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**INTERACTIVE MULTIMEDIA FOR SECOND  
LANGUAGE LEARNING: A COMPARISON BETWEEN  
INDIVIDUALS AND DYADS IN A HONG KONG  
TERTIARY INSTITUTE**

A thesis presented in partial fulfilment of  
the requirements for the degree of  
Master of Education  
at Massey University

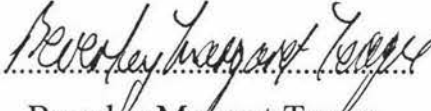
Beverley Margaret Teague

1994



## DECLARATION

I declare that this thesis represents my own work, except where due acknowledgement is made, and that it has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualification.

  
Beverley Margaret Teague

## ABSTRACT

Interactive multimedia appears to offer many advantages for adult learners studying in a self-access centre. However, there has been very little research into the use of multimedia for language learning so the advantages are largely speculative. Computers have a very individual tradition on the one hand, while on the other there is considerable interest in the way in which group learning is facilitated by the computer. This study examines the way in which individuals and dyads respond to interactive multimedia for second language learning. It focuses on three areas: control in the computer environment, adult second language learning and the social dimension of the computer environment.

One of the problems with carrying out research in this area is the difficulty of finding a methodology that respects the learner choice that is such an appealing feature of interactive multimedia, while at the same time making it possible to compare the responses of different learners. The search for a suitable methodology was an integral part of this research. A case study approach was adopted. Two data collecting procedures, both of which relied in the first instance on video recording, were used. As the participants worked with the computer system two video cameras were operating. One camera focused on the computer screen and this was analysed to provide information about the way in which students used the program. The other camera focused on the participants and the computer system and this was used as the focus for stimulated recall. Interview data from the stimulated recall was analysed to provide information about participant response from the technological, socio-affective and cognitive perspectives.

Results indicated that individuals were more aware of the possibilities of the technology and more dynamic in their use of it. They viewed considerably more chapters than dyads and were more conscious of the use of time. Individuals expressed a general preference for working with a partner in the

future. In contrast, dyads viewed fewer chapters than individuals and spent considerably longer on each chapter. Their pace was more leisurely. There were clear examples of cooperation between members of dyads but a number expressed a preference for working alone in the future. There was a strong indication of the use of metacognitive strategies for language learning by all participants. Individuals provided evidence of a greater use of cognitive strategies than did dyads.

The study provided a considerable number of insights into the use of interactive multimedia for language learning by individuals and dyads. It also suggested directions for future research: these included studies to identify repetition, and its various roles, in the interactive multimedia environment, and studies of same gender groups. The methodology adopted appeared to be sufficiently robust to lend itself to use in further research.

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## CHAPTER 1 INTRODUCTION

Hong Kong tertiary education is currently undergoing rapid growth and there is concern that a considerable number of students will have difficulty in coping with the English language demands that they will face. This has led to the emergence of new language initiatives, in particular the establishment of self-access centres, in tertiary institutes in Hong Kong. Self-access centres foster learner autonomy and independence; they provide language learning resources designed to enable students to study in the way that suits them to achieve goals that are personally appropriate. Professor Philip Riley, who has wide experience in self-access learning, (Riley, 1982; 1986; 1987; 1988; Riley, Gremmo & Moulden, 1989; Willems & Riley, 1989) has been closely associated with the establishment of the centres in Hong Kong. Professor Riley spent several weeks in Hong Kong during August and September, 1992 and 1993. During this time he acted as consultant to a number of tertiary institutes setting up self-access centres. On a number of occasions during his visits Professor Riley remarked on the prevalence of advanced computer technology in Hong Kong tertiary institutes and contrasted this with the situation in his own centre in Nancy, France. Indeed, interactive multimedia technology is readily available in Hong Kong and it seems ideally suited to the self-access environment: it offers considerable choice and control, it is convenient to use, and it can be used by an individual student or a group of students. But, very little is known about the way in which students use interactive multimedia. The need for further research into the interactive computer environment has been recognised by a number of people (Marchionini, 1988; Thompson, Simonson & Hargrave, 1992; Park & Hannafin, 1993). Furthermore, it is acknowledged that there is little known about the way in which learners experience the computer environment for second language learning (Chapelle & Mizuno, 1989; Bueno & Nelson, 1993). Brierley and Kemble (1991, p.1) note that the interests of teachers of foreign languages in higher

education "have hitherto not been the most amply served by the literature on the application of information technology to the teaching and learning of foreign languages". This suggested that there was a need for research into three separate, but not necessarily unrelated areas, the interactive computer environment, second language learning and higher education, all three of which converge in self-access centres in Hong Kong.

It was decided that the study should investigate the learning experience of both individuals and dyads learning English as a second language using interactive multimedia in a self-access centre. Both self-access centres and the use of computers are traditionally associated with individualised learning while theory, research and practice more often support the concept of learning as a social process. The inclusion of both individuals and dyads would enable the individual versus social dichotomy to be explored. Furthermore, when sophisticated technology is being introduced into the learning environment it is important to know how individuals and groups interact with it in order to better support their learning. It was decided to compare the learning experience for individuals and dyads from the cognitive, social and technological perspectives by investigating what learners do, their level of engagement with the technology and the learning environment, and their need for social support.

The approach taken falls within the realm of interpretative research in that the study seeks to describe and understand the behaviour that learners exhibit in a largely unexplored realm. Learners are left free to do, or not to do, as they choose. The researcher's position is neutral and is summed up by Hughes (1990, p.93): "About conflicting values the [social] scientist can have nothing to say as to which is to be preferred, but can only review the likely outcome of the various value alternatives." However, interpretive research, with its concern for qualitative data, does not preclude the use of quantitative data when this will facilitate interpretation of the situation under investigation. Both types of data are included in this study.

The research is set within a theoretical framework of learning as an individual pursuit and learning as the outcome of a social process. When computer technology entered the learning environment in the sixties it was seen as a way of individualising learning (Martin & Norman, 1970). The history of computers in education indicates a strong commitment to individualised learning (Reiser, 1987). As the importance of the social dimension of learning became recognised this emphasis changed. Attention focused less on the computer and learning outcomes and more on group learner interaction around the computer (Anderson & O'Hagan, 1989; Bueno & Nelson, 1993; Cummings, 1985). However, recently there has been a renewed interest in the computer as an ideal medium for the individualization of learning. This is partly the result of developments in computer technology that have encouraged researchers to think in terms of "the design and production of multiple versions of lessons and the creation of complex algorithms to adapt instruction to individual needs" (Hooper, 1992a, p.21). In contrast to this individual view, learning with computers often takes place in small groups. There is a considerable body of research to support the benefits of group learning in the computer environment (Eraut & Hoyles, 1988; Hooper, 1992a, 1992b; Hooper & Hannafin, 1988). The ambivalence that exists about the role of the computer in both the individual and social contexts of learning suggests that there is a need for research that focuses on the learner both as an individual and as a member of a group

The purpose of the investigation was to observe events as they happened in a naturalistic environment so the research was responsive to the learners, and took its direction from them. The preliminary study was the first step in the process of deciding what might be a proper area of investigation within this environment. From the very first stage the learners took control by suggesting and implementing their own plan rather than adopting the plan suggested to them. The pilot study then evolved from the preliminary

study. But even the pilot study was not static and there was further learner driven evolution during this stage. Similarly, the analysis of the data was determined after the data had been collected; categories to which the verbal data were assigned were determined only after careful study and reflection.

Chapter 1 Introduction includes the background to the research and explains the rationale for the approach adopted. Chapter 2 Literature Review reviews the literature in those fields that the preliminary study suggested as appropriate. These include individual and social learning, control in the computer learning environment and adult second language learning. At the end of Chapter 2 the questions that this research sets out to answer are formulated. Chapter 3 Methodology describes the preliminary study and the pilot study that preceded the main study and explains their relationship to the main study. It then describes the main study, including the data collection and analysis processes. Chapter 4 Results presents comparisons between individuals and dyads in the areas of technology, cognition and socio-affective responses. Chapter 5 Discussion first examines the use of the second language for interviewing and the reliability of verbal data. It then discusses the results in relation to theory and research in the areas of control in the computer learning environment, adult second language learning and the social dimension of learning. Chapter 6 Conclusions presents the main conclusions arising from the study and suggests possible areas for future research.

## CHAPTER 2 LITERATURE REVIEW

### 1.0 Introduction

Interactive multimedia, an increasingly sophisticated development in computer technology, is becoming more readily available and more frequently used, particularly in tertiary institutes in Hong Kong. However, as was stated in the Chapter 1, the need for further research into the interactive environment is recognised (Marchionini, 1988; Thompson et al. 1992; Park & Hannifin, 1993) as is the need to know more about the way in which learners experience the computer environment for second language learning (Chapelle & Mizuno, 1989; Bueno & Nelson, 1993). Furthermore, the scarcity of research literature on CALL methodology, especially anything with particular reference to Hong Kong has been noted (Cheung & Harrison, 1992).

Before reviewing the literature the technology will be described because of the confusion that can arise between multimedia and hypertext. Multimedia has been described as "an electronically and conceptually integrated multimedia collection of learning resources, with all the components in one location" (Collis & Moonen, 1992, p.210). This definition is appropriate to the learning environment described in this study since computer, colour monitor, laser disc player, speakers and microphone are all in the one room, and all are connected. However, the system may also fall within the definition of hypertext or hypermedia since definitions of hyper include nonlinear or random. For some this makes it distinguishable from interactive multimedia (Dede, 1987; Marchionini, 1988; Thompson et al, 1992). Others make no such distinction between hypermedia and interactive multimedia (Reeves & Harmon, 1991; Park & Hannafin, 1993). Although it is useful to have a working definition of the technology that is being used in this study, precise categorisation as either interactive multimedia or



hypermedia is elusive. For the sake of consistency it will be referred to as multimedia although reports on hypermedia may be referred to where appropriate. Perhaps more important than the name by which the system is known are the characteristics by which it is defined: the system is interactive, it is responsive to individual demands and it provides user-directed, nonlinear methods for organising and accessing information.

## 2.0 Control in the Computer Learning Environment

When computers first entered the learning environment in the sixties they were perceived as the focus of a highly structured learning environment in which individual learners could exercise considerable control over their learning. Programs were heavily influenced by Skinner's Behavioral Psychology Theory and control was generally described in terms of repetition and pacing. These early programs fell from favour because of their limitations (Martin & Norman, 1970; Reiser, 1987) and there is a tendency to refer to this type of learner control in dismissive terms. For example, *The European Connection*, a multimedia program designed for learners of business English, has been described as "a language lab with pictures, in which students can only listen and repeat" (Coleman, 1991, p.105). A number of reviews of *The European Connection* have appeared in the United Kingdom press (Ariel, 1989; Fagan, 1989; Reynolds, 1989). These reviews are primarily descriptive and the criticism cited by Coleman does not appear to be supported by any research findings. However, in contrast to the generally negative regard in which this level of learner control is held it has been suggested that students who have repeatedly experienced failure with past learning may benefit from the opportunity for control or self-management such programs provide and there may be advantages in social and emotional terms rather than academic performance outcomes (Ryba & Chapman, 1983). This suggests that, even if the criticism that Coleman reports is correct, there may be advantages to be derived from a program that is "a language lab with pictures". Many

students entering Hong Kong's tertiary institutes have grades D or E for English in their most recent public examinations (Figures for 1993 City Polytechnic of Hong Kong indicate that among some groups of learners the percentage of those with D or E was 98%). These students often lack the confidence that is needed to exploit the language skills that they do have, or to actively seek the language skills they need, in order to cope with an English medium tertiary environment. If programs that offer only limited control do have a contribution to make in the learning and social development of certain students, or at certain stages of learner development, they cannot be ignored. However, learner control is generally perceived in wider terms than "listen and repeat" and, despite considerable disenchantment with the limited learner control offered by early computer programs, the interest in learner control has remained an important concern in the computer environment.

