Literature Review in Languages, Technologies and Learning

James Milton

futurelab

REPORT 1:

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James Milton, Centre for Applied Language Studies, University of Wales Swansea

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REPORT 1:

Literature Review in Languages, Technology and Learning

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AIMS

This review is intended to provide:

1 a sound theoretical and empirically
   informed basis for prototype
   development of digital learning
   resources to support language teaching
   and learning

2 a sound theoretical and empirically
   informed basis for informing policy
   on teaching and learning languages
   with ICT

3 a basis for communication between the
   educational research community and
   the commercial sector on the subject
   of teaching and learning languages
   with ICT.

This report has been designed to enable both rapid identification
of the key findings and in-depth exploration of the literature.

The key findings and implications of the report are presented within the
Executive Summary and Implications Sections. The main body of the review enables
readers to explore in more detail the background to these headline issues.

CONTENTS:

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

There is no one best way to learn a foreign language, nor a single optimal set of teaching materials. This is because the learners will vary both in how they learn and what they want and need to learn. Good teaching materials may, therefore, be produced according to a number of different approaches to language description, different interpretations of the theory of language learning, and according to different approaches to the process of teaching.

QUALITIES OF GOOD LANGUAGE MATERIALS

Nonetheless it is possible to identify a set of qualities which will make for good materials, and particular criteria which good technology-based materials will need. Good materials:

- are likely to be the product of an intelligently thought out approach and method
- possess a clear set of objectives within that method and approach
- are set at an appropriate language level for the learner
- are appropriate to the age and interests of the learner
- are motivating to the learner,
- possess an appropriate range of relevant activities
- engage the learner in the meaningful use of the language, and
- last sufficient time and provide sufficient meaningful repetition for learning to take place.

Technology-based materials should also:

- be understandable, quick and easy to use for both learners and, where appropriate, their teachers, and
- be able to provide useful feedback to the learner's responses.

GOVERNMENT POLICY ON LANGUAGES AND ICT

The greatest potential change in government policy in this area is the potential for the growth of language learners at primary age. While the implementation of this policy is unclear, it will require the development of new curricular materials as well as teaching materials geared to the interests and needs of this age group.

Government policy in both language teaching and the application of technology in schools, is likely to mean that there will be less formal classroom teaching of languages and rather more self-directed, distributed learning using the learner's own technological resources. This probably means that there will be a market for high quality language learning materials which are capable of both classroom and self-directed use. This also probably means that the type of technology learners will use will vary both in what it is and how new it is, and the materials will need to fit this wherever possible.

Good materials need not be based on a single piece of the most modern technology in a formal classroom setting. Ideally, they should be capable of being used both in traditional formats, such as language laboratories or at home using videos and cassettes, and in modern

formats using DVDs and the interactivity of the modern PC and internet.

For the best exploitation of technology in language teaching, there are certain adjustments at a policy level that should occur. These are:

- a reconsideration of existing National Curricula to allow a broader and more inclusive approach to the choice of language teaching methodologies. At present these appear too narrow to allow best advantage of technology to be taken. This is particularly the case for adult learners

- an extension of the curricula available to allow materials to be developed at all appropriate levels and for particular specialisms where these are required

- additions to teacher training in this area to allow teachers to be better informed of the diagnostic tools at their disposal and to make better informed and more professional choices of materials for their learners

- additions to teacher training so that there is greater understanding of and sympathy for the use of technology in both class and independent learning.

THE FUTURE OF LANGUAGE TEACHING TECHNOLOGY-BASED MATERIALS

It seems likely that in addition to existing technology, where the PC can perform a limited number of language-related tasks, the following possibilities may emerge:

- the speed and reliability of the internet should make networking with other learners overseas practical and

materials will be needed to control and guide these interactions in a constructive manner

- within existing PC technology, set-top box or other device, it should be possible to make better use of the multilanguage options of DVD and computer programs, to produce a wider range of more attractive, approachable and interesting language teaching materials which will bolster what language teaching may go on in class, and may allow motivated and independent learners to make progress away from the traditional class environment

- remote call centres for language teachers accessible by learners nationally or internationally is a possibility

- software which can grade written foreign language production offers the potential of useful feedback to learners, and huge opportunities in examining

- the possibilities of diagnostic and monitoring software becomes feasible and this would add to the quality of technology-based materials and provide a unique selling point

- the growth of materials designed for young learners at primary age seems inevitable.

Since the number of people learning any one foreign language may be quite small - even if the overall numbers learning languages is high - the ideal set of materials should be constructed to allow the language content to be replaced easily while retaining programming and ideas common to all. In particular, to be a commercial success, the materials should look to address the EFL market which is probably bigger than all other foreign language markets put together.

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INTRODUCTION

1 INTRODUCTION

A sound theoretical basis for the development of language teaching materials, whether technology-based or not, should comprise:

- **an approach:** that is a set of assumptions, preferably based on empirical research, as to the nature of language, the nature of learning and the nature of teaching, and these give rise to

- **a method or design:** that is the appropriate selection and sequencing of language items for teaching and a description of the roles of the learners and teacher in the learning process, consistent with the approach, which gives rise to

- **a set of techniques or procedures:** which are the detailed classroom and other practices designed to carry out the method or design. (Anthony, 1972; Richards and Rodgers, 1982).

While it may look a bit old, this framework still underpins the way teaching methods and teaching materials are systematically designed and evaluated.

It must be stated at the outset that there is no universal agreement about the nature of learning and teaching, or even about the nature of language, to give rise to a single, optimal method and set of techniques for teaching foreign languages.

Part of the reason for this may well be that learners vary both in how they learn and in what they want to, or can, learn. Best practice in teaching may well vary from learner to learner and from class to class.

In an ideal world, teachers would analyse learners' individual needs and circumstances, and adopt teaching techniques to match these, although in practice, this is not so easy. Good policy in this field should reflect this need for diversity.

Historically there is one full-blown approach, the audio-lingual approach, where teaching methodology is particularly tied to technology in the form of the language laboratory, but this is no longer accepted as entirely valid (see for example, Richards and Rodgers, 1986, 44-61). The language laboratory is now one of many instruments which a teacher might use for specific learning objectives. Computers, videos and all other pieces of technology, are just some of the techniques which a teacher may employ in teaching languages.

There are, however, tenets of good practice in teaching and materials design, and it is possible to demonstrate how technology can make good use of these, as well as bad use of these, with a variety of learners and in differing learning circumstances.

This review will, therefore:

- examine the principal approaches to language description

- examine the principal approaches to language learning

- examine the major approaches and methods to language teaching

- examine how learners may vary and how this may impact on the choice of techniques and materials for teaching

- examine the tenets for evaluating language teaching materials, in order to demonstrate what general principles

APPROACHES TO LANGUAGE DESCRIPTION

the creation of good teaching materials including technology-based materials, should follow.

This material is not always transparent and may not resonate with those not intimately concerned with the systematic analysis of teaching materials. Examples may be more informative. The review will therefore go on to examine:

• individual aspects of technology-based teaching, and specific examples of materials, with a view to demonstrating through research what may well work best in given circumstances and with particular learners;

• other factors not explicitly covered hitherto; and

• finally, government and European initiatives in this area, where they exist.

2 APPROACHES TO LANGUAGE DESCRIPTION

As Halliday et al (1964) point out, the principal contribution of the linguistic sciences to foreign language teaching is that they enable good descriptions to be made of the languages being taught. If you do not know, or you cannot describe, the subject matter you are teaching, then teaching is likely to be ill-directed and hit-and-miss. Written descriptions of languages have been extant for over two and a half thousand years and yet there is still no complete agreement as to how language is to be characterised, and divided into its constituent yet relevant parts, for teaching. In the current state of language teaching it is probably useful to distinguish four broad approaches. These do overlap to some degree. One is a traditional, structural approach where phonemes and morphemes are identified as the building blocks of language and these elements are systematically combined through rules of grammar and syntax. Thomson's (1961) 'A Practical English Grammar for Foreign Students' is a good example of a pedagogical grammar in this genre. This is the view which has dominated in language teaching for some 40 years since Chomsky's (1959) demolition of Skinner's (1957) theories of learning.

The second approach, a lexical approach, challenges whether the smallest elements, morphemes, are always the basic units of language. In this approach, most recently characterised in Wray (2002), language may also usefully be seen as a number of prefabricated, even formulaic, phrases - often called 'chunks'. Some of these are learned and repeated unchangingly, such as many greetings formulae, while others can be added to or adapted according to linguistic need in a manner that has, as yet, defied easy description. Lewis's (1993) Lexical Approach and Willis's (1990) Lexical Syllabus are examples of this sort of approach.

A third approach is a functional approach to language description where in addition to grammatical characterisation of languages, semantic and communicative dimensions are emphasised. Wilkin's Notional Syllabus (1976) is an attempt to characterise this approach with syllabus design in mind.

A fourth view is an interactional approach, which characterises and tries to describe language in terms of the social transactions between individuals. This is the approach I find to be the least satisfactory and complete in terms of description.

