Chapter 7

Summary, Applications and Implications of *MMInteraktif*

> CALL activities are often referred to as if they are all similar. For example, administrators ask whether or not *the computer* facilitates language development, teachers ask whether students like *the computer*, and researchers report results of meta-analytic studies to sum up the effects of *the computer* on students' learning. Implicit in these perspectives is the assumption that language learning activities in which the computer plays a role are similar to one another in important ways.
>
> (Chapelle, 1994: 33)

7.1 Introduction

In this work we have demonstrated the range of factors that are pertinent to the design of a learner-centred interface through a review of the literature in the relevant fields and a discussion of the issues raised. In doing this we have questioned the assumption introduced by Chapelle above, that there are significant similarities among computer-based activities merely by virtue of the fact that a computer plays a role in their delivery. After the section above, Chapelle also goes on to question this assumption of similarity, using CALL research studies as her evidence. In this work we have investigated this question and extended it to examine the ways in which even similar CALL categories of language learning activities may differ.

As we have shown, individual differences among learners, variations among texts, contexts, and tasks, and the nature of learner interaction with the software all contribute significantly to differential learner success in language learning mediated by computers. These contributing factors and their impact on the instructional design model developed for the *MMInteraktif* software package will now be reviewed chapter by chapter from this work. This will be followed by a review of future applications and implications of the use of this package for research in the area of second language acquisition, and specifically in the area of the effectiveness of learner-centred features of *MMInteraktif*

for student language learning. Having specified from theory and research so many of the characteristics of this particular CELL multimedia package, we have a useful tool for collecting and analysing data on learners' interactions with different features of *MMInteraktif*, and their strategies for using these features.

7.2 Summary of the findings and conclusions in this work

MMInteraktif has been designed within a sociocultural paradigm. By this is meant that meaning is constructed by learners using the package through their interaction with the tools and resources it contains. At the same time that learners are negotiating meaning through a listening and viewing comprehension task and the associated help tools, they are also co-creating with the software their own individual learning paths. Another essential element of the realisation of a sociocultural paradigm through *MMInteraktif* is allocation of control to the learner using it. With the understanding that different learners need and desire different levels of control and structure, *MMInteraktif*'s three-layered approach allows learners to take control in an informed and staged or 'scaffolded' manner. The location and function of navigation tools, the content and design of tasks, and the whole instructional design concept are all grounded in this understanding.

However, *MMInteraktif* is not designed to be used in isolation. It is envisaged as being used as just one tool in a complete learning environment as set out in Figure 5.2, A model of a CELL Learning Environment. In such an environment, the incorporation of awareness-raising in language learning strategies and a task-based approach reappear in other components of the teaching and learning process.

Another essential feature of the flexibility of *MMInteraktif* to cater for individual differences is realised through the inclusion of tools and tasks in the package which highlight visual, aural and kinesic modes of perception and learning. At the task level, for example, some tasks require simple yes/no decision-making implemented by a mouse-click. Other tasks, however, allow more kinesic learners to use their preferred mode by

picking up objects with the mouse and moving them to the appropriate locations. In keeping with research by Birdwhistell (1971), Soudek and Soudek (1985), Kellerman (1992), and Hurley (1992) to mention a few, the culture-specific and genre-specific co-verbal features of language are also highlighted, particularly for learners who prefer the visual mode. This is achieved through the emphasis on paralinguistic strategies, the inclusion of the 'visual transcripts' for media texts, and the associated search feature for classifications of visual elements of texts by illocutionary intent or function.

Having reviewed the findings of this work as a whole, and the package realised as a result of these findings, we will now review the conclusions reached in individual chapters for more details on the points raised above.