Control in the computer environment took on a whole new meaning with the revolutionary perspective offered by Papert (1980). Papert advocated personalised learning environments in which children were in control instead of being controlled. This was largely a rejection of the control imposed by task oriented programs; even though newer programs offered a wider range of options learners were constrained by the demands of the task. Papert believed that by controlling the computer children could embark on an exploration of their own thinking processes. This relationship between control and thinking processes has resulted in a great deal of attention being focused on the degree to which learning with computers encourages the development of metacognitive skills which in turn leads to a high degree of learner control (Babbs & Moe, 1993; Paris & Winograd, 1990; Reeve & Brown, 1985; Brown, Bransford, Ferrara & Campione, 1983; Ridley, Schutz, Glanz & Weinstein, 1992; Holmes, Robson & Steward, 1985). The computer learning environment is viewed as highly supportive of the metacognitive perspective as it is conducive to promoting thinking about the learning process (Pea, 1987). The importance of



metacognitive knowledge in second language learning is recognised Wenden, (1987) and O'Malley, Russo, Chamot and Stewner-Manzanares (1988) have provided a clear contrast between cognitive and metacognitive strategies in second language learning. It was decided to use the O'Malley et al. list of learning strategies as the basis for the exploration of cognition in this study. It seemed that their list offered the possibility of linking cognition and second language learning in the interactive multimedia environment. And, more particularly, it offered the possibility of linking metacognitive strategies with the interactive multimedia environment. Whether or not the interactive multimedia environment encourages the use of metacognitive skills that lead to a high degree of control for adult second language learning is of considerable interest. It was speculated that the O'Malley et al. list would serve as a valuable data collecting tool, and that by using it, insights into this environment would be gained.

The learner control that is demonstrated in a particular situation must be a reflection of the degree of the choice that is available. Laurillard (1987) observes that computer assisted learning has imposed unnecessary restrictions on student's freedom to choose and in a historical review of teaching based on discovery, exploration and individual experience Jacobs (1992, p.119) finds that "computer-assisted instruction has so far tended heavily towards the programmed variety". This means that effectively the student's freedom to choose is largely task governed and it is in such environments that choice is usually studied. The limitation of task governed situations has been recognised by Salomon, Perkins and Globerson (1991), who in a discussion of how technologies can aid in cognitive processing, discuss the importance of mental processes being nonautomatic and under the learner's volitional control, rather than that of the task or the materials, and the importance of such processes being effort demanding. They note that recent research has shown that students who are mindfully engaged in a task mobilise more of their cognitive resources than those who are not similarly engaged. The state of mindfulness is described as the employment

of nonautomatic, effortful, and thus metacognitively guided processes (Salomon & Globerson, 1987). However, Salomon, Parkins and Globerson (1991), when discussing the role of computer tools note that despite the opportunities that they present for mindful engagement "this does not mean that one could not use the tool in a mindless trial-and-error fashion; the more open ended the activities afforded by a tool, the more freedom the learner has in becoming, or not becoming, mindfully engaged in them" (p.4).

In situations where mental processes are under the learner's volitional control and not imposed by the task or the material this raises questions about the inclination towards mindful engagement that the learners bring to the learning situation, and the degree to which the learning situation supports mindful engagement. In the study described here the learning environment does not make any specific demands upon the learner or require any prespecified outcomes. There is no evaluation of performance and no system of scoring. The possibilities are indeed, open ended. The learner is in control. Although the interactive multimedia environment may support a range of learning possibilities the way in which learners respond to those choices is of interest in this study especially as Jacobs (1992) notes the lack of agreement among researchers about the way in which learners respond to choice.

Some empirical research, beginning with a classic experiment by Pask and Scott (Pask, 1972), has shown that learners will choose their own best learning strategies if conditions are well planned in advance. However, a mounting body of evidence suggests that learners generally tend not to choose wisely when confronted with learner control systems (Jonassen, 1990) (Jacobs, 1992, p.120).

In contrast Marchionini (1988, p.11) is wholeheartedly enthusiastic when he

says "one of the most exciting potentials of hypermedia is the quantity of learner control it allows."

There have been studies of the control that the learner is able to exercise when using the computer and Laurillard (1987) reports that students using an interactive video cassette program exhibited a wide range of routes through the same material. She noted that the imposition of a program designer's "optimal" route would have seriously constrained the student's own optimal routes. Laurillard also acknowledges that her discussion does not apply easily to non-mathematical models. There is clearly a need to investigate control in the language learning environment, specifically control in the interactive multimedia environment, where students are confronted by a virtual cornucopia of choice. The very notion of an "optimal route" is thrown into doubt when the destination is not clear.

The way in which learners utilise the control available to them is of interest, as is the relationship between control of the technology and the self management of learning. Furthermore, the student's perception of control in this environment is of considerable interest: whether control is perceived as challenging or bewildering may be crucial in determining the degree to which students engage in mindful, self-determined learning tasks. When mature learners are free to control their own learning there is a need to know how they respond to the choice and control that are inherent to interactive multimedia systems designed for second language learning.

### 3.0 Adult Second Language Learning

It has been claimed that in naturalistic contexts language learning is inseparable from language use and that one of the most persistent problems of language teaching in formal contexts is the disjunction that can easily arise between language learning and communicative language use, particularly when learning happens at a distance from the target language

community (Little, 1994). Although English is one of the official languages in Hong Kong, and its use in education and the media is widespread, many Hong Kong students perceive a sense of distance from the target language community that results in the disjunction that Little describes. Little (1994, p.7) reports that Legenhausen and Wolff have proposed a model of language learning as language use and that "In this model language proficiency combines communicative skills with language awareness and is underpinned by language learning awareness". This model implies that equal attention must be given to the internalization of target language forms and the development of analytical skills. It raises the question of how learners are going to internalise the forms of the target language, and here there is considerable support for the memorisation of sentences, both whole and partial (Nattinger & De Carrico, 1992; Pawley & Syder, 1983).

It has been suggested that adult learners may find memorised speech serves a number of purposes: it has an immediate communicative purpose; it enables the adult learner to keep control of topics and thus avoid the risk of the conversation moving into fields that the learner is not linguistically competent to handle; it may provide raw materials for the learner's internal mechanism to work on (Hatch, 1983). The importance of materials for the learner to work on is supported by Little (1994, p.9) who argues that "authentic texts can provide learners (as they also provide native speakers) both with a reason for communication and with the resources from which to construct their message".

In the context of this study some explanation of authentic texts is required: Little (1994, p.9) describes authentic texts as "texts produced in any medium to fulfil a communicative purpose in the target language community." The text used in this study, i.e., *The European Connection*, has been described as "dense and well researched, stuffed with widely usable business jargon" (Coleman, 1991, p.104) so it may be argued that it provides learners with vicarious experience in the target language

community and so functions as authentic text. The emphasis on learner engagement with the text that is referred to above, suggests the learner is engaged in meaningful as opposed to rote learning. However, whether a clear distinction can be made between rote learning and meaningful learning needs to be considered.

An important tenet of cognitive theory was that the degree of meaningful, as opposed to rote learning, of new materials depended on its interaction with the cognitive structures held by the learner (Ausubel, 1963, 1968). According to this theory rote learning involves the mental storage of items which have little or no association with existing cognitive structure, while meaningful learning is described as a process of relating and anchoring new material to relevant established entities in cognitive structure (Brown, H.D., 1980). This does not explain whether these two types of learning are entirely separate or whether there is a point of convergence, or transfer, that would permit rote learning to precede meaningful learning. If, for example, the cognitive structures held by the student could not sustain meaningful learning of new material the question of whether or not the learning environment would support the learner in moving from rote, to meaningful learning, would have to be considered.

It is likely that given adequate exposure to an information rich environment learning would in time become meaningful as more and more of the contextual support was internalised. This suggests a possible learning route from rote, through memory (including memory of the context in which the language occurred) and then to reflection, with each stage characterised by greater internalisation of the learning. It is not intended to imply that all rote learning would follow this route and in the case of adult learners three pre-conditions may be necessary: the learning situation may have to be perceived as personally engaging, the learner may have to perceive the relevance of the situation in which the language is embedded as relevant to his or her own particular language needs, and the learner may have to be

willing to invest time in rote learning. Learners, no matter what their age, may be willing to spend time on rote learning in order to meet the exigencies of a test, but it is unlikely that adults, when placed in a complex language learning environment, in which there are no formal requirements imposed, would choose to invest time in rote learning unless they perceived there to be some personal benefit in doing so. This suggests that personally relevant rote learning may be a component of conscious learning and that learning environments that support memorisation may be of considerable benefit, particularly to adult learners.

Another aspect of memorisation that is important here is derived from studies initiated by Bransford and his colleagues at Vanderbilt. In an early study learners were asked to recall strings of words (Bransford & Franks, 1971) and results showed that rather than recalling strings of words learners were actively and constructively processing information and inferring meaning. Gardner (1985) reports that the Bransford and Franks (1971) study suggested that certain activities such as drawing inferences, supplementing and interpreting, were common, if not automatic, in the processing of verbal material. Other studies focussed on the way in which additional non-textual information influenced the way in which a text was interpreted (Bransford & Johnson, 1972). The presence of "organising schemata" including stories, scripts and other inferential and organising processes that individuals bring to the learning task was posited as being influential in the process of interpretation. This offered an alternative to standard information processing paradigms of cognition and recognised that individuals bring a diversity of experience to the learning situation and use that prior experience to interpret new information (Gardner, 1985). The theory of organising schemata has ties to Bruner's theory of concept formation (Bruner, 1983; 1985) but attention now focuses on the depth with which material is processed; whether only superficial aspects are attended to or whether new material is assimilated into various schemata that already exist.



Much of the discussion of learning in the computer environment focuses on task centred learning and smaller units of knowledge but discussions that relate to adult language learners seem to recognise the need to look at more holistic learning and to consider the way in which adults relate new information to that that they already hold. Whereas cognitive theory describes meaningful learning as a process of building up, organising schemata suggest a top down model of meaningful learning. The two theoretical perspectives are not mutually exclusive but the presence, or absence, of organising schemata may be of particular significance when different cultures meet, as happens in second language learning. The absence, or even the limitations, of existing schemata could strongly influence the degree of assimilation of new information that is present in the learning environment.