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APPROACHES TO LANGUAGE LEARNING

3 APPROACHES TO LANGUAGE LEARNING

Learning a foreign language may be the biggest, most complex and most difficult task any learner will consciously undertake. Because it combines explicit learning of vocabulary and language rules with unconscious skill development in the fluent application of these things, learning a language is quite different from any other subject in the curriculum whether inside or outside school. We are still far from fully understanding the process of learning, as the following brief summary will show.

3.1 BEHAVIOURIST AND COGNITIVE APPROACHES

There are two basic approaches to the understanding of how language is learned. On the one hand there is a behaviourist approach which holds that language is essentially a habit-related activity which can be learned explicitly through repetition and memory. In contrast, the cognitive approach sees language learning as far more complex than this. Language is gradually acquired through experience and practice, in a fashion which is not completely understood, until it becomes automatic. It is a building up of knowledge systems rather than simple learning. While the behaviourist approach has been largely discredited, it would be a mistake to discard it entirely. Certain elements of language such as vocabulary, may respond well to explicit teaching and repetition. The development of structural accuracy and fluency, however, is not so easy and requires meaningful interaction with the foreign language and lengthy exposure before it may be acquired.

3.2 THE CRITICAL PERIOD IN LANGUAGE LEARNING

Since Lenneberg (1967) there has been common acceptance that there is a critical period in language learning, that is to say, there is a particular time in a child's development when it is especially geared to language learning. Language learning outside this period may be slower, more difficult, or less successful. Examples of adult learners gaining complete fluency in a foreign language are rare while the development of fluency in a foreign language among children is commonplace. Latest thinking is that there may actually be several critical periods. Native-like pronunciation is acquired within months of birth in first language learners and it appears very hard for adult foreign language learners to gain. An intuitive and native-like feeling for correctness in structural aspects of language appears to develop within a few years of birth, and also resists teaching among adult learners. Vocabulary development, by contrast, appears to develop continuously among youngsters and adults alike and very large foreign language vocabularies can be developed with effort.

3.3 NATURAL ORDER THEORIES

There is some evidence that some elements of foreign language structure are systematically learned before others. Krashen (1987), in particular, advances this theory. Therefore, language rules that are easy to explain may not always be internalised and used earliest. This implies that learners may optimally be presented with items in the correct learning sequence. However, while some idea of sequence in the morphemes of English

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APPROACHES TO LANGUAGE TEACHING

is given by Krashen, and pronunciation sequences have also been described, other sequences are obscure. Gass et al's (2002) work on pedagogical norms is the best and latest work I know which attempts to pull together research in this area. Materials design may be informed by this research in sequencing the introduction of new elements in the order learners appear predisposed to learn. Realistically, these sequences are still piecemeal and incomplete.

4 APPROACHES TO LANGUAGE TEACHING

As might be expected where there is so much variation in describing what is to be taught, there is also considerable variation in how to set about teaching it. There are a number of clearly separable and identifiable approaches although it is quite unusual, these days, to find a teacher who deliberately follows one to the exclusion of all others. Most teachers try to be eclectic. The following list is not intended to be utterly comprehensive.

4.1 THE GRAMMAR-TRANSLATION METHOD

This is usually seen as a nineteenth century method but it continues to be used widely, particularly in situations where learners will only want or need to handle written texts in the foreign language, usually literary texts. It focuses on the learning of vocabulary relevant to the texts being studied, and the learning and application of language rules in translating these texts into and out of the target language.

A strength of this approach is that it does work well in classroom format, and good learners can take a lot from it. It can provide a foundation of lexis and structural knowledge which can be applied in other circumstances outside the classroom. Because of its organisation, and where learners are expected to work independently, this may be one method that lends itself well to technological implementation. Its weaknesses, however, are perceived to be its narrow focus on the reading and translation of texts and its lack of a means of dealing with language where speaking and other forms of communication are required.

4.2 ORAL APPROACHES AND SITUATIONAL LANGUAGE TEACHING

The features of this approach include the absence of translation in teaching (learning is conducted only in the foreign language) and the spontaneous use of oral language. Textbooks and texts are replaced by the teacher as the principal source of information, and the teacher can use mime, demonstration and pictures to introduce new ideas and concepts. Critical in this approach is the responsiveness and ability of the teacher and it is difficult to see how an approach like this could be easily adapted to the limitations of technology, at least until affordable broadband links between teacher and student become available. In the 1920s and 1930s British linguists in particular attempted to refine the content of the language being taught by trying to anticipate the situations which learners might encounter. Frequency analyses enabled syllabuses to hone in on the vocabulary and structures which learners

APPROACHES TO LANGUAGE TEACHING

were most likely to need and these could be repeated frequently in class. Learning theory is essentially behaviourist but the relevance of the situations and language structures should rescue the approach from monotony.

A strength of this approach is its effort to use scientific methods to identify items for inclusion in a syllabus which would be genuinely relevant and motivating for learners. A weakness is the difficulty which emerged in identifying discrete situations which were useful for learners, and in describing the language these situations contained. Language proved to be far more unpredictable than this.

4.3 AUDIOLINGUAL APPROACHES

Highly structuralist in approach, and focused on the differences between native and target languages, which involved learning a lot **about** language rather than the language itself, these approaches emphasised formal drilling and memory to expedite learning. Structural accuracy was paramount. This approach lent itself particularly to emergent technology in the form of the tape recorder and the language laboratory. Learner interest was immaterial here since repetition alone was sufficient to induce learning. This may have accounted for its popularity when this approach was criticised even at the time for its deficiency in both language and learning theory.

A strength of this approach is that, incidentally through the language laboratory, it enabled learners to focus both on speaking and listening as well as reading and writing. Weaknesses include its notorious tedium and frequent ineffectiveness. Language drills divorced

from meaning just cannot teach the entirety of language. From the materials creation point of view, it can be very tempting to follow this sort of approach in technology-based materials since gap-fill and drill lend themselves easily to programming. This temptation must be resisted – at least to a degree. Some of these exercises can be useful but an excess will prove counter-productive.

4.4 COMMUNICATIVE LANGUAGE LEARNING

Based on Wilkins' (1976) notional and functional categories, communicative approaches attempted to introduce communicative competence. This typically involved the carrying out of tasks or the solving of problems, in pairs or groups of learners, using the target language. Where audiolingual approaches were highly structural, in communicative approaches meaning is paramount and the teaching of structure is usually downplayed (although this is not an essential element of the approach). The role of memory is also downplayed in favour of the internalisation of language rules which may not be explicitly explained. The naturalistic use of language for communication, it seems, is thought to provide sufficient motivation to learners. This can work where learners are, for example, in the country of their target language, are surrounded by the everyday use of the target language, and have hundreds or thousands of hours of meaningful exposure to the target language.
Strengths of this approach include the interactive foreign language use which can give very real fluency gains. Another strength ought to be that these notional/functional categories can apply to pretty

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LEARNER VARIATION

much any theme or context which should allow great flexibility in the selection of genuinely interesting materials for learners. In practice, this is not always done. An obvious weakness, particularly in the UK, is that this approach has been seen as a rationale for never explicitly teaching structure and this has become an area where learners are notoriously weak as a result. A couple of classes a week, it seems, cannot replicate the sort of meaningful exposure required for learning to take place. Using technology-based materials to create the volume of meaningful exposure, and to practice the task and problem-solving activities envisaged in this approach, would look like a good way forward.

5 LEARNER VARIATION

There is general agreement that all learners are not alike. Not only will they vary according to obvious characteristics like age and gender, they will also vary according to learning style and learning preferences. Presented with the same material in the same class, some learners are likely to find the materials helpful and learn well, while others may find the same tasks uncongenial and fail to make the progress they otherwise could.

There is some debate as to what these different learning styles are. The most academically rigorous approaches to language learning style emerge from language aptitude research. Carroll and Sapon's (1957) model of language learning aptitude is still a standard. Four elements of aptitude are identified:

- short-term memory
- the ability to form sound symbol correspondences
- grammatical sensitivity
- language inferencing skills.

Statistical analysis of learners' results on tests derived from this sort of approach allowed only two styles of learning to be clearly identified: analytic learners and memory-based learners, although a third group who were good at both emerged (Skehan, 1989). In theory, therefore, the analytic learners ought to be the ones who would take most advantage from a grammar translation course, while memorisers ought to take most from an audiolingual approach.

One of the virtues of aptitude research is that it is tied to diagnostic testing and this makes it possible for teachers to know the potential strengths and weaknesses of their learners, and adopt appropriate teaching materials and strategies even before teaching begins. There is empirical evidence that learners who are provided with a teaching approach to match their learning style, as assessed through this type of analysis, are at a learning advantage over students who are not matched in this way (Wesche, 1981).

Aptitude tests have mostly been designed for use by specialists but the latest set of published tests, Meara et al (2001), are computer delivered and marked, provide profiles of individual learners' strengths and weaknesses, and offer advice on the pedagogical implications of the learning styles they suggest. They are designed for use by non-experts.

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TENETS OF GOOD TEACHING AND GOOD TEACHING MATERIALS

Knowledge of this area, and use of these tests, is almost entirely limited to the research community. Given that this variety in learning exists, it would make sense from a policy point of view to introduce teachers at large to this area through teacher training and professional up-dating.