7.2.1 Summary and conclusions from Chapter 1

In Chapter 1, we illustrated the breadth of scope of influencing factors on the development of language learning methodological principles, and how these principles have been realised in approaches to the incorporation of technology in language learning programs. We surveyed the terms that have been used to refer to various roles which computers have been allocated in both general learning and language learning. The term 'CELL' referring to computer *enhanced* language learning was introduced as the preferred term to describe the instructional design model proposed in this work and the package based on this model. CELL was also distinguished from CALL in that CELL carries the interpretation of learning being made qualitatively *better* in certain critical ways through the use of the computer.

In this context, a sociocultural paradigm was introduced to CELL instructional design as encompassing elements of humanism, cognitivism, and the dynamic construction of meaning identified as necessary to the creation of a learner-centred multimedia CELL software design model. Finally, the results of a survey were presented to illustrate the need for a CELL instructional design model that fits with teachers' perceptions of how

languages are learnt and how they should be taught. In this survey, 74% of language teachers at all levels of educational provision indicated that their greatest needs were either for software more appropriate to their purposes, or for training in how to produce compatible software for themselves.

7.2.1.1 Future needs in Teacher Education for CELL

The findings of this survey indicate the crucial need to expand on the number and breadth of teacher in- and pre-service training courses in CELL and CELL design, also advocated by Wolfe (1993: 183). These days students are usually more conversant with computer technology than teachers, as a result of courses available in keyboarding skills and information technology in schools, and their exposure to technology outside of the classroom. Teachers, on the other hand, need training to gain the requisite familiarity with the technology and need access to it. Without this experience, they cannot be expected to become experts at programming or to create software that excites and motivates their students to experiment and learn with it.

Another problem is that of cost, and on this issue, it is important to see to what extent the expense is only perceived, and what lower-cost alternatives can be arranged. Educational institutions that cannot afford state-of-the-art technology can often find much cheaper and functionally satisfying solutions in 'older' technology. Factors that should be considered in this case are: flexibility of the equipment (can it be used by other groups of learners for other purposes); compatibility with existing equipment and planned purchases; capacity for being upgraded or expanded; and usefulness to the maximum number of teachers and learners (Tucker & Whiting, 1992). With these considerations, institutions will not find themselves paying out large amounts of money for the latest technology, which, within a year or two, will have become much cheaper and more readily available – or even worse, obsolete.

7.2.2 Summary and conclusions from Chapter 2

Chapter 2 then provided evidence that the number of variables across text, context and task is sufficient to raise serious doubts about the validity of making assumptions about similarities among listening and viewing comprehension tasks, even without the added complication of the role of computers. The problem of grading listening and viewing comprehension tasks for difficulty was then discussed. This discussion concluded that grading determined by the complexity of texts or contexts is too complex a proposition, though tasks can be graded according to the cognitive demands put on learners to respond to them, using a taxonomy developed on the basis of Bloom and colleagues' (1956) *Taxonomy of Educational Objectives* in the cognitive domain.

To cater for the range of other variables identified for texts and contexts, it was concluded that a more practical approach to grading allows learners to select the level of difficulty, and provides them with the information and tools to make their selections. In a CELL context, this could be achieved by teacher/designers providing a range of texts, incorporating a similarly wide range of contexts, into the CELL package, among which learners choose which texts they wish to work on, and at what level of cognitive difficulty. We also stressed the complementarity of listening and viewing comprehension in the provision of appropriate texts. With the use of multimedia texts it is now possible to provide learners with easy access to a widely varying media texts. However, in the choice of these texts for inclusion as resources, teacher/designers need to ensure that the visual channel is informative, that it complements the message conveyed orally, and that learners' attention is drawn to the means through which this complementarity is realised. This can be achieved through the provision of tasks that highlight these features.

7.2.3 Summary and conclusions from Chapter 3

In Chapter 3 we reviewed the range of individual differences that have been identified among learners as contributing to their degree of success in language learning activities, and the range of learning contexts in which this research was based. We also assessed the

capacity for education and awareness-raising to influence these elements of difference in a direction that promotes learning. Claims for advantages of the use of computers were presented, including the capacity of computers to allow learners to work at their own pace, and in their own time.