More recently Bransford and his colleagues at Vanderbilt (The Cognition and Technology Group at Vanderbilt, {CTGV}), have focussed their attention on multi-explorations of situations presented in video discs (CTGV, 1990; 1993). This they have termed "anchored instruction." They are trying to recreate some of the advantages of in-context learning ("situated cognition") that are present in real world learning (Rogoff & Lave, 1984; Brown, Collins & Duguid, 1989). They are interested in anchoring, or situating, instruction in the context of information-rich videodisc environments that encourage problem solving . Problem solving, and not language learning per se, is the focus of their work but nevertheless there may be some implications for this study. One of the main objectives in using the anchors is to help students see the need for new learning and to set important learning goals. Another objective is to help create environments that are conducive to cooperative learning. Whether multi-explorations of situations presented in video discs will help second language learners achieve these objectives is of some interest. Many have written on situated cognition (see Educational Technology, March, 1993) and Damarin (1993) uses a metaphor that may prove apt here. Damarin draws a

distinction between travel and tourism:

A tourist's goals are typically to see all the sights, learn their names, make and collect stunning pictures, eat the foods, and observe the rituals of the city. A traveller, on the other hand, seeks to understand the city, to know and live briefly among the people, to understand the languages, both verbal and non-verbal, and to participate in the rituals of the city. At the end of equally long visits, the tourist is likely to have seen more monuments, but the traveller is more likely to know how to use the public transportation (Damarin, 1993, p.29).

The metaphor of tourists and travellers presents an interesting perspective on the way in which learners respond to a particular environment. Whether it is appropriate for second language learners is uncertain.

No discussion of adult second language learning would be complete without considering the work of Krashen. Krashen (1982) distinguishes between conscious learning and subconscious acquisition of language. Krashen has claimed that the adult second language learner has two means of internalising the rules of the target language. The first is acquisition, a subconscious and intuitive process of constructing the system of a language, and the other is learning, a conscious representation of rules usually in a deductive or pedagogically orientated context. Of greater interest here is acquisition. The input hypothesis forms part of Krashen's theory of second language acquisition:

The Input Hypothesis claims that we acquire language in an amazingly simple way - when we understand messages. We have tried everything else - learning grammar rules, memorising vocabulary, using expensive machinery, forms of group therapy, etc. What has escaped us all these years,



however, is the one essential ingredient: comprehensible input (Krashen, 1985a, p.vii).

Krashen defines comprehensible input as input that contains "structures that are a bit beyond our current level of competence" (Krashen, 1985a, p.2). Krashen's focus here is primarily on the acquisition of grammar but he acknowledges the importance of extra-linguistic context and refers to input as "the essential environmental ingredient" (Krashen, 1985a, p.2). However, comprehensible input is not, in itself, deemed to be sufficient for language acquisition to occur. The language learner must be receptive to the input. The degree of receptiveness will be influenced by the "affective filter." The "filter" is described as an internal processing system that subconsciously screens out incoming language based on what psychologists call "affect" and it can include motives, needs, attitudes and emotional states. The filter is credited with a number of roles in the language acquisition process, one of which is determining the selection of target language models, while another is determining which part of the language will be attended to first (Dulay, Burt & Krashen, 1982). According to Krashen (1985a, 1985b) the degree to which the affective filter is used will determine language learning success. The language learner who feels threatened, and anticipates failure, may filter out comprehensible input. In contrast the learner who is not concerned about failure, and even temporarily forgets that he or she is hearing or reading another language, will filter out less of the comprehensible input.

Second language learning theory that hypothesizes the presence of an affective filter may provide an unexpected link between second language learning and general learning. The importance of mental processes being non-automatic and under the learner's volitional control (Salomon Globerson and Guterman, 1989) raises a number of issues in an environment which is not task structured. If, as Salomon et al. suggest, only non-automatic mental processes can lead to mindful engagement, this poses questions

about how mindful engagement is to be evaluated. Students who are consciously striving to understand some aspect of the language may be considered to be mindfully engaged and hence learning the target language. However, in an environment that presents a rich language learning experience students may be less inclined to focus on a particular aspect and more inclined to acquire, or not to acquire, as the case may be, the language through subconscious and intuitive processes. The relationship between non-automatic, mindful engagement, and subconscious and intuitive processes demands some consideration in the interactive multimedia environment.

Multimedia, presenting as it does information through various sensory channels, offers a rich resource from which to draw meaning. Winn (1993, p.19) describes these environments as "full of information, but relatively unconstrained by instructional prescriptions" and argues that the learning that video programs foster is a result of student interaction with the video, not with hard-and-fast instructional activities prescribed by the designer. These views credit the learner with considerable autonomy in the learning process. The absence of hard and fast instructional activities is possibly a source of concern in teacher centred classrooms where control is largely in the hands of the teacher. However, if it is accepted that multimedia is a rich source from which to draw meaning and that in using it learners will employ an affective filter this means that the learner will select those parts that he or she wants to attend to. At the point of deciding to attend, and the assumption here is that the degree to which the learner perceives the input as comprehensible will largely determine this, then the learner does become mindfully engaged, and the mental processes become non-automatic and under the learner's volitional control.

The importance of mental processes being under the learner's volitional control may increase as learners move beyond introductory learning, as have the learners in this study. In their discussion of Cognitive Flexibility

Theory Spiro, Coulson, Feltovich and Anderson (1988) distinguish between introductory learning, advanced knowledge acquisition, and practical expertise in a subject area. They observe that there are problems for learners moving from introductory learning to advanced knowledge acquisition and that "obstacles to advanced knowledge acquisition include conceptual complexity and the increasing ill-structuredness that comes into play with more advanced approaches to a subject area" (p. 375). Ill-structured domains are described as domains that have both content complexity and irregularity of application (Spiro & Jehng, 1990). Language learning domains, beyond the elementary level, seem to fit within this description. Spiro et al. (1988) say:

Cognitive flexibility involves the selective use of knowledge to adaptively fit the needs of understanding and decision making in a particular situation; the potential for maximally adaptive knowledge assembly depends on having available as full a representation of complexity to draw upon as possible (p. 378).

Furthermore, and of particular relevance to this study, is the fact that Spiro and Jehng (1990) argue that cognitive flexibility theory is particularly suited to the special needs of random access instruction. Ill-structured domains and random access instruction are both concerned with conceptual content that tends to be more complex than superficial introductory level familiarity. Spiro and Jehng note that ill-structured domains open the way for the goals of learning, and the way in which learning is assessed, to shift. Goals and assessment are also of interest when random access instruction is being used. Spiro and Jehng suggest that learning and assessment should shift to the mastery of important aspects of complexity and the ability to transfer to new and greatly varying contexts. They consider schemata, as discussed earlier, to be the retrieval of intact, rigid, precompiled knowledge structures and not sufficiently adaptive to meet the needs of ill-structured domains.

Here they appear to be somewhat at variance with the supporters of situated cognition.

The role of memorisation and mindful engagement for adult second language learners in the multimedia environment are of considerable interest. The competing claims of situated cognition and cognitive flexibility theory are of some interest but it is not anticipated that it would be possible to make more than incidental reference to these important theories of cognition in this study.

#### 4.0 The Social Dimension of the Computer Environment

The use of computers was initially associated with the individualisation of learning but the sociohistorical view of learning, particularly as espoused by Vygotsky (1976), provided new insights into the learning process. Rogoff (1990, p.14) reports that "From the sociohistorical perspective, the basic unit of analysis is no longer the [properties of the] individual, but the [processes of the] sociocultural activity, involving active participation of people in socially constituted practices". From this perspective learning is perceived as a network of relationships in which regulative outcomes are based on social interactions with others. Vygotsky (Wertsch, 1985) further emphasized the social roots of cognition through his discussion of the "zone of proximal development." Parents, teachers and peers, operating at a level just beyond that of the learner, are said to be operating in the learner's "zone of proximal development." With their support and encouragement the learner strives towards new cognitive awareness. It has been noted that although Vygotsky's work principally discusses children, identical processes can be seen operating in the learning adult (Tharp & Gallimore, 1988).

Despite the widespread acceptance of the "zone of proximal development"

concern about "zones" and the "more experienced other" is voiced by Tudge (1990) who has carried out research, the aim of which has been "to disentangle competence and confidence." Tudge's research focussed on children and indicated a surprising amount of regression for all children except lower partners. Tudge focussed on a number of issues to account for this, including what he described as "The traditional, narrow, interpretation of the zone of proximal development." Tudge observed that "impersonal feedback (from the materials alone) may be as effective as interpersonal assistance in promoting development within the zone of proximal development" (p.166). In a more recent study carried out in the hypermedia environment (Repman, Weller, & Lan, 1993) doubts are raised about who benefits in collaborative learning situations and whether collaborative learning offers advantages over individual learning to all learners. Repman et al. find that the actual identification of zones of proximal development poses something of a problem.

The Vygotskian perspective has led to an interest in the social and cognitive interactions in educational environments (Clements & Nastasi, 1988; Paris & Winograd, 1990), and an interest in computer-assisted cooperative learning (Johnson & Johnson, 1986). Pea (1987) argues that the social support provided by more competent others can be broadened to include computer systems, and Rogoff (1990), also supports the inclusion of the computer as a legitimate aspect of the sociocultural environment. The view expressed by Tudge re the role of impersonal feedback in the "zone of proximal development" seems to lend support to the views of Pea and Rogoff.

The nature of the support that the computer provides to the individual learner, and to the group of learners, is of particular interest in this study. Whilst there is considerable support for tasks in a computer environment being carried out more successfully within a social context (Clements & Nastasi, 1988; Hay, 1993) computer applications have a very individualistic

tradition. Much of the literature on interactive multimedia stresses its value for individual learners (Gayeski & Williams, 1984; Bangs, 1987; Coleman, 1987; Hill, 1987). In support of this it has been claimed that real life decision making and reasoning are mainly a solo affair (Salomon et al., 1991). Furthermore, interactive multimedia is often associated with training programmes (Branch, Ledford, Robertson & Robinson, 1989; Topham, 1989) with much of the software available for mature learners intended for tutorial purposes, and so it is frequently claimed that it is particularly suitable for the individual learner. This is in keeping with the tradition of computers which tends to place emphasis on the product, or outcome, of the learning.

Hooper (1992a) examines the instructional and social benefits of cooperative learning and notes that Berliner (1991. Cited in Hooper, 1992a) says that education - even when carried out with personal computers - is an inherently social process. Pea (1987) does not assume that self-sufficiency is the objective of computer learning activities. He says that solo performances are not realistic in terms of the ways in which activities are organised and accomplished in the real world. However, Hooper (1992a) also notes that recent developments in computer technology have rekindled interest in individualization. Certainly the technology based learning environment is primarily presented as an individual learning experience in a recent publication on advanced educational technology (Engel, Bouwhuis, Bosser & d'Ydewalle, 1992).