There are other learning style classifications and some of the more popular ones are based on Karl Jung's theories of psychological types and assessed using the Myers-Briggs Type Indicator (Briggs-Myers & McCaulley, 1985). There are online tests to assess your learning style (for example at http://www.humanmetrics.com/cgiwin/JTypes1.htm) but the application to language teaching, and especially children, is not straightforward and is not well documented. Kolb (1984), for example, hypothesises four types of learners:

• concrete experiencers
• reflective observers
• abstract conceptualisers
• active experimenters.

From a language teaching and materials point of view these designations do not obviously link with established approaches but some sensible choices could be made. Abstract conceptualisers, for example, might be expected to handle a grammar-based course well while an active experimenter might be most at home in a total immersion learning environment.

More fashionably, Gardner (1993) hypothesises seven types of intelligence (more recently nine) which learners may have in different measure:

• plays with words (verbal-linguistic)
• plays with questions (logical-mathematical)
• plays with pictures (visual-spatial)
• plays with music (music-rhythmic)
• plays with moving (body-kinesthetic)
• plays with socialising (interpersonal)
• plays alone (intrapersonal).

The theory is here that learning in a group will be maximised if the materials address all of these intelligences. There is a lack of empirical evidence to demonstrate unambiguously that this is true. However, his ideas might be used as the basis for the creation of good materials. The obligation to address each of these different intelligences means that a writer will create a wide variety in the approaches and exercise types for the materials. Learners will find something they like whatever their learning style may be and consequently the materials are more likely to retain learner interest. This is a good lesson to bear in mind. I know of one publisher which deliberately attempts to create materials with these different intelligences in mind, and their materials can be quite impressive and are certainly well received by teachers.

6 TENETS OF GOOD TEACHING AND GOOD TEACHING MATERIALS

The formal evaluation of language teaching materials and software is well established and there are plenty of good checklists available which can be used for this. There are even websites dedicated to providing reviews and assessments of software and other language teaching materials for the information of users.

I feel the most systematic and complete checklist is by Hubbard (1992) designed for evaluating language teaching computer software programs, and which is derived from Richards and Rodgers' (1982) hierarchical structure described in the Introduction. Such a checklist need not only be used to evaluate existing software materials but allows materials writers to address necessary issues at the design stage. I have placed a summary of this checklist in Appendix 1. This is actually quite a dense document so below I have picked out some of the main considerations.

6.1 THERE SHOULD BE A CONSISTENT APPROACH AND METHOD LEADING TO THE MATERIALS

More accurately, the checklist asks whether there is a clear idea of how languages are learned and what is to be taught underlying the materials. It is a very common feature of technology-based language teaching materials, that they are technology-led rather than pedagogy-led. The materials often use a clever piece of technology because it can be done, rather than because it enables the learner to enhance or use their foreign language knowledge. It is not of prime concern, in designing materials, what the approach and method are, but they must clearly exist and the materials must signal this. Able and experienced teachers can then make an intelligent choice for the students they have. As a matter of policy it would be a mistake to favour one approach over another. This is what appears to have been done with the modern languages National Curriculum for GCSE, where a communicative approach appears to

have been pursued to the exclusion of all others. I don't think anyone could describe the product of this approach as satisfactory.

6.2 THERE SHOULD BE A CLEAR SET OF OBJECTIVES

Good materials must be clear about what it is they are teaching and how this is to be achieved. It is axiomatic that if you set clear and attainable objectives for your learners they are likely to achieve them, and if you don't set such objectives they probably won't. If language teaching materials were to follow a structural approach, which might suit the analytic learners identified above, then you would expect the structural point being taught to be identified clearly and for there to be elements of presentation, practice and performance in the teaching materials. A communicative approach could be expected to identify a notional or functional task, for example buying a railway ticket or ordering a meal, and to construct appropriate tasks around this situation.

6.3 THE MATERIALS MUST BE USABLE

It must be clear to the user (and the users are teachers as well as learners if the materials are part of or complement class work) how to use the materials, and they must be quick and easy to use. Milton (2001) notes that technology need not enhance and often considerably diminishes language learning where it is misapplied. Kreeft-Peyton's (2000) study is noted, for example, where more than half of all class time was spent getting to the lab, logging

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TENETS OF GOOD TEACHING AND GOOD TEACHING MATERIALS

materials must address the age level of users very precisely or learning will not take place

on and setting up. This represents a huge waste of learning time and learning could not possibly be optimised in this sort of environment. Nonetheless, Kreeft-Peyton was incredibly positive about the activity which just goes to show how seducing technology can be, even to an experienced teacher. The usability of materials and activities must be evaluated much more rigorously and critically than this. The implication for the creation of materials is obvious here; they must be clear, quick and easy to use.

6.4 THERE SHOULD BE FEEDBACK TO USER RESPONSES

One of the virtues of technology is, or should be, that you can interact with it. There are gaps to respond to questions in language lab activities, there are gaps to fill in written questions on computer screens. Ideally, these should be marked, mistakes corrected, and feedback and explanations provided. If learners are to work alone, this sort of feedback is essential. It is really hard to learn a language if you never know whether you are right or wrong. In fact, the role and benefit of feedback in all of computer-aided instruction, is hard to assess. Current thinking appears to favour the idea that in languages, correction and encouragement are crucial to success while negative aspects of feedback tend to be found in other aspects of computer-aided instruction (Steinberg, 1991). Judging the appropriate use of feedback is more art than science and it is the sort of thing a sensitive teacher becomes very expert at. Building this kind of sensitivity into the reactions of a computer program is far from achieved. Somehow, however, this has to be built into language teaching

materials. Some thoughts on what the future may hold in this direction are given below in Section 7.8.

6.5 THE MATERIALS SHOULD BE APPROPRIATE FOR THE AGE OF THE LEARNERS

As Milton and Garbi (2000) point out, most computer-based language learning materials are designed with very particular learners in mind and these learners are adult or near-adult, educated, sophisticated and able to interact intelligently on a wide range of topics, they have high levels of computer skills and are fairly fluent in the foreign language. Unfortunately, most foreign language learners in UK are not like this. They are young, they are in the early stages of the education process, they cannot handle complex questions or interactive activities, they have very particular interests such as dinosaurs or boy bands, they may not be able even to use a keyboard, and they have very little foreign language knowledge. Materials must address the age level of users very precisely or learning will not take place. In Warschauer et al's (2000) summary of Internet projects with young learners the learners either spent their time learning how to use the computer or lacked sufficient foreign language to communicate. In these cases, it is hard to see any language learning occurring. For the large numbers of learners outside the school environment, the situation is not entirely changed. These may be adult but the overwhelmingly majority will be beginners or false beginners.

6.6 THE MATERIALS MUST BE MOTIVATING

Learners can vary enormously in their interests, in their learning goals, whether they are in class or self-directed. Whatever the reason for learning, learners must be motivated or they will not learn. There is a belief that instrumental/integrative motivation such as learning a language to get a new job, study abroad or integrate into a new language community, is most effective (Gardner and Lambert, 1972). These learners are likely to be motivated by materials which replicate as precisely as possible the type of language environments they will encounter in their new speech community, such as buying a railway ticket. School foreign language materials for GCSE look a lot like this.

Unfortunately, most language learners are youngsters in school and do not posses instrumental or integrative motivation. If they learn it will be because they enjoy language learning (intrinsic motivation) or they want the exam pass to do 'A' levels or get to university (external motivation). Intrinsic motivation can be affected by good choice of topic and materials. Buying a railway ticket is not very interesting to an 11 year-old, in any language, but an interview with Robbie Williams might be. This would imply great sensitivity in materials creation and regular review and updating to reflect current adolescent fads. The good thing about computers, at least currently, is that young learners love them whatever they do and this will enhance intrinsic motivation.

External motivation can be affected by offering appropriate rewards for success in language learning. Exam success in a foreign language used to be a requirement for university entry in UK and it still is across most of Europe. In these circumstances language learning is widespread. Reintroduce this in the UK and learners (and teachers) would receive the signal that languages are a necessary part of educational success and more people would learn them. Reintroduce grants for those studying languages at university and language learning will become a much more attractive option. This is a policy matter. However, allow languages to be removed from the curriculum, which is current policy, and the motivation to learn them is almost non-existent. It is impossible to be optimistic about the future of foreign languages in the state education system in the current state of government policy.

The emergence of a new, younger group of foreign language learners in primary schools (see Section 9) means that this approach to the content of materials must be reviewed with this age group particularly in mind. What captivates and interests a 7 year-old is unlikely to be the same as what interests a 16 year-old. The implication for policy and materials design here is that a new curriculum is required to fit these learners, and a whole new market will open up of learners at primary age.