We suggested that a corollary to these advantages is that learners work in a self-access context, and that this entails the need for learners to be able to manage or direct their own learning. In addition, in a learning environment incorporating the use of CELL software, learner differences in the area of preferred modes of perception (visual, aural, or kinesic) can be catered for, both through tasks designed to exploit different modes, and through the provision of a wider variety of text types.

This chapter then discussed the distinction between learning styles and learning strategies, concluding that styles may be defined as the inherently preferred modes of approach to the perception of learning tasks, whereas strategies seem to be the techniques and methods that learners use to tackle their application to working tasks. Learners' styles need not affect the effectiveness of their final result in solving or completing a task. Learners may be aware of other styles, and may be able to vary their style of approach, depending on the task, or content area. The selection of a different (less preferred) style/approach may in fact constitute the use of metacognitive strategies such as identifying the purpose of a language task, and planning for it (Oxford, 1990: 20). However, learners cannot change their style preferences. Strategies, and clusters of strategies, on the other hand, vary greatly in their effectiveness for different tasks and at different levels of cognitive maturity. There is also evidence that learners can be trained to use different and more effective strategies through awareness-raising in their use in specific circumstances. This lead us to the discussion in Chapter 4, of the learning strategies that have been shown to improve both general learning and language learning more specifically.

7.2.4 Summary and conclusions from Chapter 4

This discussion in Chapter 4 included an examination of learners' reactions to self-direction and autonomy in language learning, concluding that learners differ in their capacity for self-directed learning and their inclination to use it. Some learners naturally prefer to manage their own learning; others can come to prefer it when they have sufficient understanding of how to do it; while yet others may never feel comfortable or successful when required to manage their own learning. These findings point to the need in self-access CELL packages for a flexibility of approach that caters for this range of learner capacity for managing their own learning. Alongside this need is also the need to incorporate information that helps learners increase their awareness of their own learning and their understanding of strategies and approaches to improve this.

These understandings have lead us to the hypothesis that computers can best be incorporated into language learning by allowing learners to make their own choices about the texts they work on, the paths they take through these texts, and the kinds of tasks and tools they use to access these texts. However, this availability of choice by no means precludes a learner's choice to allocate control of her/his learning paths to the teacher/designer of the instructional package. This flexibility in the level of control also entails the provision of explicit information to learners on how to make the choice about what level of control at which to work, as well as information on how to make efficient use of this control in terms of both navigation through the package, and material on which to work. In this way, we maintain, the flow of control through this CELL listening and viewing comprehension package represents an improvement over other CALL packages that have been designed.

In order to achieve the level of control detailed here, learners need to gain an understanding of the strategies that are available to them, and the interaction among them, the framework within which this interaction occurs, as well to practise using effective strategies in context. In order to provide this framework, the literature of both

general learning and language learning was examined for a comprehensive model. Oxford's classification of language learning strategies was found to be the most comprehensive, and the most suitable for modification to the CELL context. However, it lacked the emphasis on paralinguistic strategies that we feel is intrinsic to a multimedia CELL package. It was therefore necessary to modify the framework of Oxford's classification to include a paralinguistic category.

In addition, Oxford's distinction between Direct and Indirect strategies, especially with the addition of the paralinguistic category, was found to be inadequate for a sociocultural paradigm. In order to take better account of the role of interaction in the dynamic nature of the construction of meaning in language learning processes, Oxford's framework has been further reconceptualised into three levels which are progressively more outward-directed: metalinguistic, processing, and interactional. This new framework has then been incorporated into *MMInteraktif* in three main ways. Firstly, less self-directed learners who choose to work in the most structured layer of the package are presented with an overview of the framework, with connections to tasks that practise the various strategies listed. Secondly, tasks are designed such that the more effective strategies are incorporated into the working of the tasks. Thirdly, to assist with the development of metacognitive strategies, tasks are labelled with their cognitive level and classification, and learners can go at any time to the overviews of both the cognitive taxonomy and the strategy overview.