There is considerable ambivalence about the individual and social context of computer learning. It has been observed that there are certain applications of the technology that are better with a group of users (Mashiter, 1989), and by implication, there must be certain applications, or uses, that are better with individual learners. But also of interest is the role of the computer in any interactions.



If the computer assumes the role of "more competent other" the way in which it fills this role in an environment that is not product oriented needs to be considered. Furthermore, the interaction between the individual learner and the computer may be different from the interaction between a group of learners and the computer: the intra action within the group may significantly influence the role of the computer and the process and product of learning. Although there is considerable interest in, and support for, small group discussion around the computer (Cummings, 1985; Levy & Hinckfuss, 1990; Light, Foot, Colbourn & McClelland, 1987; Teague, 1992) the scarcity of pupil-pupil dialogue has been noted by at least one researcher (Anderson & O'Hagan, 1989). Furthermore, ethnicity may influence styles of classroom discourse and this could have an affect on discussion around the computer. Little (1986; 1987a; 1987b; 1988; 1993; 1994; Little & Davis, 1986) is involved in research into information systems and technologies for second language learning. He argues that:

information systems and information technologies can promote the development of learner autonomy to the extent that they can stimulate, mediate and extend the range and scope of the social and psychological interaction on which all learning depends (Little, 1994, p.1).

In the context of this study it is the extent to which the interactive multimedia environment can stimulate, mediate and extend the range and scope of social interaction that is of considerable importance. Little undertook the development of Autotutor as a means of delivering authentic video materials to individual language learners working in self-access mode (Little & Davis, 1986). As the Autotutor project has developed so has the author's interest in exploring the possibility of using Autotutor with small groups of learners rather than with individual learners. The learners who have taken part in the Autotutor experiments come from many different countries. Little (1993, p.9) notes that "Different educational cultures

condition learners in different ways, and this conditioning inevitably helps to shape the way they work through their Autotutor programs." He also reports that the Autotutor program stimulated lively conversation among the learners.

However, the conditions under which second language learning occurs may vary enormously from context to context. Little reports on a learning environment that characteristically includes speakers of different languages, whilst this study takes place within a learning environment that is characterised by the possession of a common language by the participants. Whereas group members who do not have a common language must negotiate meaning in the target language, those who have a common language may be less disposed to negotiate in the target language. All the participants in this study have Cantonese as their first language. Of interest here is the report from one experiment (Little, 1993) in which it was found that when groups of learners all had the same first language they seemed much less ready to use their target language. Little notes "as a matter of general principle we need to give special attention to the problem of stimulating a learning conversation in the target language when all the learners share the same mother tongue" (Little, 1993, p.9).

Furthermore, Little's comments on educational conditioning need to be considered together with findings from other researchers. Sato (1990) found that in two groups of university students for whom English was a second language, Asian learners contributed to classroom discussion far less than did non-Asian learners. Furthermore, Sato observed that Asian learners appeared to be more dependent upon teachers for providing them with opportunities to talk in the classroom than were other learners. Also of interest here is the extent to which non verbal language is a part of the negotiating process.

Rogoff (1990), while supporting the role of language in the Vygotskian



perspective of cognitive development says "I prefer to view communication more broadly to include nonverbal as well as verbal dialogue rather than to focus so exclusively on words" (p. 17). The role of nonverbal communication is an important aspect of linguistic study (Harper, Weins and Matarazzo, 1978; Wallwork, 1984). Furthermore, Neu (1990) believes that in order to assess an adult second language learner's acquisition of communicative competence nonverbal communication cannot be overlooked. These views open up the question of non-verbal communication and this may be an important consideration when interaction between learners is being considered. The role and style of interaction between members of a dyad may be highly significant in determining how their learning experience is shaped and perceived. Whilst this is acknowledged the detailed analysis of the verbal and non-verbal interaction between members of dyads would be a major study in itself and will not be undertaken here. However, verbal and non-verbal interaction that is observed in the course of the study, and appears to be relevant to the aims of this study, may be referred to.

There is a need to explore the way in which dyads and individuals use interactive multimedia for second language learning especially as recent developments in computer technology have rekindled an interest in individualization whilst other developments are increasingly turning towards the social context of the computer environment. This study will be directed towards the learners' experience of interactive multimedia for second language learning.

## 5.0 Verbal Reports

One of the main reasons for using verbal data from learners is the difficulty in determining what they are actually doing through observation alone. The possibility of using interview data to give access to covert forms of learning behavior was first suggested by Naiman, Frohlich, Stern and Todesco (1975. Cited in Cohen, 1987). The need for access to such learning became

apparent in the preliminary study (Teague, 1992). There it became obvious that neither teacher observation, nor student dialogue generated as students worked around the computer, would provide the insights needed to understand the interactive multimedia experience. The literature on verbal reports was reviewed in order to assess the advantages and disadvantages of using them in this study.

Although retrospective verbal are frequently used as data a number of people have expressed reservations about their use (Bruner, 1985; d'Ydewalle, 1992; Ericson & Simon, 1980; Garner, 1988). One of the main reservations about the use of verbal reports focuses on whether processes that have become automatic are amenable to this type of scrutiny; it is argued that recurrent processes that have become automatic are particularly problematic since the more routinized a process is, the less reportable it may prove to be since it is not attended to. In support of this argument the tendency for experts to report their cognitive processes according to implicit or common sense theories about those processes, rather than by actually investigating them has been remarked upon (Nisbett & Wilson, 1977). Although the availability of automatic processes to scrutiny was clearly a concern, the degree of automaticity and non-automaticity demonstrated by the participants in this study would remain speculative until the data were collected and analysed. Furthermore, it has been remarked that verbal report data are limited to learning strategies that the learner is conscious of. As such, verbal data do not purport to give access to second language acquisition processes (Cohen, 1987), that is assuming that the distinction that Krashen (1982) makes between second language learning and second language acquisition exists.

There were two other issues related to verbal reports that needed to be considered. The first issue relates to the verbal facility of the participants. It is argued that verbalising difficulties can mask strategic strengths (Garner, 1988) and it has also been said that not only do learners sometimes know

more than they tell but sometimes learners also tell more than they know (Nisbett and Wilson, 1977). Furthermore, there are considerable individual differences in the tendency to verbalise. Clearly, verbal facility will have a considerable impact on the verbal data volunteered. This is an important consideration when the target group is made up of learners who have been identified as being particularly weak in second language skills.

The second issue related to how recently the learning being reported had occurred. d'Ydewalle (1992) reports that in retrospective verbal reports the ideal case is when the retrospective report is given immediately after the task is completed. He says that much of the information is still in short term memory and can be reported directly without error prone retrieval from long term memory. Cohen (1987) discusses retrospective reports in terms of the information being retrieved from short term memory, i.e., within 20 seconds or so, or of being retrieved within about an hour of the event. He refers to both of these situations as immediate retrospection. However, in the latter situation the data may be only somewhat more complete than data from delayed retrospection, i.e., taking place a few hours, days or even weeks after the event since it appears that the bulk of the forgetting takes place immediately after the mental event.

Despite these reservations there is also considerable support for verbal data. It has been suggested that the extent of the conscious processing that learners carry out has been underestimated (White, 1980). If this is so then a considerable amount of their cognitive processing should be available to scrutiny. Even though Hayes and Flower (1983) are not convinced that verbal reports can do justice to many important psychological processes, which, they say, are completely unconscious, they nevertheless endorse the collection of verbal report data. Verbal report data are considered beneficial in providing direct evidence about processes that are otherwise invisible. They yield rich data and promote exploration of cognitive processes. Ericsson and Simon (1980) say "verbal reports, elicited with care and

interpreted with full understanding of the circumstances under which they were obtained, are a valuable and thoroughly reliable source of information about cognitive processes" (p. 247).

## 6.0 The Research Question

The program used is called *The European Connection*. The program is designed for learners of business English and it offers a great deal of learner choice. Learner choice extends to learners setting their own objectives and monitoring their own progress. The absence of prescriptive tasks is a distinctive feature of the program and makes it highly suitable as an instrument with which to study the way in which different learners respond to a particular learning environment when they are free from imposed constraints. In the research that is reported here hardware and software combine to provide a challenging opportunity for investigating the learning experience of tertiary students in an environment that Winn (1993, p.19) describes as "full of information, but relatively unconstrained by instructional prescriptions".

The focus of this study will be learner insights into the use of interactive multimedia with particular reference to the three areas discussed in the literature review: control in the computer environment, adult second language learning, and the social dimension of the computing environment. It is recognised that within each of these areas there are many research questions that could be asked and it is accepted that limits must be imposed. Therefore, this study set out to investigate the following questions concerning the learning experiences of adults learning English as a second language using interactive multimedia in a self-access centre.

- 1 Do individuals and dyads differ in how they select and process drama chapters from an interactive video program?

This will be examined by a screen analysis of:

- i the number of chapters they choose to do
- ii the order in which they work through their selected chapters
- iii the number of lessons they repeat
- iv use of control keys within chapters to either abbreviate or extend their exposure to that lesson.

- 2 Do individuals and dyads differ in terms of their level of thinking about the learning experience?

These differences will be examined by means of a semi-structured interview and stimulated recall focussing on:

- i the learning strategies that they use
- ii the way in which they describe the technology
- iii the way in which they describe the social experience.

In the process of examining these differences, the words of Gardner (1985, p. 135) will be given due cognizance: "... too much emphasis has been placed on having an experimental procedure without any perceptible flaws or ambiguities; and all too often this emphasis takes place at the expense of considering what is an interesting or important problem". Although answers to the above questions will be sought, other interesting and important problems will be considered as they arise.

## CHAPTER 3 METHODOLOGY

### 1.0 Introduction

This chapter presents an overview of the preliminary study (Teague, 1992) that was carried out in order to identify aspects of interactive multimedia that invited further research and to consider appropriate methodologies for investigating the interactive multimedia environment. After the preliminary study has been discussed the pilot study that preceded the main study is then reviewed. During the pilot study the methodology went through a number of revisions. The absence of an established methodology for investigating this complex environment made it necessary to continuously review and adapt the methodology in response to the previous stage of the study. The changes in methodology are documented in some detail because they may be of interest to others who are interested in studying the multimedia environment from the learners' point of view. The revised methodology is described and this is followed by a description of the sample, the research design, a description of the technology, the procedure followed, and, finally, the data analysis.

### 2.0 Preliminary Study

#### 2.1 Description of preliminary study

In a multimedia learning environment students are required to manipulate a sophisticated array of technology whilst at the same time participating in a learning situation, the substance of which is unrelated to the technology through which it is being accessed. A search of the literature failed to

reveal any clearly defined or articulated methodology for investigating this complex environment. The preliminary study carried out prior to this research used a methodology derived from a study of computer learning by Levy and Hinckfuss (1990) that focused on the dialogue between learners.