Of course, a large number of language learners are also adults, often taking evening classes. The motives for learning can vary enormously here but can be expected to be largely recreational. Some benefit can be gained by the choice of theme and topic to reflect holiday language and so on, however, many learners view these classes in the same light as, say, taking a course in motor-maintenance or Italian cookery. The scale

whatever the reason for learning, learners must be motivated or they will not learn

TENETS OF GOOD TEACHING AND GOOD TEACHING MATERIALS

of language learning is so vast, and progress so hard to appreciate, that many learners in these classes become demotivated. The drop-out rates are enormous. There is no research done on this, nor is the government currently willing to fund it. What might help both teachers and learners is diagnostic testing before learning begins and progress monitoring during learning so these learners can be counselled and supported better during learning. Materials might routinely include elements of these things.

6.7 THE MATERIALS MUST FIT THE LANGUAGE LEVEL OF THE LEARNER

Two of Krashen's (1987) axioms for successful language learning state that successful teaching materials must be pitched just above the learner's level of knowledge, and that the materials must be comprehensible. If materials you put in front of learners are too hard, you run the risk they will understand nothing and learn nothing and even for experienced adult learners this can be hugely demotivating. Warschauer et al's (2000) studies of learning through the internet, suggests this is exactly what happened with low level learners using e-mail. This means that successful materials will have to be carefully constructed and edited to match learner levels since authentic materials are likely to be only truly accessible to the most advanced learners. Laufer and Sim (1985) for example, suggest that you need to know 95% of all the lexis in a text for it to be comprehensible and you would need a very large vocabulary to have that degree of coverage.

Two potential problems need to be addressed here. One is that this is a

considerable change in direction from the National Curriculum which is tied to the use of 'authentic' materials. I do not think this need be a problem since carefully graded materials will simply be better than National Curriculum materials and there may even be some marketing advantage to be taken from this. Rather more problematic is the difficulty of accurately grading materials and signalling their level. Commonly used terminology, such as elementary, intermediate and advanced, is very imprecise. I believe developers and teachers should look to use some of the more sophisticated computer techniques which can assess the level of learners (for example, Meara and Jones 1988 or Meara and Milton, 2002), and assess the level of texts for use in teaching (for example, Laufer and Nation's LFP (1995), or Meara's PLEX). This will be a new departure, however, and is not uncontroversial.

6.8 IS THE INTERNAL ORGANISATION OF THE MATERIALS SUFFICIENT AND APPROPRIATE?

There are many factors which might be at play here but an important one is whether there is sufficient repetition and recycling of learning materials? The importance of repetition in learning is axiomatic (for example, Nation, 2001). The greater the meaningful repetition of items to be learned, with appropriate spacing, the greater the likelihood of an item being learned. In an ideal world, therefore, technological materials would systematically exploit the content of school curricula to maximise learning. I believe there are problems here since in the UK the content of language syllabuses is incredibly slight. WJEC (1995) and NEAB (1997) GCSE syllabuses, for example,

successful teaching materials must be pitched just above the learner's level of knowledge and the materials must be comprehensible

contain only about 1,000 words and this is not sufficient for anything but the most limited and basic communication – they would need to be three or four times bigger for anything approaching normal communication. They are also remarkably dull. It might be expected that adult and evening classes would have a separate more relevant curriculum to work to but this is not the case. Often they have only the loosest of syllabuses to work to, with thematic areas identified for coverage but very little formal or structural content. Where a qualification is required for these learners, as it may be for funding purposes, the standard is the school-based GCSE.

While linking technological or other materials to National Curricula would be a good starting point and sales ploy, developers are going to have to face the fact that if really effective teaching materials are to be created, a much better and more extensive syllabus than currently exists must also be created. This involves the selection of vocabulary and structures and their sequencing so that these items can then be systematically reworked across the various pieces of technology. If these things are not readily available in modern foreign languages in the UK then there are plenty of good EFL syllabuses and descriptions to plunder for creating this material. These range from very young learners (UCLES, 1998) up to UCLES's First Certificate in English (Hindemarsh, 1980).

Good internal organisation should mean too that the choice of activities, as well as the sequencing of the content, is appropriate for the learners. Thus if learners only ever want to order drinks in a bar or food in a restaurant on holiday,

activities which stress writing in the foreign language would seem redundant as would vocabulary and structure outside these thematic domains. Most learners are not as conveniently focused as this, and this means that a more general curriculum and a wider range of activities is required. A wide range of input styles, from structural explanations to reading and listening texts, and activities based on these, from gap-fill and drills to interactive information gap exercise and even free production exercises, will be required. This is a challenge to programmers and writers, but it is an essential component of good materials.

A further point which needs to be considered is that if these materials are to be saleable outside the UK then they must fit precisely with the various syllabuses which national governments adopt. Often, these syllabuses are a thinly disguised form of protectionism designed to preserve local publishers from destruction by US and UK publishing giants. Whatever the reason, materials must be sanctioned by local ministries as fitting local syllabuses and be placed on lists of suitable materials before they can be used in schools or bought by them. Exclusion from these lists rules products from these markets almost entirely.

6.9 THE MATERIALS SHOULD PROVIDE ENOUGH TIME FOR LEARNING

If there is one factor which affects success in learning a foreign language more than any other, it is the amount of time spent meaningfully engaged in using and learning the foreign language. In a pan-European study Milton and Meara (1998)

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RELEVANT TECHNOLOGIES AND TECHNOLOGY'S FUTURE DIRECTION

show that British learners do not appear to be worse learners than their European counterparts but they spend only a fraction of the time learning and therefore make only a fraction of the progress compared to learners in Europe. Two things emerge here. The first, is that if the materials you create, technological or otherwise, are to make a serious impact on language learning then you must prepare hundreds and hundreds of hours of activities. For example it takes 500 to 600 hours to raise a student to UCLES First Certificate in English level which, with a vocabulary load of about 3500, is at the boundary of communicability. British schools are likely to offer only about 200 hours in a foreign language. Secondly, there are studies which suggest average rates of uptake for lexical and other items. It is therefore possible to be more scientific about the number of items introduced and recycled in any single piece of teaching material and this knowledge should be taken advantage of. Studies over the course of 70 years repeatedly show that learners learn between three and five words (lexical families) per classroom hour. Good learners are better than this and can learn at double the rate, while poor learners learn less. But these are only generalities. Some studies show that really good learners can soak up language at an immense rate; up to 35 words per hour in a reading task. I am not aware of any comparable studies for structural uptake. Practice materials can often be rather hit and miss with some materials so slightly loaded with vocabulary or structures, that there is nothing to learn.

What is needed here, and this is easy to build into a technology-delivered piece of courseware, is pre-testing and progress testing so learners (and their teachers) will know where they stand. A text or exercise with only a few tens of words might be easy work for a good learner who need only spend an hour on the task. Its completion can be confirmed by progress testing. The same materials might prove much more challenging to a less able learner who would require rather longer. In this context testing can be motivating rather than threatening. It can confirm progress where learners feel they are at a standstill or going backwards, it can confirm the successful completion of a task so the learner can move on to the next activity.

7 RELEVANT TECHNOLOGIES AND TECHNOLOGY'S FUTURE DIRECTION

These days, most people think technology means a computer but a computer is just the latest in a whole series of technological aids which have been used to assist foreign language teaching. At various times, great hopes have been held about the application of technology to teaching. When the language laboratory was introduced, for example, the novel approach to teaching and the 'scientific' use of technology was expected to improve the speed of learning. In reality, language laboratories have proved to be a useful tool, but only one tool, in the hands of a good teacher, and a huge waste of time and money in the hands of a bad teacher. There is really no evidence to suggest the use of language laboratories improved the efficiency of language learning overall. But for learners with specific needs, such as developing a good accent, then having the opportunity to speak and to monitor their production in a language laboratory, is likely to be more effective than a method that doesn't employ such a tool.

More recently, there is an undercurrent of thought that technology might replace teachers. If such a scenario is even possible then it remains a long way off. The essence of foreign language instruction is a most sophisticated form of communication between the learner and the teacher. The truth is that we can only communicate with even the most sophisticated piece of computer software in the most limited, even primitive, manner. At present we are still a world away from programming a computer, for example, to recognise and respond appropriately to language error. This does not make language learning technology useless. But it does mean that proponents of it, and producers of it, have to be very realistic in what these applications are expected to do. A technological application might be useful or useless according to the needs of the learner, how the technology is to be built into the overall process of learning, the technology he or she has available to use, the expectation of the technology and a host of the other variables listed in the section above. Below, therefore, I have attempted to summarise the types of language learning technologies which are available and to indicate their various strengths and weaknesses.

7.1 LANGUAGE LABS AND COMPUTER LABS

Language labs were conceived within an approach, based on then fashionable psychological theories of learning (Skinner, 1957), which made them a total learning environment. Used in this manner, the labs showed some profound short-comings. Teaching in the language lab was based on repetition, even meaningless repetition, gap-fill and transformation exercises, but did not involve meaningful communication. You cannot really **communicate** with a cassette. There was a tendency to practise highly formulaic language, as a result, while most foreign language use is quite unstructured and is not formulaic. They proved boring and the use of booths claustrophobic. Most of all a teaching technique based on little more than repetition is flawed, it does not improve language learning as a whole. There are potential benefits too, of course. Labs give everyone a chance to speak in the foreign language, more regularly and for longer than they could in the traditional classroom and this can give some gains in fluency and in pronunciation. Language labs are still to be found in most well equipped schools and universities but they have changed somewhat. The booths are gone and labs can be used as traditional classrooms. Repetition and gap-fill practice have a more limited use in a broader range of language teaching techniques. The lab might be used for 10 minutes practice in a class, before they move on to something else. Labs can also be used by highly motivated students, privately, for individual practice. Pronunciation courses such as Baker's Ship and Sheep for example, have proved hugely popular.

