes to using the Web.

Most of us have learnt over the years that it should be the pedagogy which drives materials creation, not the technology — even though there are those who do not seem to have learnt this message yet! The starting point should never be the technology, whether we are talking about platform or software, but the learning design principles. So if this were to be applied to the Web, we would have to conclude that many things cannot be done via the Internet or would be better done through another medium. This next part of the work will examine this problem.

The problem which has arisen now is that the Internet, and in particular its component element, the Web, offers us a different and highly restricted range of technical opportunities for delivering language learning. HTML is *de facto* the default system for all Web browsers and that leaves us with a major problem — and one that is far more serious for us in the language learning community than it might be for other learning disciplines. HTML, unless enhanced (more later on this), employs the basic “click and go” function which is similar to the computer interaction described in the last section. When a “hyperlink” is clicked, the “page” is replaced by something else — although there are some relatively easy ways to enhance this, such as using “frames”, which offer a limited though valuable extra dimension. Other forms of interactivity are not generally possible (other than a limited use of sound playback) without “enhancing” HTML routines.

So the obvious inference is that we should use these enhancements. If only life were that simple.... Whereas there is a whole raft of authoring systems for non-web based computer interactions which ensure that we do not have to be C++ or Visual Basic programmers, (some of them specific to language learning), very few such authoring programs exist for us to exploit the use of the Web. In fact, it is relatively easy to create simple routines using HTML programs which are often not recognised as authoring systems — such as Microsoft Front Page* — but when one progresses to the creation of higher levels of interactivity, the additional routines that have to be used “on top of” HTML, such as Java, JavaScript, Flash, ShockWave and so on, demand a learning curve which is relatively high and will not appeal to any but the most die-hard enthusiast programmer/linguist. Thus having to have recourse to programmers for these techniques ensures that there is a high price to be paid for production.

This may explain the extreme poverty of the vast majority of language learning routines available “live” over the Web (though we will question this assumption in due course — it is only one of the reasons in our opinion). We should be familiar with the style of things we so often see: value-enhanced “books” accompanied by tests; multiple choice exercises that offer no feedback; the lack of any meaningful user interaction with sound or video; and so on. It is our contention that there are two major reasons for this: the HTML-based structure of the Web itself, and the lack of application of sound pedagogic and instructional design parameters to the materials in question. This is further compounded by the lack of authoring systems, with some notable exceptions, to which we shall make reference later.

To sum up the situation in a different way. Although some of the interactivity which we

currently employ in CALL can be made available over the Internet, most of the more complex routines demand high programming skills (and hence expense) and some of them are virtually unobtainable given the current state of the art. To persist with a demand for web-based learning for outcomes which cannot realistically be delivered, seems to us to once more be placing the technical horse before the pedagogic cart, just as occurred in earlier days when we used the excuse that the technology could not yet deliver some facilities as a reason for asking students to do nonsensical things, such as "writing" a dialogue because we did not have sound cards for them to speak it. The wheel is turning full circle.

However, all is not as bleak as it sounds...

VII. WHAT WE CAN DO ON THE WWW IF WE PUT OUR MIND TO IT

The good news is that there are things we can do, and do well. Firstly, on the technical level, there are authoring tools becoming available to assist production. Even if not all linguists want to use them themselves, they will still be cheaper than using high level programming resources.

*Hot Potatoes*⁷ is well known in the CALL community, and it offers easy creation of a restricted, though increasingly wide range of exercises. It can be tailored as to its on-screen presentation, and, above all, will offer feedback and a pragmatic approach to non-standard multiple selection tasks. The system clearly works over the WWW and its use is not restricted to language learning. Its main drawbacks are its restricted range of activities, and the difficulty of linkage of the exercises created into a hierarchical or progressive learning environment.

*MALTED*⁸ (Multimedia Authoring for Language Tuition and Educational Development) is a system aimed specifically at language learning. It has been created as the result of a large European Commission funded project, and is scheduled shortly to arrive on the market as "freeware". As with *Hot Potatoes* it works across the WWW, and in addition has a feature of linkage to an asset base of materials. There is a range of templates for many different activity types. Its main asset is a powerful "drag and drop" authoring routine which allows the inclusion of virtually any media objects on the screen — thus offering efficient feedback and support systems. It also has different levels of granularity, with the possibility of including activities within an overall framework to create a course or other hierarchical or progressive sequence. Its disadvantages are its clumsy handling of text and inadequate rendering of sound input/output facilities. Hopefully these will be improved in later versions.

The things that both these systems have in common is their use of "extra" routines, (JavaScript and Java respectively), on top of the standard "mark-up" languages, thus making available the additional functions which could only otherwise be achieved through higher programming skills as identified earlier. They do not yet go far enough, but it is a start...