In the preliminary study (Teague, 1992) four students learned how to use the program. They then worked in mixed gender pairs and used the program for 90 minutes. This session was videoed. Selected segments of the dialogue that occurred as the students worked together were categorised under various headings and comparisons between groups and individuals were made. During informal discussions after using the technology students tended to have most to say about their evaluation of the program and rather less to say about their use of it. The student who was the most obviously "interactive", i.e., contributed most to the dialogue and retained significant control of the keyboard, was quite critical of the program and failed to recognise those features that could have been beneficial to him. Conversely, the student who was the least obviously "interactive" commented the most favourably on the program, and was the most thoughtful and perceptive about how it could benefit him. This suggested that any investigation of the learning experience should consider, not only the opinions of the learners, but also their cognitive involvement with the program. The way in which this cognitive involvement would be assessed was a major factor in the selection of a methodology.

Whilst the methodology used in the preliminary study provided interesting data about some aspects of learner participation the data were not sufficiently comprehensive for the study that was now envisaged and nor was the methodology appropriate for a study that would include both individuals and dyads. Although it could reasonably be anticipated that dialogue would be generated by pairs of learners, and this dialogue could be recorded and subsequently analysed, it could not form part of the comparative data as there would be no similar data from individual learners.



## 2.2 Factors in designing an appropriate methodology

### 2.2.1 The aims of the study

The aims of the study were to investigate the experience of a particular group of students using multimedia for second language learning and to compare the experiences of students working as individuals and in dyads. It was decided that the learning experience should include the choices that students make within the program, the students' cognitive involvement with the program, and insights into the social dimension of that experience.

### 2.2.2 The program

The nature of the program had to be considered in selecting a methodology. The European Connection offers students a wide variety of choice and there are no specific learning tasks that have to be undertaken or goals that have to be achieved. The imposition of task-oriented activities would have been incompatible with both the nature of the program and the aim of this study. The program will be fully described later (see 7.2).

### 2.2.3 The collection of data

Think aloud techniques were considered as a way of accessing the learning experience. However, think aloud techniques posed the same problem as that posed by analysing the dialogue: the learner groups were not all amenable to this form of data collection. Whereas think aloud techniques might be possible for an individual when working on some parts of the program they would not be appropriate if the learner wanted to record their own voice and play it back. Nor would think aloud techniques be appropriate for pairs of learners who would not be able to simultaneously interact dialogically and comment on their thinking processes. The problem that had to be resolved was how to provide a basis of comparison between

the two groups that would be equitable.

Marland (1984) and Marland, Patching and Putt (1990) have reported the use of video for stimulated recall. Their work has been largely in the area of Distance Learning. They have used videos of individuals learning from text as the stimulus for recall about the learning process in follow-up interviews. The interviews have provided the data for categorising and analysing learners' cognitive processing. Stimulated recall appeared to offer a method for gaining insights into the cognitive processes of both individuals and dyads that would allow comparisons to be made between these two groups of learners.

It was decided to adapt this method to the current research. Marland et al. noted the presence of two types of visual cues: those relating to the content being studied, e.g. diagrams and headings; and those relating to body movements, e.g., underlining and facial expressions, and used these as focal points for their questions. However, it was not felt that these features would be entirely appropriate in this new context. The researcher reviewed videos of the preliminary study and noted particular learner behaviours that seemed to warrant closer investigation. Learner behaviours that appeared significant included:

- looking at the screen and pointing to it
- eyes focused on the keyboard for a prolonged period
- fingering, but not striking, the keyboard
- striking the keyboard with a series of rapid strokes
- referring to guide sheet
- referring to template of functions on keyboard
- holding the microphone (without recording)
- rehearsing language (visible lip movements - with or without voice)
- rehearsing language holding the microphone
- recording
- leaning back from the screen

leaning towards the screen  
 looking away from screen  
 talking to partner  
 looking at partner.

It was not possible to discuss the significance of the particular visual cues with the students involved in the preliminary study because of the time lapse between that study and the one currently being undertaken. However, it was speculated that the same visual cues would occur in a similar learning situation and these visual cues were subsequently used to focus the attention of the researcher during the semistructured interview and stimulated recall components of the pilot study.

A list of the questions that students would be asked was drawn up and discussed with a colleague. The questions followed closely the format recommended by Marland et al. (1990, 1992): they were open-ended and, it was hoped, invited disclosure. Questions included:

Could you tell me what you're thinking here ...

Tell me a bit more about what you're thinking ...

Could you tell me a bit more about what you're doing ...

Could you tell me why ...

Could you explain ...

Could you give me some more information ...

Is that what you were thinking then? (or Is that what you're thinking now?)

It was anticipated that these questions would give access to the learners' cognitive involvement with the program.

At this point two students came to the researcher and asked for further help with English. They agreed to work with interactive video and thus provided the researcher with the opportunity to pilot the methodology and make any further adjustments before embarking on the main study.

### 3.0 Pilot Study

#### 3.1 Students learning to use the program

The students spent about two hours learning how to use the program one Friday and then returned together the following Monday. They used the program for an hour and this session was videoed. One student returned for an interview the next day, and the other returned two days later. The time delay between using the program and the interview is significant because of comments about loss of recall if there is a lengthy delay (d'Ydewalle, 1992). Prior to the first interview the researcher spent a considerable amount of time reviewing the video of the students at work and identified the three segments that would be the focal point of the interview. These segments were selected from the beginning, the middle and the end of the video and each segment lasted for approximately five minutes. This was the procedure that was followed in the preliminary study and it revealed interesting differences in learner usage as the practice session progressed. The intention was to examine these differences in greater detail in the main study. The divisions for beginning, middle, and end, were not specifically timed as it seemed more important to respect the coherence of a particular segment rather than the demands of the clock. In order to aid recall, and to provide a wider context for the segment to be discussed, it was decided that a minute or two on either side of the selected segment would also be shown. The 5 minutes that would form the basis of discussion would be indicated.

#### 3.2 Interviewing the first student

The interview took place in the researcher's office where a video/TV had been installed together with a tape recorder. The student was told that she would be shown three segments from the video. Each segment would be

shown once without pausing and during this time the student should try to remember what she was thinking at the time. The student was told that during the next viewing the researcher would pause the tape at certain points and ask her to recall what she was thinking at the time. The student was told that if she wanted to make comments or raise points for discussion she, too, could pause the video during this second viewing. The student agreed to this and also to the stimulated recall being taped.

The researcher indicated the point at which the segment to be discussed had commenced and the student nodded. At the end of the segment the researcher reached for the pause button only to be stopped by the student saying "No, not yet. I have an idea." "No, no, not yet" was repeated several times as the video played on well beyond the selected segment. It became apparent that the interviewer and the student had different perspectives on what they considered to be appropriate times to pause the video. The interviewer wanted to pause to investigate the significance of a particular visual cue whilst the student wanted to wait until nothing appeared to be happening. This conflict had to be resolved in order that the students' interest in seeing themselves on video did not eclipse their willingness to be interrupted to disclose their thoughts. It was decided to offer students the whole video to watch in their own time, after the interview had taken place. It should perhaps be noted that these students were social work students whose course offered few opportunities to use computer technology and who had never watched themselves on video before in their normal Cantonese speaking mode, much less as learners of English. They expressed considerable interest in watching the video and seeing themselves as learners.

Another problem that became apparent during the first interview was that when the video was paused and the student was asked what she was thinking the responses she gave did not always seem to be indicative of thoughts at the time being referred to. Rather they seemed to indicate a

number of time references and points of view, e.g., there were comments that related to previous learning experience or to the student's newly assumed role as self-observer, as well as opinions about the program. The video certainly provided a stimulus for verbal communication but there appeared to be a need to control responses.

Marland et al. dealt with a similar problem by classifying the verbal data they collected as either interactive, i.e., occurring while studying, or non-interactive, i.e., not occurring while studying. However, they were interviewing students for whom English was presumably their first language and it may have been relatively simple for them to clarify the situation with a carefully worded question or two and to direct the student back to interactive responses. In the interview described here, though, open ended questions such as "Could you tell me what you're thinking here" (as suggested by Marland et al.) elicited responses that ranged over a vast area of opinion, explanation, description and suggestion, not all of which were pertinent to the situation being investigated. Such questions served as an open invitation to disclosure and made it was very difficult to focus on specific cognitive activity. Marland et al. were disappointed in the low level of cognitive and metacognitive activity revealed by their study. It was speculated that a similar low level of cognitive activity, coupled with poor language skills, could result in data that were very limited with regard to cognition if a wholly stimulated recall format were adopted. There may appear to be a degree of incongruence between the responses described and poor language skills, but sometimes students who are eager to be helpful may say all that they can and fail to be selective in their responses. It can be difficult to interrupt and change the focus under such circumstances. There was a need to revise the interview to ensure that the learning experience could be more systematically investigated.

### 3.3 Interviewing the second student

After considering the outcome of the first interview, and reflecting on students' comments during the preliminary study, it was decided to treat the interview and the stimulated recall as a continuous piece of discourse for the purpose of analysis. It seemed that students would benefit from being given the opportunity to express their opinions, and talk about the learning experience, before they viewed the selected video segment. It was hoped that this would then enable them to focus more specifically on aspects of the learning that occurred while studying, during the stimulated recall. This was considered to be somewhat similar to the distinction that Marland et al. made between interactive, i.e., occurring while studying, or non-interactive, i.e., not occurring while studying, in their classification of verbal data. It was hoped that this would facilitate the analysis of verbal data in this study.

An interview schedule with six questions was prepared (see 8.5.1). These were intended as prompt questions that would invite opinion and comment on various aspects of the learning experience, including the technology and the socio-affective domain, prior to the viewing of the video. This was the only significant change between the interview with the first student and the interview with the second student. It should also be noted that the second student asked for pencil and paper so that she could make notes as she watched the video. Pencil and paper were subsequently made available to all the students taking part in the study but none chose to use them during the interview and stimulated recall.

Throughout the interview every effort was made to maintain a neutral tone. Where extra information was sought the researcher tried to express interest without indicating that any particular point of view or opinion was preferred, or that she herself held any opinions that she was seeking to verify or discredit.



The semi-structured interview lasted for about thirty minutes. In the next thirty minutes there was only enough time to carry out stimulated recall using the first of the three segments selected for viewing. The student was eager to return in the afternoon to look at the other two selected segments. The researcher recognised that it would not be possible to allocate this amount of time to interviews during the main study but welcomed the opportunity to continue with the interview because the insights gained could prove useful in subsequent interviews. Furthermore, there was the question of courtesy to the student who had shown a genuine interest in helping and whose wishes needed to be respected.

### 3.4 Review of pilot study methodology

Some problems that had been identified were resolved during the pilot study. The interest that students displayed in viewing themselves as participants could be anticipated, and to some extent controlled, it seemed, if students were assured that they would be given the opportunity to view the whole of the video later on. The focus had been sharpened by inviting the second student to comment on the system in response to a number of general questions, i.e., the use of a semistructured interview, prior to viewing the video in the stimulated recall phase. However, there was still a problem with the length of the interview. In both cases it had run over an hour without covering the three segments of video that had been selected for discussion.