Computer labs for teaching languages have emerged as something of an oddity. They do not have a firm place in the methodology of language teaching as did the audio labs when these were first invented. As a result there is no clear method or best practice for using them as a result. Very often these facilities carry out the same forms of exercise, gap-fills, repetition etc, as did audio labs before them. It is still rare to see a real benefit

teaching technique based on little more than repetition was flawed, it does not improve language learning as a whole

RELEVANT TECHNOLOGIES AND TECHNOLOGY'S FUTURE DIRECTION

conveyed by their transfer to computer. Baker's (1977) pronunciation course, for example, might be improved if the computer were able to give visual feedback on the quality of a learner's production. I have seen this used with deaf children but I have only ever seen one experimental attempt to do this in foreign language instruction. It is difficult in these circumstances to see the gain for the extra investment required for these labs if this is all they are used for. The wider potential for the use of computers is considered below.

Bear in mind that for most language learners, there is no access to a language lab. It is a luxury. The application of the software in multi-user environments also makes for expensive complications in licensing users. From a commercial point of view, materials produced for this environment must have a use outside the classroom environment, or be a bolt-on to another course, if they are to be a success.

7.2 CASSETTES AND CDS

While these appear simple pieces of technology, and not particularly dedicated to language learning, they have the advantage of ubiquity. Cassette and CD players are available to almost every learner of a foreign language both in school and in their homes.

There are multiple examples of good practice with these. Foreign language songs, if supported by transcriptions and translations, can yield immense learning gains with good learners (De Armas and Bosch, 2002). From a language learning point of view, songs have certain natural

advantages; they are highly loaded with vocabulary and structures, repetition is in-built, language structures are embedded in meaningful phrases and the music is thought to be an aid to memory. Repetition of these songs need not be meaningless and dull, as with drills in the language lab, but is normal practice with almost all listeners. With younger children, simplified language stories supported by books with pictures and practice exercises are very popular, for example, Dooley (1997). While I have not seen this sort of approach systematically applied to older learners (perhaps for fear of patronising them) there is evidence that this approach can be used with a much wider age group, if the material is sensitively selected, and can also be immensely successful with good learners (Horst and Meara, 1999).

Good practice is to select and control the materials to supplement and reinforce classroom learning - hence the supplementary materials produced by major publishers for their course books. Stand-alone materials will have to be very carefully selected and controlled if they are to fit easily with other classroom materials.

7.3 VIDEOS AND DVDS

Most major publishers have produced video courses at one time or another. They have never been very popular or notably successful as stand-alone publications. Videos, in particular, are still quite cumbersome to use for language learning - rewinding to the right place, for example, or having a really clear freeze-frame so you can read a subtitle. But as part of teaching the cultural content of a language and bringing users up-to-date in news and

from a language learning point of view, songs have certain natural advantages

issues in the country of the language being learned, videos have had and still have a place (e.g. Naski-Brown, 2000).

DVDs appear much more user friendly. The advantage of this form of technology ought to be that the need for paper support - essential with cassettes and CDs - is removed. Songs or films, for example, can be offered in a choice of languages and a choice of subtitles so you could practise listening or reading or both.

From a commercial point of view, links with already popular songs, films or TV series offers credibility and motivation to learners. However, there are points to note. The language of TV, and films in particular, can be highly colloquial or arcane and is much less suitable for language learning purposes than inauthentic materials. A film like 'Dirty Harry' I suspect is almost unusable for teaching. By contrast, some surprising and attractive series may be very useful. 'Xena Warrior Princess' and the film 'Galaxy Quest' appear to contain quantities of quite mundane language which seem suitable for practice with intermediate learners.

It is worth noting that the amount of language and therefore the opportunity to learn is quite slight compared with songs which are really heavily loaded with language. TV and film are visual media and make great use of images supported by music and less use of language. I am not aware of published research to show the uptake of language from these sources although there is research ongoing in several countries. I would expect this to be effective with almost all learners.

7.4 COMPUTERS

Computers can be used to carry out a number of language practice activities either inside or outside the classroom. Most of these activities could be done without a computer and using pencil and paper and a cassette player. Computers are used for practising grammar through gap-fill, transformation and similar exercises; they can also be used for vocabulary building with similar exercises (see for example, Chapelle, 2001). It is still rare for these activities to be built into an interesting scenario, such as an adventure taking advantage of the visual opportunities presented by the computer. The highly innovative 'French on the Run' (Jacobs and Clarke, 1982) which integrated grammar practice into an adventure escaping from occupied France during the war (if your grammar was poor you got caught by the Gestapo) has not been followed up to my knowledge and is now unusable. The function of the computer in this type of learning appears to be purely motivational – the computer makes these necessary exercises palatable for learners where with pencil and paper they would not be. Hanson-Smith's (2000) book, for example, which contains examples of good practice in this field, never once identifies a language learning gain in the technology enhancement of the title; benefits are extra-linguistic such as growth in learner independence. From a materials design point of view, this field would benefit from a much more adventurous approach. Adventure games would be ideal provided that they are driven by the use of the target language.

The use of computers for extensive reading and listening has been touched on above and there is huge potential for learning

adventure games would be ideal provided that they are driven by the use of the target language

RELEVANT TECHNOLOGIES AND TECHNOLOGY'S FUTURE DIRECTION

learners need good models of language to copy, so give them good models

benefits if a range of materials, interesting to users for their subject matter, is available. Since computers were first available in the classroom, however, their use for intensive listening and reading has also been emphasised (for example, Jones and Fortescue (1987)). There are some exercises here, such as text manipulation exercises, where the interactivity of the computer is a benefit. The computer is less helpful where traditional open-ended questioning is used (and this is more demanding that objective style questioning) since it becomes difficult to provide really useful feedback on every possible answer provided by a user. Feedback on this kind of activity is still probably best done in class.

The use of word-processing for writing in a foreign language is also a repeated feature of uses of computers. Obvious things like spelling checkers can be incredibly useful to the learner. Aside from this, the benefits to be obtained in this kind of activity result from the quality of the product. A common writing activity such as writing a school magazine becomes a far more credible activity where desktop publishing allows the insertion of high quality pictures and layout and design. The benefits are therefore motivational again. Some thought might be given to the use of the memory available in computers to give learners examples of good (and maybe even bad) practice. Learners can learn a lot from the examples of others, and are more likely to produce good materials if they can see what good material looks like. Some organisations, like exam boards, are rather suspicious of this but I am not. Learners need good models of language to copy, so give them good models.

Language games are another feature of computer-based language teaching programs, again, because their use is thought to be motivational as well as instructional. An archetypal example is in Jacobs et al's (1995) Autohall, a computer-delivered course in technical English for motor mechanics. The games are used to reinforce the structural and especially the lexical content of the course. Crosswords, a version of hangman (which involves building a car), word mazes and letter rearranging tasks are all used. Games use has a clear objective in this context, the recycling of important technical vocabulary, without which learners cannot progress. In other contexts, games tend to become a substitute for a really useful language activity because they are quite easy to create and they are not too taxing intellectually for the user. But, learners won't learn too much from the uncontrolled use of this kind of activity. To be really useful, games must involve some more realistic element of communication.

A genuinely innovative use of the computer in language teaching is the use of concordancers and similar programs as a means of providing breadth of exposure to lexis and structures for learners (for example, Aston, 1995). Learners can use the resources of corpora such as the British National Corpus to find examples of their desired word or structure so that usage or collocation becomes clearer. I am suspicious of this approach since unless precisely the right questions are asked of the data, it can provide many more misleading examples of the use of a target structure than useful ones. Users have to face the uphill task of training learners (and teachers) in the software, thus diverting valuable time from the business of language instruction itself. For the time-

being, at least, this technique should be laid to one side.

The benefits of computer usage in language teaching would seem, at the moment, to lie in the opportunity for extensive language exposure outside the classroom, rather than in revolutionising the language classroom itself. Materials production might usefully focus on this fact.

7.5 COMPUTERS AND VERY YOUNG LEARNERS

There is a trend across Europe for foreign language learning to start at very young ages, and this has been supported by a number of initiatives from the European Commission. Learning can start even as young as three, where it is difficult to separate all elements of first language learning from the foreign language learning. Not surprisingly, materials at this age range, which can be very good, tend to blur the distinction between first and foreign language learning. Some materials, such as the Jump Ahead series (PIN, 1997) could be used with either group. They have interactive screens where objects can be clicked on and their names heard, the alphabet can be practised, black and white print-outs are downloadable for colouring and labelling, and there are songs to sing using the vocabulary taught. They correctly identify thematic areas, such as animals and their young, which are of interest to these very young age groups. An interesting development of this is Kid-net (CO&SO, 2001) which has published preliminary materials of this kind but are capable of adaptation to many different languages easily.