VIII. WHAT WE HAVE NO EXCUSE FOR *NOT* DOING ON THE WWW

Having examined what is possible and what is difficult on the Web, there is still an important outstanding issue. The lack of tools and the nature of web browsers do not at all explain some of the poor learning routines and environments we see. It would be invidious to single any out, and in any case web sites are always moving or changing, but it would not take a long “surf” session to find many examples of poor design. For instance, there are so many exercises which offer no feedback other than the “Sorry, try again” style. This is no more acceptable on the Web than it would be in other learning environments, so it is difficult to see what justification there can be for it. Nor can a technical excuse be used — feedback for multiple choice routines is perfectly possible using pure HTML language.

The real issue here is one of design, stemming from a seeming lack of concern or knowledge of how second languages are acquired, and how students learn best using their little 4x3 window on the world. In so many cases it is not only a lack of instructional and ergonomic design (though, strangely, there often seems to be some sophisticated screen design work involved) but, far worse from our point of view, even the basic pedagogic learning principles seem to have been eschewed, presumably in favour of a “quick and dirty” programming approach.

The whole question of the use of feedback is a fundamental one. It is the key to the use of computer-mediated study, and is the primary advantage that computer programs, *if well designed*, can have over most other methods. Computer feedback can never replace the classroom or the real language environment, but it does offer significant advantages. Research⁹ has shown that students enjoy the non-threatening environment which can be presented, and appreciate the intensive work they can do which, depending on the nature of the task involved, is not always possible even in the classroom. To cite just two examples, a class of twenty students could all be role-playing a dialogue at the same time; or imagine a large group of students exploring a text, all of them choosing to access a completely different range of support explanations and/or exercises, thus working at their own pace. None of this is really very difficult to achieve, given careful planning and design. But learners will make better progress if they understand *why* they made mistakes, rather than merely knowing that they have made them, and how many they have made. One can even see many web sites (and for that matter other computer programs) which fail to distinguish between **ACTIVITY**, **EXERCISE** and **TEST**. Such basic failures have everything to do with poor instructional design, and little or nothing to do with technical limitations.

IX. WHAT WE STILL NEED

So what do we need to improve the situation? Firstly, in our view there has to be a change in the level of awareness. Over-hyping the Web is as bad as those advertisements that tell us we can learn a language in 24 hours. There does exist good practice on the Web and we need more publicity for this — there are examples of publications in this field¹⁰. More, and more reliable “portals” which will give us access to quality assured sites are an urgent necessity. It is difficult to see how this might be funded, but a quality assurance scheme for language learning web sites would be a major step forward.

We must stop falling into the trap of thinking that learning over the Web is going to be a cheap(er) option. Some personal research, though rudimentary, into the costings of providing web-based learning in languages suggests that it would be almost impossible to receive a good return on investment. Even if one could persuade a wide audience to pay for courses, this will never be of the order of magnitude which might be possible for, say, management training, and, given the high cost of creating *pedagogically sound* programs, it is hard to see how money could be made, and so it becomes clearer as to why there are not hundreds of publishers out there rushing to offer us quality language training over the Internet, and also why so much of what is there is unsound.

One way to ameliorate this situation will be to have quality authoring systems specifically for creating language-training routines available over the Web. These should include the higher functions which will assist in the creation of more satisfactory instructional and ergonomic designs. They should also contain technical solutions that need to be developed. The ensuing reduction in production costs might make it possible for us to see better and more widely available materials on the WWW.

It is clear that things may change in the not too distant future. The advent of broad band connection to the Web will make possible some synchronous interactions that are currently quite difficult and slow (such as learner sound input). The take-up of these communication networks varies from country to country and depends on many factors, commercial and political. For example in the UK the rate of introduction of broad band and digital networks is slow, whereas other European countries are developing good infrastructures.

But, given what we have discussed earlier, none of this will be valid if there is not a better quality of program design. As we have stated, there is no current technical or financial obstacle to the development of programs with high quality feedback and carefully worked out pedagogical principles. So one has to have little confidence that there would be much difference if new tools became available. What one could hope for might be that more and better practitioners got involved in quality materials creation. Added to this, there is a clear need for more training in instructional design techniques for language learning and for greater dissemination of best practice.

X. DON'T BE DESPONDENT!

The preceding sections have been presented in an attempt to be realistic about "web-based learning" rather than pessimistic. It would therefore be wrong to conclude without offering some practical advice for those wishing to create learning materials available over the Internet.

It is obviously not possible here to produce a full course on production techniques, and there are places to go for advice¹¹. What we aim to do is to produce a set of questions and suggestions as a checklist and aide-mémoire.