7.2.5 Summary and conclusions from Chapter 5

Chapter 5 brings together the findings from the disparate fields examined in the previous chapters, to arrive at a coherent model for the design of learner-centred multimedia CELL software. It is here that the framework is put into place for the step-by-step description of the flow through *MMInteraktif* that comprises Chapter 6.

Firstly, the main elements of learner-centred methodology – humanism, cognitivism, and learner-centredness – introduced in Chapter 1 are revisited and links made into the instructional design model. Then there is a review of various approaches that have been taken to instructional design, both at a theoretical level, and in the realisation of software packages. Following an examination of Hubbard's classification of design approaches, comprising Behaviourist, Explicit Learning, Acquisition Oriented, and Learner Strategy Oriented approaches, we concluded that a CELL instructional design model could incorporate aspects of all these approaches, and therefore needed to be specified in detail. Hubbard's Development Module was used as the basis for discussion of features intrinsic to a CELL instructional design model, and features of *MMInteraktif* were mapped against these.

We concluded that the help and feedback components of the *MMInteraktif* were critical aspects of the sociocultural paradigm within which the package has been developed, as were the Navigation elements reflecting learner control over the flow through the package. The three-layered approach to learner access to the package was therefore regarded as representing an appropriate and innovative realisation of the sociocultural paradigm implemented in a learner-centred CELL software package based on multimedia texts. Thus, a novice learner in the area of computer use and self-directed learning could choose to work in the most structured environment, Lesson Sequences.

A learner who is more focussed on improving her/his cognitive skills through language learning, or specific listening and viewing comprehension skills would decide to work, initially at least, in the Taxonomy Layer. Finally, the most self-directed and self-motivated learners would choose the Browser Layer, for the opportunities it provides for detailed exploration of the media texts, both visual and aural, and for the variety of practice features available for improving specific oral/aural skills. Nevertheless, regardless of which layer they enter the package, learners are able to change the layer in which they are working at any time by clicking on the icon link to the appropriate layer.

7.2.6 Summary of Chapter 6

A summary of the components of *MMInteraktif*, the kinds of tasks represented, and how these relate to the instructional design features presented in Chapter 5 form the content of Chapter 6. The framework of the three-layered approach and the links among the layers is provided diagrammatically here. For each of the layers, the flow or progression of a learner using the package is described, and 'screen dumps' are provided to illustrate the description and intent of each of the tasks described, and the location on the screen of elements described or mentioned.

7.3 Further implications and future directions

Having described in detail the design process of *MMInteraktif*, the reasoning behind this, the model developed from this for CELL instructional design within a sociocultural paradigm, and the actual realisation of the package, we now turn to an examination of the implications of this creation for future CELL design. We also review practical uses to which *MMInteraktif* can be put, either in its present form, or with modifications, and what form these modifications might take. In this we echo Chapelle that:

> the most important question ultimately to be addressed by this type of research [CALL-based] is how CALL activities can be designed and used to facilitate language learning.
>
> (Chapelle, 1994: 41-2)

Several of Pica's (1994: 94) suggestions for research perspectives on questions from the language classroom are applicable to further research using *MMInteraktif* as the mechanism of data collection. Specifically, questions about the effectiveness of activities focussing on comprehension can be investigated using the listening and viewing comprehension tasks contained in this package. Thus, for example, using the data collection feature underlying the package, we will be able to evaluate learners' performance on tasks at different cognitive levels. This will assist us in determining to

what level of cognitive demand individual learners can effectively and successfully deal with the material presented. In collaboration and consultation with learners we will then be able to advise learners on techniques for improvement, on different material to use, and on other parts of the package in which to work.

The development of pronunciation and intonation accuracy can be examined using data collected from learners' attempts at using the various features of the *Practice* menu such as forward and backward build-up, modelling, 'follow words', and echo reading possible with the use of 'slow play'. Currently, such an examination requires the teacher to log in to the area on the computer where learners have recorded their attempts. However, speech recognition technology is a burgeoning area of research. As this technology becomes more sophisticated and easier to use, it will be possible to make comparison charts available to learners, allowing them to identify and focus on areas where their attempts do not correspond with the model.