The financial potential of a worldwide marque of this kind is easy to see but appears not to have been realised by a major publisher as yet. The growth of interest, and numbers of learners, in this area is the single most important change in language education of recent years. There is now a huge, new and multi-language market in this area which is currently almost untapped and is inaccessible through traditional means.

7.6 THE INTERNET

The use of the internet in education is much vaunted and considered massively important by its proponents. One writer, Hanson Smith (2000, 1) actually refers to "the dominance of the internet in education". Others (Warschauer et al, 2000) call it the fourth most important invention after language itself, writing and printing. It is important not to be swept away by the hyperbole. At present, the benefit from the use of the internet is still, in many cases, potential rather than realised. There are really two things it can offer to language learning. First, it can offer users the opportunity to speak to each other either via text in chat boxes, aurally or even visually using web-cams. Second, the world wide web gives a huge resource of language materials which learners potentially might use.

The interactivity with other speakers of the language is the most important potential benefit. The principal drawback of the foreign language classroom, historically, has always been the absence of realistic opportunity to use the language you have learned. Role-plays and simulation are just not the same. The internet gives you the opportunity to do this. The European

the principal drawback of the foreign language classroom, historically, has always been the absence of realistic opportunity to use the language you have learned

RELEVANT TECHNOLOGIES AND TECHNOLOGY'S FUTURE DIRECTION

Commission has sponsored at least two networks in this field: ALTE for secondary schools and VIRLAN for primary age children. Both have had some limited success. ALTE because users across most of Europe have the level of knowledge of their foreign language, usually English, to communicate on their chosen topic without too much direction or help. It is worth noting that UK school children are almost entirely restricted to participation as native-speakers in this. VIRLAN takes elaborate care to arrange situations where users with very limited foreign language resources can still undertake meaningful language exchanges, as in an interactive whiteboard drawing and guessing games. While these appear childish, they work surprisingly well with adults too.

There are still practical problems to overcome with this sort of application and these have restricted the genuinely wide-scale use of these kinds of activities. One is the practical problem of arranging common time and opportunities for users in two or more countries to collaborate. A second is that unless use is limited to asynchronous e-mail exchanges, the technology is still not reliable enough to allow real-time exchanges, especially if these involve sound or vision. Schools, indeed all users, need something more reliable than this if the internet is to be widely used. Thirdly, there are problems with control of access to sites of this kind. Experience, particularly with ALTE, has shown it is nearly impossible to stop youngsters exchanging personal details with each other and that it is also almost impossible to control access only to children with language learning intentions. My own local education authority took this problem so seriously they have banned internet access in all primary schools

rendering almost redundant the computers they have put in these schools. Passive monitoring software is urgently required here to identify bogus users in these environments.

The second potential use of the internet is the access to the world wide web and the huge resource of materials it allows. Well-organised and controlled examples of the use of this resource, for example, Robb (2000), are rare. In this case the writers placed their materials, once created, on a web page and dealt, in their foreign language, with the e-mail responses which this generated. More typically, however, users are let loose in this huge and confusing environment and are somehow expected, through uncontrolled exposure, to gain from the experience. This can only be potentially useful to the most linguistically able and, presumably, adult learners where teachers will not have a duty of care in exposing learners to potentially undesirable sites. There are also many practical restrictions in doing this well. Not the least of these is the time taken in setting up good materials. Materials cannot be reused in this medium, as they could be with paper and pen materials, because URLs and websites change with such speed and regularity (just as you are about to use them in my experience) that they need recreating almost every time. Teachers have to be really enthusiastic, and with plenty of time and the equipment available to make use of this medium.

In the current state of technology I think the possibilities of internet usage in language teaching are vastly over-rated. The future may, of course, be different (see Section 7.8 below).

7.7 TESTING

In all the enthusiasm for computers and the internet in language teaching, the opportunities for language testing or language monitoring appear to have been overlooked. A review of the dozen or so texts on computers in the classroom which I have next to me, shows that only one (Leech and Candlin, 1986) even mentions this. Formal computer tests such as those devised by TOEFL and UCLES (for its IELTS test) have proved problematic but as the recent arguments over 'A' levels show, all high-stakes testing is problematic. One of the benefits of the computer ought to be the provision for low-stakes standardised tests of many different kinds which can be administered and marked by computer. Such a thing can be found online, for example at http://www.dialang.org/. These tests are usually characterised as "quick and dirty" but a good test of this kind is just quick and need be no worse or less accurate than any other test. The benefits of testing of this kind can be much more than providing some formal accreditation of attainment in a foreign language. Tests can, and should, be available so learners and teachers alike can monitor their progress. Studies such as Milton (forthcoming) show that being able to see progress, when as the learner you cannot really detect it yourself, is immensely motivating.

7.8 THE FUTURE OF TECHNOLOGY IN TEACHING LANGUAGES

One thing that will not happen is that within the foreseeable future technology will advance to the point where a learner can communicate fully with a computer through speech. This means that replacing the input of a teacher, or another interlocutor, by technology is not possible. But how might technology be used to replace parts of the teacher's function if learning is to become, as seems likely, something that is done outside the normal classroom through PC? One scenario which seems likely to me is the remote teacher – especially for the lesser-learned languages. Rather as the current government has introduced phone-in systems to relieve the strain on doctors, and as companies and banks have call-centres to cope with questions, complaints and orders, I think it is inevitable that they will try a remote teacher call centre contactable through phone, e-mail or the internet. These might set learning schedules and tasks, they might provide a point of contact for support when motivation is low, or they might monitor and assess work such as written work which a computer is currently unable to do. While the one-to-one teaching which this would imply appears expensive, remember that it can be placed anywhere in the world including places where labour of this kind is really cheap. Another application of this kind might be to adapt conferencing software so a single remote teacher can tape-stream a lesson to multiple locations.

At present complex interactive language tasks (and actually this is most language use) require a teacher to assess, moderate and respond to them. It may prove possible to train neural-networks to grade foreign language written output, such as essays for GCSE or other formal exams. This would provide certain foreign language practitioners with genuinely useful feedback; you write a practice essay and the computer tells you straightaway what grade you would be likely to get. There is

being able to see progress, when as the learner you cannot really detect it yourself, is immensely motivating

OTHER RELEVANT FACTORS FOR CONSIDERATION

some trial software around from TOEFL in the USA, presumably published by ETS in Princeton, which claims to do this, although I have not been able to get hold of this to evaluate it. We have worked on this in Swansea with some limited success (which is perhaps why Princeton do not want us to see theirs). Aside from its use in teaching there is huge potential for this type of software, for example in providing a single, quick and reliable evaluation of this material which currently requires hundreds or thousands of expensive human markers who then all do it differently. It provides a way out of the current 'A' level exam fiasco and, as such, may be hugely lucrative. This is an area where it is well worth investing in research.

I think we can assume that the technological short comings of the internet will be overcome so that linking learners in different countries in real time using audio or vision becomes possible. There will be a place for the sort of communicative information gathering or problem solving tasks that can take advantage of this. Problems will remain in getting learners together in networks to do this, but the problems will not be technological. I think in order to get this working on the scale it requires, these activities need to be linked explicitly to a major publication – something like the Headway series produced by Cambridge which sells by the million. If they are built-in or bolted-on to something of this scale then these activities become feasible. This type of activity will also be catapulted straight into the mainstream where currently it is seen as the preserve solely of technophilic teachers.

The possibilities of using tests to diagnose learning styles, or monitor learner

progress and provide motivational feedback, or to assess materials so they can be linked to learner level, have already been mentioned. All of these are very real and practical advances that can and should be added to technology-based materials, taking advantage of the technology and offering something which ordinary materials cannot provide.

At a more mundane level, there are existing technologies which are not being taken full advantage of. DVDs, with their multi-language facilities, offer excellent language practice and language development opportunities for adolescents and adults but are almost unused at the moment. The use of existing, popular TV or film materials, or songs, can be highly motivating to learners and can enhance learning. This is an area that can be quickly and readily developed. Edutainment activities, such as language-based and language-use games and adventures are highly feasible within the current state of programming knowledge but are rarely well exploited. Technology-led materials rarely provide the language practice needed for progress, and pedagogy-led materials are either so technologically simple, or tedious, that they likewise fail to provide the desired result. A more systematic and better thought out combining of technological and pedagogic expertise is likely to produce much better materials.

8 OTHER RELEVANT FACTORS FOR CONSIDERATION

Several points which have only been touched upon to date need to be considered at this point.

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UK GOVERNMENT AND EUROPEAN POLICY AND RESEARCH PROGRAMMES

8.1 TEACHERS NEED TRAINING AND EXPERIENCE IN TECHNOLOGY USE

Any discussion of the use of technology in teaching has to assume that teachers and learners have some idea of how to use technology. Experience shows that this knowledge is far from universal. The Department of Education's own research suggests that over a third of all secondary teachers admit to being uncomfortable with technology and the figures in the primary sector are much higher. (http://www.dfes.gov.uk/statistics/DB/SBU/b0197/964-06.htm). The same figures suggest that language teaching is an area where technology is least frequently applied. Extensive awareness raising and training programmes through INSET, in the UK, and at conferences overseas will be needed if a technological approach to language teaching is to succeed.