There was a need to keep the interview within an hour for a number of reasons: it would be difficult to compare data gathered in interviews of greatly varying length; there was the likelihood of the interview becoming a forum for general or even personal issues; students who would be volunteering to take part in the research would do so on the understanding that there would be a 1 hour interview. After some deliberation it was decided that the interview schedule would have to be condensed. With this

in mind attention the researcher turned her attention to the selection of the segments from the beginning, middle and end of the video.

The use of three segments was not satisfactory for a number of reasons: students had just settled down and were feeling comfortable talking about a situation when it was time to move to the next segment; time taken to search for the relevant segments disrupted concentration; students needed time to reorient their thinking to the new segment. It was therefore decided that instead of three short segments one longer segment would be viewed. This would be a 15 minute segment taken from the later part of the video. It was decided to abandon the investigation of differences in usage as the practice session progressed (see 3.1) as being impracticable in this study although this was the procedure that was followed in the preliminary study.

## 4.0 Revised methodology

### 4.1 Description

The one hour of the interview would be divided approximately as follows: 20 minute semi-structured interview, 15 minutes of unpaused viewing, 25 minutes of paused viewing with focus questions, i.e., stimulated recall. The whole hour would be audio taped and students would be provided with pencil and paper to use for making notes, while watching, should they want to. Both of the students who took part in the pilot study spontaneously indicated that they had learned something in the process of watching themselves learning. They were able to see, i.e., understand, things that hadn't been obvious to them at the time that the learning was taking place. It occurred to the researcher that as participants were to be offered a copy of the video to watch it might be very useful to ask them to record any observations or comments under general headings on a check sheet and return it to the researcher. This could provide further data that would help

in understanding the learning experience.

## 4.2 Constraints arising immediately prior to data collection

The data collecting procedure had to be further refined once students had volunteered to participate in the main study because of the time constraints imposed by their schedules of work and study. Students' preferred times for working on this research project were Saturday, when they had no classes (although several worked on Saturday morning), or on a particular evening when they either had no classes, or could fit in 2 hours between finishing work and attending a late evening class. Students had virtually no flexibility within this schedule. It was essential to work within their time constraints. It was decided that using the technology and the interview, together with the stimulated recall would all take place within a 2 hour time slot. If this had not been done then the stimulated recall session could not have taken place until one week after the practice session, i.e., students who were available on Saturday morning would not be available again until the following Saturday. As a result of the need to work within a two hour time limit it was not possible for the researcher to preview the video prior to the stimulated recall session. Without time to preview the videos the researcher could not select a segment for the stimulated recall. An arbitrary decision was made to use the last 15 minutes of the video for the stimulated recall session and not to view the segment unpaused, with the student, prior to beginning the stimulated recall.

It was also decided that in order to keep within the 2 hour schedule the time that the students worked with the interactive video would be reduced from 60 minutes to 45 minutes. The reason for this was, in the first instance, purely practical - the video cassettes used in a handi-cam video recorder are 45 minutes long on standard play. To record for 60 minutes the long play mode has to be used. It would then not have been possible to play the video tape on the player available without first copying it onto a

regular tape. Such a delay would have made it impossible to keep to the revised 2 hour schedule.

With the imposition of a very tight schedule it was not possible to interview individually those students who worked in pairs, although this was the original intention. Students who worked in pairs stayed together for the interview and stimulated recall sessions.

### 4.3 The final schedule

The final schedule that was adopted was as follows:

individuals or pairs using the technology	45	minutes
turn off, lock up, return to office	15	minutes
interview/stimulated recall	30-45	minutes

## 5.0 The Sample

There were 10 participants (6 male, 4 female) aged between 22 and 27 years. All were ethnic Chinese with Cantonese as their first language. They held full-time jobs and had just completed the first year of evening study towards a Higher Diploma Computer Studies. They had been identified by City Polytechnic of Hong Kong (CPHK) as needing to improve their English language skills and were enrolled in a mandatory 28 hour language enhancement programme in the Language Institute at CPHK. All participants volunteered to take part in this study in response to a letter (Appendix A - 1), and on the understanding that the 4 hours that they spent on the project would be credited towards the 28 hours of language study that they were required to undertake. There was no selection of volunteers as the number did not exceed 12, the number that the researcher regarded as the maximum that she could accommodate in the study.

## 6.0 Research Design

A Comparative Case Study within an interpretive framework was selected as the research design most compatible with the objectives of this study. The main objective of the study was to investigate second language learning within an interactive multimedia environment. It was deemed appropriate to collect data related to the learners' perspective in order to understand the situation. A case study approach recognises and accepts the complexities of social situations: the researcher had already gained some insights into these in an earlier study (Teague, 1992) and was persuaded that the research design adopted should be sensitive to the complexity of the interactive multimedia environment if the learning experience was to be adequately described. Furthermore, the choice of a case study approach was reinforced by the small number of participants that could be accommodated in the study. When the number of participants is small the collection of fine data is imperative if the research is to have any significance. There is currently little empirical data available on second language learning in the interactive multimedia environment and it is recognised that case studies can be used to indicate, discover or study issues (Adelman, Jenkins and Kemmis, 1976). "A spirit of discovery" was uppermost in the researcher's mind when she set out to investigate this environment from the learners' perspective. Many of the decisions related to how case studies are carried out are based on practical decisions and the way in which this study evolved is compatible with this tradition. Finally, the analysis and interpretation of the descriptive data would be of considerable interest in evaluating both the uniqueness of this case and its potential for generalisation to other cases. Having selected a case study approach as the most appropriate, this approach was further refined in order to facilitate the comparison of the learning experience for two different groups of learners, individuals and dyads. A Comparative Case Study within an interpretative framework was adopted.

## 7.0 The Technology

### 7.1 Equipment

The multimedia equipment was basically a video laser disc player linked to a TV monitor and a computer. Specifically, it consisted of the following: IBM AT, PS/2 computer, a video overlay card, colour monitor, video disc player, one set of speakers, a voice recorder box and a microphone.

Support equipment consisted of two video cameras:

Camera 1 positioned behind the participants with an uninterrupted view of the computer screen,

Camera 2 positioned to include participants and computer,  
a microphone attached to Camera 2 and placed on the work surface beside the participants,  
one audio tape recorder.

### 7.2 The European Connection

*The European Connection* (Version 3.0) consists of a 12 inch laser disc and a computer software package. It is the result of a collaborative venture between the BBC, who produced the video material, and Vektor Limited, who provided the multimedia expertise.

The programme is designed to teach business English at intermediate to advanced level. The single disc is menu driven. A number of business related situations are presented as chapters in an on-going drama. As well as the drama there are also a number of telephone situations and a series of video interviews that offer views on Europe in the 1990's, and a test option. In this study only the drama chapters are used. The action centres around a British advertising agency trying to secure a large contract from a Japanese



client who wants to enter the European market. There are three main characters: David Rogers, the manager of the advertising agency, and Kate Warner and Barry Hopkins, two senior employees.

A unique feature of the program is that there are no prespecified outcomes. The User Manual (Vektor, 1989) states that unlike conventional language courses, The European Connection is intended to be controlled by the user. The user decides what to do with the material, how to pace and structure his or her work and what options suit his or her learning style. This leaves the learners free to choose their own learning goals and pathways, to determine the strategies that they will adopt, and to evaluate their own performance and progress. Learners can select the chapters in any order, since each is self-contained, and they can choose from a range of options designed to improve their language skills. The drama can be viewed in the unpaused or paused mode, with or without subtitles. In the paused mode there are breaks at convenient points in each utterance. Users are able to repeat the phrase, and, if subtitles have been selected, they can be displayed word by word as a memory prompt. From the subtitles users can go to Role Model, Dictionary or Grammar, for additional support. The Dictionary is described in the manual as a pronouncing dictionary and the Role Model fills a similar function. The difference is that whereas the Dictionary provides single words the Role Model provides phrases. From both the Dictionary and the Role Model users can choose to see and hear either an American or a British speaker. This allows repetition and comparison. The Grammar option offers explanatory text and examples and is similar in format to a text book. It is also possible to turn off the audio or visual option in order to focus on a particular aspect of learning. The program offers other choices but those described are the most relevant to this study.

*The European Connection* is described as providing up to 100 hours of language learning. The number of hours is an indication of the temporal

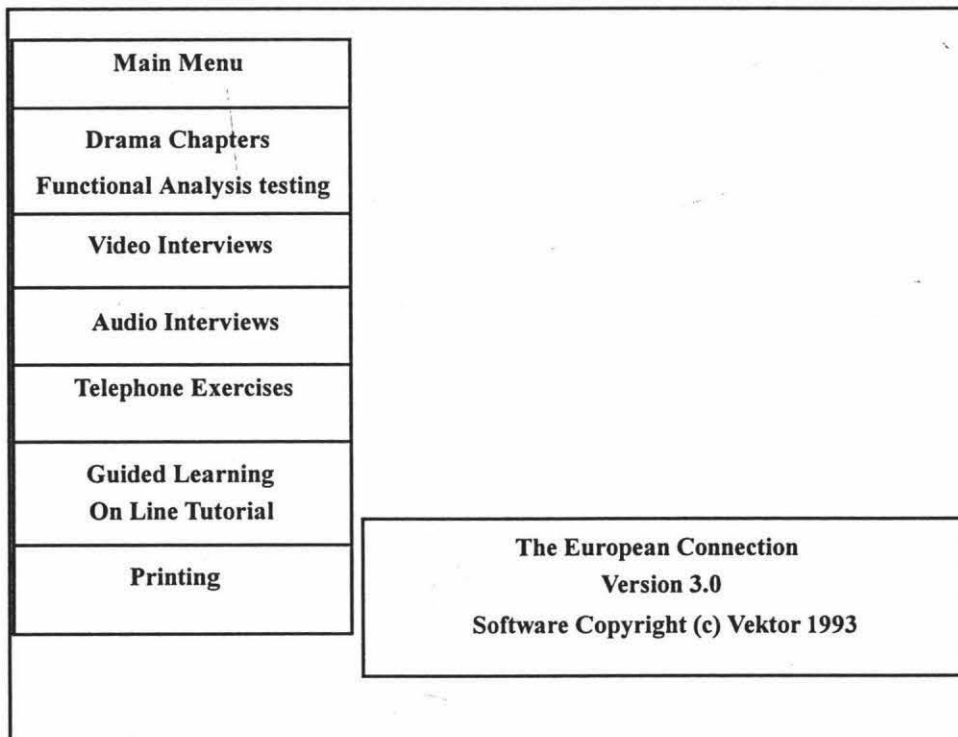


framework of the program and suggests that in a short study, such as the one described here, some restrictions must be imposed in order to facilitate data collection. In this study restrictions were imposed at two points:

1. The Main Menu - the participants were asked to select only Drama Chapters (see Figure 1).
2. Viewing Options Menu - the participants were asked to select either Drama or Role Play from the first box (see Figure 2).

The participants could choose freely from all the other boxes in the Viewing

Options Menu as well as from the Drama Chapters Menu and from the Interrupt Menu (see Figure 3).