With appropriate modifications to incorporate stimuli for learner on-task introspection, *MMInteraktif* could also be used to provide data for learning strategy research. In their discussion of research studies to define, classify, and describe learning strategies, O'Malley and Chamot list a series of problems with data collection. Some of these include how to determine 'precisely what students do when using a strategy with a particular language learning task, [...] the relationship between the strategy use and learning outcomes, and to identify the impact of strategy use on second language acquisition' (1990: 221-2). One of the problems O'Malley and Chamot mention with collecting 'on-line' data from learners (by which they mean collecting 'think-aloud' data from learners while they are working on a task), is that of the immense effort required to design, plan, and prepare the study for just a small number of questions with a small number of students.

As Liou's (1995) prototype study has demonstrated, it is possible to incorporate think-aloud elicitation stimuli into a software program designed for other purposes, such as listening comprehension. With the record-keeping facility of *MMInteraktif*, this process could be streamlined as data could be collected and stored asynchronously from a larger number of students, using the same tasks and stimuli. Additional information could also be collected from modifications to the package similar to those Liou made, with multiple choice questions on thinking processes being displayed on the screen before, during and after different stages of working through a task. In *MMInteraktif*, students' learning from awareness-raising in strategy use could also be studied, by comparing the records kept within the program of learners' time spent on tasks incorporating various strategies, and the frequency or appropriateness of their use of the same strategies on other similar tasks.

Also on the topic of research into language learning strategies, Oxford mentions the need for 'more studies on how students choose strategies and on strategy training' (1993: 183), as one of the areas of language learning strategies that requires further investigation. The integrated approach to strategy education taken in *MMInteraktif* is based on learners becoming more aware of the strategies *embodied* in tasks with different goals, such as listening and viewing comprehension. It also relies on the explicit giving of information on strategies conveyed through the information screens in the package, and the explicit labelling of tasks.

Data collected on learners' proficiency in the use of these explicit strategies after working on the package would provide useful information on both strategy choice and the effectiveness of this integrated approach to strategy training. As Schmidt has concluded, 'incidental learning is certainly possible when task demands focus attention on relevant features of the input' (1990: 149). In addition, together with further information obtained by other means, such data could help shed light on which features of the input – in this case, the language material, the incorporation of strategy training with tasks, the

task labelling, or the information screens – different learners find most salient to this particular kind of computer-mediated learning process.

In fact, *MMInteraktif* provides us with a unique instrument with which to investigate the range of learner-computer interactions that Bickel and Truscello (1996: 18) list as being necessary areas of research. These include: the differences between learning strategies used on computers as against strategies used in other contexts; the development of new, computer-specific or software-specific strategies; the emergence of a wash-back effect in strategy use between computer and classroom contexts; and learner-rating of the effectiveness of computers as a tool in their language learning environment. While not yet in a position to deal with all of these issues, because of the careful design of *MMInteraktif* future researchers will be able to draw conclusions about certain specific aspects.

Together with information gathered from other sources such as learner profiles, strategy use questionnaires, and style and strategy inventories, we will be able to determine differences in the use of certain strategies, and the relationship between aspects of learning style and specific strategies practised in *MMInteraktif*, such as inferencing, predicting, and organising one's own learning. A carefully designed evaluation study could also provide quantitative data on the effectiveness of the instructional design of *MMInteraktif* for the learning of the use of certain strategies, for improving listening and viewing comprehension, and for the effectiveness of such an integrated approach compared to previous studies which have separated the language skills from strategy instruction.

This evaluation study would require determining learners' understanding and use of strategies before and after working with the software, possibly using strategy inventories such as that of Oxford (1990:283). Learners' improvement in the skills of listening and viewing comprehension could be investigated using similar activities based on different

texts. Though not discussed in detail in this work, the Author layer of *MMInteraktif* has been designed to build up a suite of authorable lesson templates. It is therefore relatively easy to create several versions of a set of tasks which are similar in type, but based on a variety of different texts.