8.2 CHILD PROTECTION

If use of the internet and the world wide web is expected in any capacity whatever, then active steps must be taken to make sure that the sites which learners use are protected. Children are vulnerable and the use of such sites and chat rooms by paedophiles to gain access to youngsters is documented. This is a serious business. I believe it may be possible to develop software capable of passively monitoring usage and separating children, who would have a legitimate reason for using the sites, from adults, who may not. Ultralab has experience of managing this successfully within the TESCO SchoolNet project.

8.3 WHICH MARKET?

In all the discussion above, I have rather assumed that the principal market to be addressed is that of school learners in the UK learning languages other than English. This is to ignore the fact that the overwhelming number of foreign language learners are outside the UK and are learning English. Any organisation considering entering the language software market should not ignore the immense potential of EFL. The UK market is comparatively small, and appears to be shrinking as the profile of foreign languages in education diminishes. Dependence on the UK market may be problematic especially in the long term. As CO&SO (2001) shows, with careful planning, multi-language solutions to learning problems can be created, maximising the potential return on investment. Small changes may, nevertheless, be necessary to meet the needs of local ministries. Within this review it is impossible to discuss the specificity of individual markets, but designers and developers must be clear about their desired market and the localised changes likely to be required.

9 UK GOVERNMENT AND EUROPEAN POLICY AND RESEARCH PROGRAMMES

In the UK, research in the area of language learning, with or without technology, falls under the Economic and Social Research Council, although it is conceivable that a proposal might also fall under the Arts and Humanities Research Board. ESRC has recently (2002) initiated Phase III of its Teaching and Learning Research Programme and this might be relevant to

language teaching is an area where technology is least frequently applied

UK GOVERNMENT AND EUROPEAN POLICY AND RESEARCH PROGRAMMES

the emergence of a primary age learning body in schools will create a huge new market for learning materials

the development of software resources, since while it focuses on post-compulsory education and training, and lifelong/adult learning, this currently mirrors what goes on in schools – probably more closely than is good. My own experience of applications under this initiative is that research into language learning is not a priority since they tend to favour research which would be applicable beyond languages and across the whole curriculum. Details can be found at http://www.esrc.ac.uk/esrccontent/ researchfunding/. While it is not intended to support research, developers and designers should be aware of the existence of the Learning and Teaching Support Networks, which have a Language, Linguistics and Area Studies Group. This is designed to support the teaching of languages, amongst other things, at all levels. Details can be found at http://www.lang.ltsn.ac.uk/news/ newsarchive2000.html.

Government policy on education also appears calculated to diminish the importance and place of foreign languages in the curriculum. While an entitlement to learn a foreign language will remain for all students in education and a foreign language will remain a core subject for students up to the age of 16, it is proposed in the latest green paper (http://www.dfes.gov.uk/ 14-19greenpaper/chap3.shtml) that pupils may be allowed to disapply (ie discontinue) up to two of these core subjects. Since languages are hard for students, and schools will have more than one eye on their GCSE league table performance, it is inevitable that in almost all cases the foreign language will be discontinued. Paragraph 3.7 of the same document confirms that where

disapplication currently applies, the foreign language is the subject that most frequently suffers this fate. The same green paper, paragraph 3.20, also confirms that foreign language teaching should "reflect the reality of the world in which we live". I believe this is an extremely dangerous statement which is usually interpreted by teachers and educationalists as meaning that 11 year-olds should be taught to buy houses in the foreign language. The real world of an 11 year-old, or the retired holiday-maker, is quite different from this. These policies fly in the face of the conclusions from the recent Nuffield Enquiry on foreign language teaching (http://www.nuffield foundation.org/languages/home/). The one hopeful element in this green paper is the entitlement for primary age learners to learn a foreign language. However, there seems little indication of how this is to be introduced in schools and no indication of how learners progressing to secondary schools with a variety of language experience behind them and at a variety of language levels, are to be integrated into a single, cogent foreign language policy at secondary level. This proposal seems likely to make it more difficult, not easier, to study foreign languages at schools. The emergence of a primary age learning body in schools will create a huge new market for learning materials, but will need some thought to the development of the existing National Curriculum which is entirely unsuited to this age group.

Government policy on ICT appears to move away from the expensive business of providing huge ICT resources in schools (http://www.dfes.gov.uk/ictfutures/ theschoolofthefuture.shtml). The expectation is that personally owned ICT will be increasingly used by pupils in the

SUMMARY OF IMPLICATIONS FOR PRACTICE, CURRICULUM DESIGN AND DESIGN OF LEARNING RESOURCES

future. Technology-based practise and extension materials would therefore appear to have a real place in the school of the future.

While the UK government has no dedicated opportunity for language research, the European Community takes the business of foreign language development in its population very seriously indeed. There are many programmes which are designed to foster and help fund the development of foreign language teaching materials, testing, networks, student and teacher exchanges at all levels of education from nursery school through to in-company professional training. The majority of these can be found under the Socrates programme (http://europa.eu.int/comm/education/languages_en.html). This includes an e-Learning initiative which may be of particular relevance. There are other European programmes concerned with technology where a language-based initiative might also be possible.

10 SUMMARY OF IMPLICATIONS FOR PRACTICE, CURRICULUM DESIGN AND DESIGN OF LEARNING RESOURCES

The teaching of foreign languages is both an immense and an immensely varied business. The subject matter being taught, language itself, is so large and detailed that it is hard even to describe. The processes of learning are so complex that they are little understood. The learners vary in what they want to learn and what they are capable of learning. Perhaps it is not surprising, then, that the materials and methods involved in language teaching

vary too. It is not surprising too, that language teaching has a history of adopting every possible technical innovation, from the printing press to the Internet, in an effort to improve the quality and success of teaching. Technology is, and always has been, an integral part of language teaching. It seems likely that in the near future, this trend for use of technology will increase. As the numbers taking foreign languages in schools declines, it becomes less financially and organisationally viable for schools to teach all learners every language they want, at the level they need. The result is bound to be an attempt for learners, including adults returning to education, to work more independently, using technology as a teaching resource in place of the traditional language classroom. It is also likely to lead to attempts to create a remote classroom with learners distributed around the country and teachers accessible only through technology. Assessment is also likely to be technology-driven, not only for financial reasons, but also to drive out the frailties imposed by human markers using subjective marking systems.

These technological resources will have to follow the sort of prescriptions laid down in the sections above if they are to be successful. Nonetheless, the need for variety, if only to reflect the diversity of the learners, remains paramount. The marketplace for these materials is huge, and the rewards to those who create quality materials, which are marketed attractively, immense.

the teaching of foreign languages is both an immense and an immensely varied business

SUMMARY OF IMPLICATIONS FOR PRACTICE, CURRICULUM DESIGN AND DESIGN OF LEARNING RESOURCES

10.1 IMPLICATIONS FOR POLICY

At the level of policy, these changes in attitude to and the use of technology have a number of implications:

- UK language teaching policy is currently linked to a particularly narrow interpretation of the communicative approach which seems to me to be unsuited to the circumstances of classroom or technologically-enhanced teaching in this country. A much broader and more inclusive policy is needed. This is particularly the case if full advantage is to be taken of the opportunities offered by modern technology which can utilise different approaches, different methodologies and more attractive techniques than are currently possible. Effectively, a rethink of the National Curriculum on foreign languages is required, and curriculum needs to be broadened, to accommodate the opportunities offered by technology-enhanced learning. Since adult learning of languages is heavily influenced by the school curriculum, redirection here is particularly urgent

- nowhere in education is a centrally-directed, one size fits all, approach less appropriate than in foreign language teaching. Learners are highly varied in aims, in level, in interests, in learning style, and a host of other ways. Teachers need to be better equipped to make good professional judgements about what materials and techniques are best suited to their learners than is currently possible. This is especially the case if they are to provide learners with direction for more independent work, possibly using technology, outside the classroom. Teacher training needs to make teachers better aware of the

research and diagnostic materials available to them. Many of these diagnostic tools are, themselves, technology-driven

- the impact of the use of technology is particularly weak in the teaching of languages. Part of the problem is the attitude of teachers themselves who are often unfamiliar and unself-confident in the use of this technology. This is another area which should be addressed in teacher training

- there seems to be very little in the school or work system which actively encourages foreign language learning, and a lot which actively discourages it. If we are really serious about the need for learners to acquire good foreign language skills then we need policies which will reverse this. I have suggested offering grants for students who take foreign language degrees to attract learners into this area, rather as such grants are currently used to attract graduates into teacher training. There are other ways of seducing learners into this area. That could be explored.