- Ask yourself why you are doing it. Would it be better done another way?
- Ask yourself what is the added value of using the Web.
- Find out all you can about techniques. Read the literature¹².
- Remember that the moment you publish on the Web, you have an audience of many millions¹³, unless you employ password access.
- If you have any links to other sites, check them regularly to see that they are still live.
- Think "end users" all the time — they are the ones who might have to wait minutes for your screens to download if they have a slow connection and you have used complex graphics!
- Use the US principle — K.I.S.S. — "Keep It Simple, Stupid!"
- Start from first principles — pedagogic design first, instructional design next, technical considerations later. In the classic multimedia production cycle, content creation comes towards the end of the process, not the beginning! Make a design before you do anything else.
- Pilot your design and materials with suitable learners and monitor their reaction to your learning environment — ergonomic as well as pedagogic factors.
- Cost out your designs if this is to be a significant factor.
- Resist demands from "authorities" that web-based learning should reduce costs. It will not.
- Check out any available authoring systems. Only devote "learning curve" time to acquiring advanced programming techniques if you are really dedicated.
- If programming at the most basic HTML level, contemplate using all the available facilities so that a better pedagogic design can be presented (including high levels of feedback — see below).
- Always preview your work in a variety of browsers at varying screen resolutions.
- Give the students all the contextualised feedback you can possibly provide, unless you are offering a test.
- Don't sacrifice feedback for reduction of costs.
- Make a clear distinction between learner activities, exercises and tests

- If you have a good idea that would work better on a CD-ROM or won't work synchronously over the Web, then create a CD-ROM version or use file transfer for the learners to download material rather than use it live.
- If you want to get more involved — subscribe to EuroCall¹⁴

XI. TO SUMMARISE...

Whether we call it “e-Learning”, “web-based learning” or whatever, we should be clear that this is not something that will solve all our language learning problems — pedagogic, sociological or financial. There are, though, many advantages in harnessing the power of the Internet to help us. But this will only be effective if we are realistic about its current limitations as well as its future potential, and as long as we are not seduced by the technology into reducing the role of pedagogic and instructional design into the servant of the former, rather than its master.

NOTES

1. See the series of articles by David Noble at <http://communication.ucsd.edu/dl/aiidiii> particular “The Bloom is off the Rose”: <http://communication.ucsd.edu/dl/ddm3.html>.
2. Using <http://www.google.com>, which is probably the most powerful search engine.
3. <http://www.pianotuition.co.uk>. — but if this site is unavailable, try another search!
4. The author still feels that instructional design techniques developed in *Expodisc Spanish*, a language course for business and sport marketing using interactive video, offer much to current instructional design work.
5. Details of the EuroCall organisation, including the annual conference, can be found on <http://www.eurocall.org/>.
6. <http://www.ict4t.org> has an extensive web site offering advice and training from experienced language materials creators.
7. Hot Potatoes was developed in Canada at the University of Victoria, and details can be found on <http://web.uvic.ca/hrd/hallbaked>
8. <http://www.malted.com>
9. Very few serious analyses have been made of the creative processes and student uses of CALL materials. Details of the TELL co-ordinated materials project can be found on <http://www.hull.ac.uk/cti/tell/>, and in particular accounts of formative and summative evaluations on <http://www.hull.ac.uk/cti/tell/eval.htm/>.
10. Graham Davies offers many useful links and advice on his company web site: <http://www.camsoftpartners.co.uk/index.htm> where one can also find more details of the two books by Uschi Felix — *Virtual Language Learning: Finding the Gems Amongst the Pebble*, and *Beyond Babel: Language Learning Online*. Uschi is the director of the Language Centre at Monash University, Australia: <http://www.arts.monash.edu.au/le/>. Again it is worth visiting <http://www.ict4t.org>.
11. E.g. <http://www.ict4t.org>
12. A good starting point is the *ReCALL* journal: <http://www.eurocall.org/recall.htm> which publishes many papers from the EuroCall conferences. There is also the CALL journal: <http://www.swets.nl/sps/journals/call.html> which deals with the same field. An article of this author (*Will the Web catch enough flies? Where web-based learning cannot yet reach*) can be found on <http://ourworld.es.com/bangspaul/EurocallIPB.htm>. There are others — search with Google!
13. All the search engines send out “crawlers” to search the internet for key words which they store in vast databases — your web pages will be “crawled” and capable of being found by them.
14. <http://www.eurocall.org/>

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The major European organization for CALL
- <http://www.ict4it.org>
A practical site full of information for practitioners
- <http://web.uvic.ca/hrd/halfbaked/>
The place to find information on the Hot Potatoes program
- <http://www.malted.com>
The web site of the new languages authoring tool
- <http://www.hull.ac.uk/cti/tell/>
Practical information on CALL and evaluation
- <http://www.camsolpartners.co.uk/index.htm>
Use this site to follow up other useful links
- <http://www.arts.monash.edu.au/le/>
Monash University offers much practical experience
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