**Figure 1 The Main Menu**

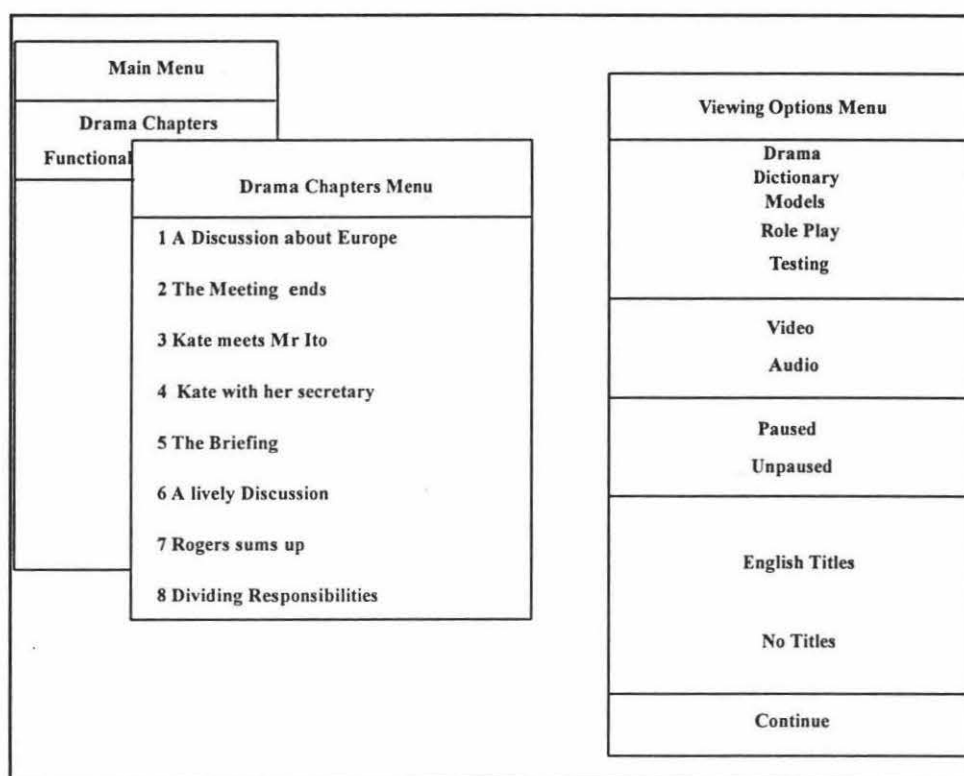


Figure 2 The Viewing Options Menus

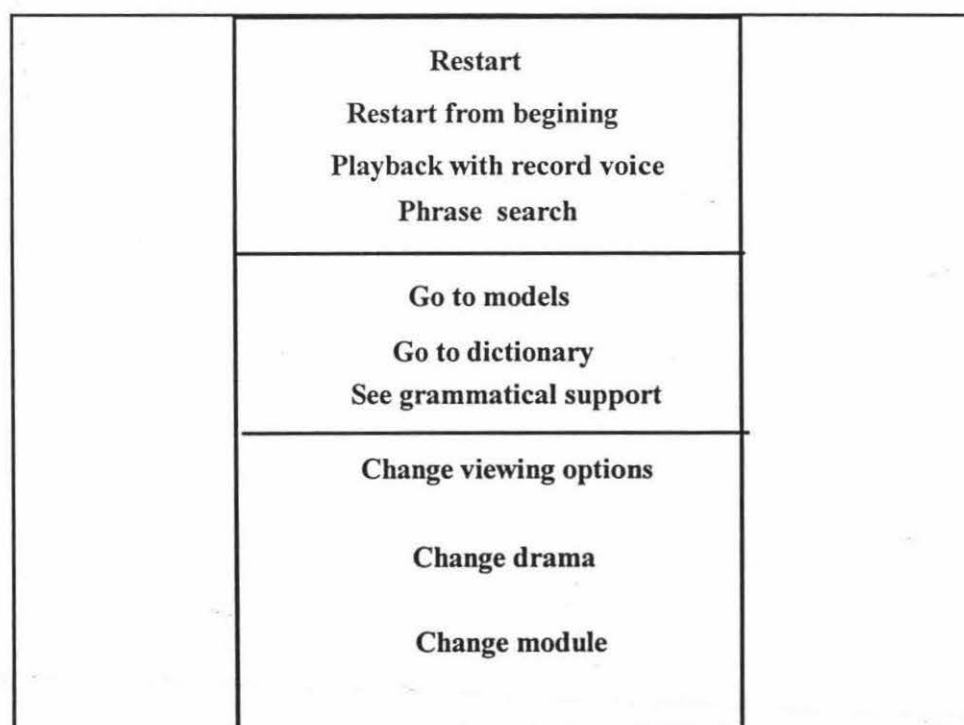


Figure 3 The Interrupt Menu

## 8.0 Procedure

### 8.1 The site

The site for the study was a multimedia classroom within CPHK. The classroom contained a variety of computer hardware distributed among approximately twenty workstations but only one workstation was available for this study. The setting was authentic in that it was used for both class and individual work and could therefore be considered as naturalistic. However, the students participating in the study had not been in the room prior to this study and they did not have access to it outside this study. Throughout the data collecting period no other students had access to the room. The room was locked when not in use.

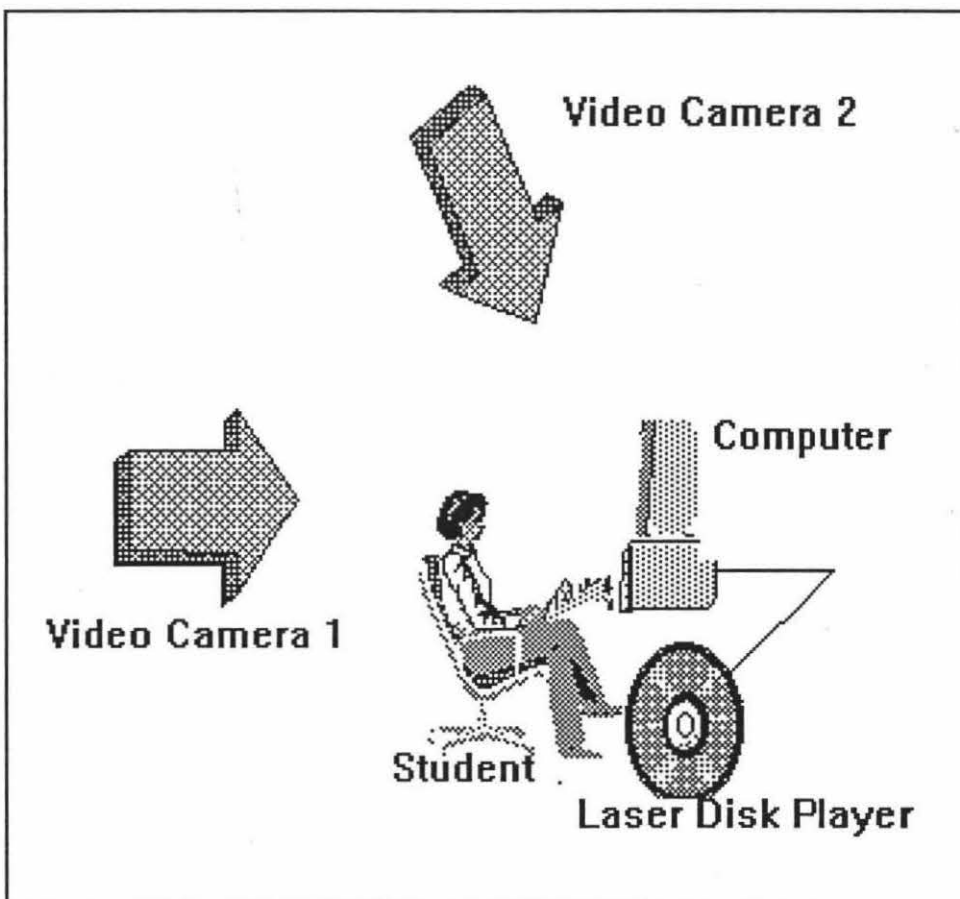


Figure 4 Video Camera Position for Recording Session

## 8.2 Meeting the participants

Students who volunteered to take part in the study were contacted by telephone and a suitable time was arranged for the first meeting. The meeting took place in the researcher's office and the participants were each given a letter (Appendix A - 2) with information about the study, and the opportunity to ask questions. This was the first meeting between researcher and participants. The group then moved to the multi-media room, the site of the study.

## 8.3 Learning to use the system

Video cameras were in place but not operating, in an attempt to make students less conscious of them during the subsequent session. There was a template naming the function keys on the keyboard and there was a list of the function keys written in bold print and standing to the left of the computer screen. That part of the program that would be used in the study was demonstrated and the participants were given the opportunity to practise using it. The participants were taught in four groups (1x1, 1x2, 2x4). The size of the groups was determined by the availability of the participants. One participant was subsequently withdrawn when the data pertaining to her use of the program were found to be contaminated, bringing the number in the study to 10. At the end of the practice session a suitable time was made for the participants to return and use the program. They were asked to work either individually or in mixed gender pairs. Participants elected their own group. Three mixed gender pairs were formed and 3 males and 2 females elected to work individually. It was one of the individual females that was withdrawn from the study.

## 8.4 Videoing the participants

The participants returned at the appointed times. Only one group could be accommodated at any one time. The participants worked with the program for 45 minutes and as they worked two video cameras were operating (see Figure 4). Camera 1 was focused on the screen only. This video was used to investigate the way in which students used the program since it provided a clear view of the options that were being used. Camera 2 was focused on the students working and was angled to record keyboard, screen and students. This video was used for the stimulated recall since it provided more prompts for the students. The researcher stayed in the room, working unobtrusively, during the first session but during the other sessions she remained outside the room, but available should the participants need help. During all sessions she checked the video camera, and the students, from time to time to make sure there were no problems.

## 8.5 The interview

### 8.5.1 Semistructured

At the end of the 45 minutes the video that was to be used in the stimulated recall session was rewound so that the last 15 minutes was ready for viewing. The researcher and the participants returned to the researcher's office where the interview and stimulated recall took place. The interview was semi-structured and based on a number of questions that were intended to prompt the participants to reveal their thoughts and opinions, on the technology and how they used it, and on their feelings about working by themselves, or with a partner. The questions were:

1. If you had a friend who was interested in improving their English what would you tell him or her about this system?
2. Before you started using the program how did you plan to use your

time?

- \* Did your plan change as you worked?
  - \* How did it change?
  - \* What made you change your plan?
3. When would it have been better to work by yourself? When would it have been better to work with somebody else?
  4. If you used the program again would you work in the same way?
  5. Can you describe the student that you think would get most benefit from this system?
    - \* Can you describe the student that you think would not get much benefit from this system?
  6. Would you like to use this system again? Can you explain why?

\* These questions were variations on, or extensions to, the numbered question immediately preceding them. They were not always asked for a variety of reasons: sometimes it seemed that it would serve no useful purpose to insist on a particular line of questioning particularly if participants had little to say on the point; sometimes the reply to the initial question suggested that it would be more productive to follow another line of inquiry.