Data collected on learners' choices to work in any of the layers, their frequency of 'layer-swapping', the time spent in the various layers, and the features they access while in those layers, could be analysed and compared with learner profile information collected using other instruments, such as learning style inventories and progress records. This comparative data would improve our understanding of the relationship between learning style, learner control, and learner self-direction. It would also provide valuable information towards our better understanding of learners' goals when working in this kind of CELL package, and what further modifications may need to be made to means of access and navigation in the instructional design.

In this work, the Appreciation level of the Taxonomy of Listening and Viewing Comprehension has not been exploited. Tasks listed at this level could be designed if feature films, music videos, or other cultural or entertainment media texts were to be presented to learners through the medium of *MMInteraktif*. Information collected on learners' performance on these tasks would provide us with some insights into the relationship between the cognitive and affective domains of processing and learning. As Oxford has commented, we need to:

> [...] reconceptualize L2 learning strategies in a way that includes the social and affective sides of learning along with the more intellectual sides. [...] When strategy training occurs, teachers should help learners develop affective and social strategies as well as intellectually related strategies.
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> (Oxford, 1993: 183)

Following Raphan (1996), *MMInteraktif* could also be used to determine learners' reactions to the help tools incorporated into the package. Information on which tools

learners use with most frequency and for what periods of time is collected by the package. This could then be analysed and compared with learner perceptions of their use of the tools, and also with their perceptions of the degree of helpfulness of each of the tools, such as the grammar notes, the context icon, the practice features, and, indeed, the Browser layer itself. In these ways, *MMInteraktif* could take advantage of 'the ability of computer-based programmes to unobtrusively track the behaviour of learners, [offering] a unique "window of observation" on the processes underlying observed performance' (Burston, 1996: 27).

7.4 Conclusion

As Chapelle comments:

> [...] to begin to address the comparative questions about CALL, it is necessary to specify the other relevant features of CALL contexts, as well as to document and analyze the texts resulting from those contexts so elements of the texts believed to be significant for language learning can be identified.
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> (Chapelle, 1994: 43)

By providing in this work such a level of specification of the salient features of texts (Chapter 2), contexts (Chapters 2, 5 and 6), and tasks (Chapters 2 - 6), we have developed a tool that can be used to assist in the identification of significant elements of language learning in specific CELL learner-computer interactions. However, even with this level of specification, there are several aspects of the philosophy of the package that some learners may not feel afinity for, or that some teachers may find difficult to integrate into their teaching programmes.

From the learner perspective, for example, the absence of a scoring feature, or a translation facility may mean that the package does not fully meet their expectations. Some learners may also find the *hotwords* mechanism for looking up the meanings of unknown L2 words and phrases insufficiently informative, as it does not necessarily

provide L1 translations. It is only when the package is used with learners of different learning styles and needs over a period of time that we will be able to determine the appropriateness of these design decisions or the effectiveness of various features.

Teachers using the package may find the approach taken too language-intensive or time-intensive, in that authoring is transcript-based. This means that, even though authentic texts are used, these texts need to be transcribed in order for lessons to be authored against them. The commitment to the use of authentic texts, while in keeping with findings in SLA research, may not be embraced by some teachers. Indeed, it is often difficult to convince beginning language learners of the usefulness of authentic texts and their capacity to comprehend them. However, it may be that the techniques espoused here are not the only means of authoring using this package – and frequent use by other teachers will produce suggestions for modifications and refinements in this area.

No single language learning software package can be all things to all people and satisfy everyone's requirements for what a package should do or how it should behave. Nevertheless in the design philosophy and software package described here, we have been able to combine research evidence from a broad range of disciplines to produce a package which caters for a broad range of needs. Teachers and learners using the software will be the ultimate judges of its effectiveness and usefulness.