10.3 IMPLICATION FOR CURRICULUM DESIGN

A number of conclusions at this level have emerged:

- the principal conclusion has already been mentioned which is that a successful curriculum in languages is sufficiently broad to allow for variety in teaching and the techniques used. Since this does not appear to happen in the UK, the curriculum probably needs rethinking, or at least broadening

a rethink of the National Curriculum on foreign languages is required, and curriculum needs to be broadened, to accommodate the opportunities offered by technology-enhanced learning

- the emergence of a new primary age language learner market requires a new or revised curriculum. The existing curriculum is entirely unsuited to this area

- curricula designed in the UK are extremely thin, that is to say small, compared to their counterparts in other countries, and this is an area which needs to be addressed if materials are to be designed which allow really able learners to make the progress their talent permits.

10.4 IMPLICATIONS FOR MATERIALS DESIGN

Again there are a number of points to be taken on board:

- a wide range of materials, following a variety of methodological approaches, will probably be effective

- nonetheless, there are certain common qualities, such as the setting of clear objectives and having interesting thematic content, which should be common to all materials. These qualities are listed above in Section 6

- materials will desirably be applicable across as wide a range of technology as possible since the more work that is done independently, then the greater the age and variety of the resources available to use these technology-driven materials. An idea of the range is given in Section 7

- one particular advantage of technology is that it becomes possible to build-in monitoring and feedback in a way calculated to help, rather than demoralise, learners. Good

materials should seek to include this wherever possible

- by extension, these monitoring and feedback procedures might lead to the formalisation of more objective, computer-driven assessments in foreign languages. Not only can these enhance the quality of formal assessment, but they might also remove much of the need for it. Formal language tests might be delivered by computer as and when needed, on applying for a job for example. This would replace current certification, as with GCSEs where knowledge is out-of-date only a few years after the certificate has been awarded

- a particular quality of technology-driven learning materials is that they must be understandable, quick and easy to use

- ideally materials should be capable of both classroom and independent use

- ideally, the materials should be designed to allow for multi-language exploitation

- materials should also be considered to take advantage of the potential for interaction between learners in different schools or even in different countries, using the internet, when this becomes technologically more reliable.

GLOSSARY

GLOSSARY

approach a set of assumptions about the nature of language, learning and teaching which underlie a teaching method

authentic materials teaching or testing materials drawn from original materials in the target language and not specially written for educational purposes

behavioural approach/behaviourism an approach to learning which is based on habit formation and positive reinforcement of correct responses

cognitive approach a view of language learning based on exposure and the unconscious assimilation of language rules into knowledge systems

communicative approach an approach to teaching where communicative competence is inculcated through meaningful exchanges in the target language in problem solving tasks and the like

concordancer a computer program which counts the occurrence of words in a text and displays the contexts of these words

corpus (pl - corpora) a body of text for analysis

critical period a limited time period in young children when language learning is optimised

direct method a teaching method based on the spoken use of the target language only

EFL English as a Foreign Language

external motivation learning in order to get something unrelated to the foreign language itself

gap-fill activity a language activity where a gap is left in a target language sentence which the learner has to fill correctly

grammar-translation method a teaching method based on the translation of written texts

IELTS International English Language Testing Service which administers a test in English for academic purposes

inauthentic materials teaching or testing materials which have been specially written and controlled for educational purposes

information gap activity a language practice activity where learners have to question another learner in order to find information they don't know themselves

instrumental motivation learning in order to achieve a very particular goal related to the language itself

integrative motivation learning in order to integrate into a new society

interactional approach an approach to language description based on social transactions between individuals

intrinsic motivation learning because it is enjoyable in itself

lexical approach an approach to language description and teaching based on lexis and lexical structures

lexis vocabulary, connected to vocabulary

loading the amount of language and other information to be learned

method the selection and sequencing of material for learning and defining the roles of the learners and teacher

morpheme the smallest unit of meaning in a language

NEAB Northern Examinations and Assessment Board

notional/functional approach an approach to language description based on semantic and communicative as well as grammatical elements

open-ended question a question which cannot be answered yes or no and may require a whole sentence for its completion

phoneme the smallest unit sound in a language

structural approach – structuralism a system of language description based on grammatical elements of language and a method of teaching which uses this approach

syllabus the written details of the language elements to be taught and their sequence of presentation

technique the detailed classroom practice to teach elements or aspects of language

TOEFL Test of English as a Foreign Language, administered by ETS in Princeton

UCLES University of Cambridge Local Examinations Syndicate - now part of OCR

WJEC Welsh Joint Examinations Committee

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http://www.ruthvilmi.net/hut/Publication/international.html

APPENDIX

SUMMARY OF HUBBARD'S METHODOLOGICAL FRAMEWORK FOR CALL SOFTWARE DEVELOPMENT

Available at:
http://www.owlnet.rice.edu/~ling417/guide.html

SOFTWARE EVALUATION GUIDE

Consider these questions before choosing a software program as a tool for your language learning or instruction. Not all of these features will apply to your needs, but this checklist may help you determine how useful your software can be to you. Based on 'A methodological framework for CALL courseware development' by Philip Hubbard, copyright 1992.

YOUR SOFTWARE'S METHODOLOGY

What are the objectives of the software?

What does the program claim to help learners achieve? What features does the program offer that will make learning easier (adequate 'help' options, clear instructions, helpful feedback, option to correct mistakes)?

How does the program help instructors? Does the software offer exercises that are supplementary to the kinds of things being taught in class already? Does it provide information that the instructor is unable to/lacks time to provide? Does it free up class time for new information by providing extra practise outside class hours?

How easy-to-use is the software?

Is there an instruction manual? Can the program and lessons be opened quickly and easily? Can the learner move from lesson to lesson easily while saving previous work? Can the learner quit from any point in the program/save previous work? Are program functions self-explanatory or based on a set of rules or instructions?

How does the software evaluate the learner's responses?

Will the learner receive informative feedback for their responses? Does the software judge responses in a way that fits with the learner's/instructor's standards for appropriate feedback? (See Procedure)

YOUR SOFTWARE'S APPROACH TO LANGUAGE INSTRUCTION

What linguistic assumptions does the software make? Do the authors base their program on a structural/functional/interactional approach to language?

Does the software approach language learning as different from other types of learning? Does it take into account internal processes in learning, or observe a distinction between mechanistic and analytical thought processes?

Does the software support a particular method of language teaching (the Direct Approach, the Audio-Lingual Method, the Natural Approach, etc)?

What platforms is the software available for (MS-DOS, Macintosh, Windows, Windows '95, UNIX, other)?

YOUR SOFTWARE'S DESIGN

Does the software offer exercises geared toward or adjustable for any of these learner variables:

- age
  field-dependent/independent reasoning
- sex
  deductive/inductive reasoning
- native language
  visual-graphic, visual-textual learning
- interests
  auditory, kinaesthetic learning
- specific learning needs
  introverted vs. extroverted learners
- tolerance of ambiguity.

How do the authors arrange the syllabus of exercises? Are exercises grouped according to notional/functional purposes or according to related skills and sub-skills? Are the exercises designed and arranged on a progressing scale of difficulty?

Does the program integrate information into the exercises about culture/literature/daily situations that may accompany the language?

Does the program focus on different learning styles in the exercises, such as recognition, recall, comprehension, experiential learning (learning by doing), and constructive understanding (using computer as a tool to discover new information)?

What linguistic levels are the exercises concerned with? Does the program focus on objective discourse/text, syntax, lexis, morphology, graphology/phonology, or a

combination of any of these? Will concentrating on any of these levels improve the learner's understanding, spoken or written skills?

Does the program offer exercises that can be worked on by a pair or a group of students as well as an individual? How well do the exercises lend themselves to class discussion or competition?

How does the program keep track of students' scores/make them available to the instructor? Does it record the number of attempts in addition to the number of correct/incorrect answers? Does it keep track of total time spent on an exercise? Does it calculate students' average scores, chart their progress, etc?

Are colour, graphics, or sound necessary or important to the efficiency of the exercises? Is the program available in a network format? Can the learner save completed exercises while using the program/after quitting the program?

YOUR SOFTWARE'S PROCEDURE

What types of activities does the software offer? Does it provide a range of exercises such as :

- games   text construction
- quizzes   text reconstruction
- simulation   problem solving
- tutorial   drill-and-practice
- exploratory activities

Which of these activities will help your learners acquire certain skills and/or suit their interests and needs?
How does the software present these activities? For example, text reconstruction can be presented in the form of a cloze, a storyboard, jigsaw reading, etc. What kinds of input are expected from the student (speech, text) and what kind of information do they receive (graphics, audio, text)?

Does the software anticipate learner responses by offering information on commonly-made mistakes, frequent misspellings, etc? Does it accept misspelled answers as correct if close to the ideal answer?

Does the software offer a selection of possible correct responses (where appropriate)? Does the software provide feedback for both correct and incorrect answers? Does it 'flag' errors, such as by highlighting a particular part of a response that is incorrect? Does it specify different levels of errors, such as the difference between a syntactic error and an incorrect word choice? Does it allow students to repeat exercises (correct mistakes) indefinitely?

How much control does it allow learners and/or instructors over the content of the lessons? Is it possible to modify lessons or add customised lessons to the syllabus?

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REPORT 1