Copies of the video used for the stimulated recall, together with a short questionnaire (see Appendix A - 3), were made available to the participants a few days later. This was done because of the interest participants in the preparatory and pilot studies had expressed in seeing the whole video. The questionnaire was included to elicit additional information. The questionnaires will not be referred to in this study. It is intended that the information they provide will be used at a later date.

#### 8.5.2 Stimulated recall

The semistructured section of the interview was followed immediately by

the stimulated recall. The questions asked during this stage of the data gathering process attempted to gain some insights into the thinking processes of the participants as they were using the technology. The data gathering schedule did not allow any time for the video to be viewed prior to the stimulated recall. It was therefore not possible to select particular segments on which to focus, nor was it possible to set the particular segment within the broader scenario of usage. The questions were therefore unscripted and responsive to the particular situation as it unfolded.

Questions asked included:

1. As you're watching what are you thinking about?
2. When you say I'm checking in my mind can you tell how you are checking?
3. What did you understand when you heard that expression?
4. Why did you repeat that expression?
5. You look a bit troubled. What are you thinking about?

Both the interview and the stimulated recall were recorded on audio tape.

## 9.0 Data Analysis

### 9.1 The video tapes

The video tapes were analysed to provide the following information:

- i. Time on screen
- ii. Title of drama
- iii. Viewing option selected: models, grammar, dictionary
- iv. Recording
- v. Selecting

The tapes that focused on the screen only were viewed first. They provided information i-iii, and v above. The tapes of the students using the



technology provided iv. Each time students commenced recording a new segment of language this was recorded, alongside the appropriate time, in the above schedule. The number of chapters viewed, the number of times a viewing option was selected, and the number of new segments of language recorded were tallied. The time that the groups spent selecting the chapters was also examined. A brief explanation of how the data were collected is necessary: the time at which groups finished a chapter and returned to the main menu was noted; the time at which the next drama chapter was selected was also noted; any time difference in these two readings was recorded as time taken to select chapter; the total time taken was recorded for each group (shown in Tables 2 and 3 as Selection). Time readings were taken from the video screen and no account was taken of any periods of less than a minute.

## 9.2 The audio tapes

The audio tapes from the interview/stimulated recall were transcribed, validated, and divided into information units. In general each new item of information was assigned a new line. Where extensive hesitations and false starts seriously distracted from the speaker's intended meaning they were accorded the status of an incomplete utterance so that they could be separated from the body of significant utterances and thus make the significant utterances more readily accessible.

## 9.3 Coding the verbal data

### 9.3.1 Broad categories

Information units were assigned to one of four categories: cognition, socio-affective responses, technology, other. The learning strategies described by O'Malley, Russo, Chamot and Stewner-Manazares (1988) (Appendix B - 1) provided the initial descriptors for cognition. Information units that fitted

within one of these descriptors, or were a close approximation to them, were grouped under cognition. Notes were made of any modifications that would be required to these descriptors in order to accommodate the current data. Three strategies were added to the O'Malley et al. list of cognitive strategies. These were absorb, think and remember. All three were characterised by a lack of specificity and may actually subsume other learning strategies. However, they were the terms used by the participants on a number of occasions so it was decided to include them as such. The descriptors for the socio-affective and technology categories evolved in two stages. As decisions were made about which of the categories best described a particular unit it was assigned to that category. Examples of units assigned to the socio-affective and technology categories were recorded. Units that did not come within cognition, socio-affective responses or technology were assigned to a fourth category labelled simply, "Other". No descriptors were drawn up for this category but examples included such things as repetition of what had just been said, utterances of unclear meaning, talk about other situations, and questions or comments addressed to the other member of the dyad during the interview. A language teacher then reviewed the categorisation of the information units. Where there was disagreement with the categorisation the particular lines were re-examined by the researcher and the language teacher together. When agreement had been reached the number of information units in each category was tallied. This provided a basis for broad analysis of the language learning experience in an interactive multimedia environment.

### 9.3.2 Narrow categories

In order to facilitate more systematic analysis the descriptors for cognition, socio-affective responses and technology were then re-examined, modified and numbered. For cognition this consisted of modifying the O'Malley et al. list of learning strategies by: deleting those descriptors for which no examples had been recorded, adding new descriptors to account for

additional strategies and refining some descriptors to account for the present learning environment. The examples of information units occurring under socio-affective responses and technology were examined in order to arrive at descriptors. Four descriptors were drawn up for technology, and three descriptors for the socio-affective category (see Table 1). Each of the descriptors was assigned a number. Each line of interview data was then coded for both category and descriptor, eg., T3 = Technology: evaluation (evaluating the program in terms of its usefulness to self and others) (see Appendix C for interview transcripts).

The first descriptor in socio-affective was such that it was only available to pairs of learners. The other two descriptors were available to all learners. This made it possible to make comparisons between individuals and pairs of learners, and also to examine in some detail the socio-affective response of pairs of learners. A much greater number of descriptors was retained for cognition.

A language teacher reviewed the categorisation and coding of the lines after this had been completed by the researcher. Where there was disagreement about particular lines they were re-examined by the researcher and the language teacher together in order to reach agreement. When agreement had been reached the number of lines in each category was tallied and the results were tabulated. This, together with the tables, provided a basis for the analysis of the second language learning experience of individuals and dyads in an interactive multimedia environment.

**Table 1: Descriptors for coding verbal data*****Technology***

1. use: Explaining how to use, giving examples of use, evaluating competence, matching need to use, itemising use.
2. description: Description of program and characters in the drama
3. evaluation: Evaluating the program in terms of its relevance and usefulness to self and others
4. suggestions: Suggesting ways in which the program could be improved

***Socio-affective***

- 1.cooperation: Monitoring each others performance, working together, explaining examples of co-operation
2. self: Evaluating own performance in a general sense, expressing confidence, relating program to cultural differences and, or, similarities in a personal way.
- 3.learning preference: Expressing opinions about working alone and, or, with others; describing the characteristics of learners who would benefit; describing aspects of culture of general relevance.

***Cognition******metacognition***

1. advanced organiser: Making a general but comprehensive preview of the concept or principle in an anticipated learning activity.
2. directed attention: Deciding in advance to attend, in general, to a learning task and to ignore irrelevant distractors

3. selective attention: Deciding in advance to attend to specific aspects of language input or situational details that will cue the retention of language input
4. self management: Understanding the conditions that help one learn and arranging for the presence of those conditions
5. self monitoring: Correcting one's speech for accuracy in pronunciation, grammar, vocabulary, meaning and understanding, or for appropriateness related to the setting or to the people who are present.
6. self evaluation: Checking the state of one's own language learning against an internal measure of completeness and accuracy or against the program model; evaluating the degree of difficulty and of usefulness of particular language items

#### *cognition*

7. repetition: Imitating a language model, including overt practice and silent rehearsal
8. resourcing: Defining or expanding a definition of a word or concept through use of target language reference materials or drawing on previous experience
9. translation: Using the first language as a base for understanding and/or producing the second language
10. grouping: Reordering or reclassifying and, perhaps, labelling the materials to be learned based on common attributes or on differences.
11. deduction: Consciously applying rules to produce or understand the second language
12. recombination: Constructing a meaningful sentence or larger language sequence by combining known elements in a new way.
13. imagery: Relating new information to visual concepts in memory via familiar, easily retrievable visualizations, phrases, or locations

14. auditory representation: Retaining the sound or similar sound for a word, phrase, or longer language sequence
15. key word: Remembering a new word in the second language by identifying it as a keyword and attending to it as such
16. contextualisation: Placing a word or phrase in a meaningful language sequence
17. elaboration: Relating new information to other concepts in memory
18. transfer: Acquiring linguistic and, or, conceptual knowledge to facilitate an anticipated language requirement
19. inferencing: Using available information to guess meanings of new items, predict outcomes, or fill in missing information
20. absorb: Acquiring language and/or building up knowledge through exposure and practice
21. think: Reflecting on the task
22. remember: Retaining language items for future use

### ***Other***

Meaning unclear, repetition, talk about other situations.

## CHAPTER 4 RESULTS

### 1.0 Data Derived from Video Recordings

#### 1.1 Student profile of program use

The data presented here were derived from the videos that recorded the computer monitor as the students worked. The drama chapters that the participants studied, and the options that they selected within each chapter, are presented in Tables 2 and 3. A number in parenthesis after a chapter indicates the number of times that the chapter was viewed by selecting it again from either the Main Menu, Drama Menu or Viewing Options Menu. From the Interrupt Menu it is possible to select Restart Drama in order to return to the beginning of the drama chapter being worked on, or to select Continue Drama, in order to return to the place at which the interruption has been made. These options were treated as options available for extending a chapter; they were not given any specific attention. The options that were given specific attention were Model, Dictionary, Grammar and Recording. The time that the groups spent selecting the chapters was also examined.

The learner profiles of program use are highly idiosyncratic. The number of chapters studied ranged between 1 and 14: one dyad viewed only one chapter, while an individual viewed 14 chapters. In contrast to this individual another individual chose to view one chapter seven times. Only two groups used all four options: model, dictionary, grammar and recording. Two individuals did not use the recording option while another individual used the recording option with the greatest frequency of all. An individual and a dyad did not use the dictionary. Again, closer analysis of the use of the dictionary revealed that an individual was the most prolific user of this



option. There was a very low level of use of the grammar option. One dyad did not use the grammar option whilst the other two dyads and an individual selected it only once. In contrast the other two individuals selected this option with a high degree of frequency. Dyads showed a greater inclination to take time to select their viewing options than individuals did. All dyads recorded a time for selecting whereas only one individual recorded a time here. It became apparent after looking at Table 1 that one of the few similarities between all groups was that all used the chapters in sequence, although this was sometimes a broken sequence. It also became apparent that individuals tended to mark the extremes in the range of use.

In order to further compare the way in which individuals and dyads used the program the averages for individuals and dyads were calculated (see Table 4). Individuals watched considerably more chapters than did dyads. This resulted in one of the most striking differences between the two groups of users, which was the amount of time spent on each chapter. Individuals spent an average of approximately 6 minutes on each chapter whereas dyads spent an average of approximately 25 minutes on each chapter. Individuals selected the various options more frequently than did dyads. Dyads' use of the grammar option was particularly high. The only exception to the greater use of options by dyads was in the use of the recording option. Dyads made greater use of the recording option than did individuals. This was somewhat surprising as the record and playback option is likely to be considered an alternative to peer feedback for learners working by themselves. It seems that individuals did not necessarily perceive it in this way. In fact, Beth, one of the individuals who did not use the recording option, said that she would use it if she were working with friends.

**Table 2 Profile of Program Use: Individuals**

Student	Chapter	Time (mins)	Model	Dictionary	Grammar	Recording	Selection (mins)
Beth	4	2			1		
	5	6	1	1	1		
	6	6	1		4		
	7	2			1		
	8	4			1		
	9	5	1				
	10	5	3		3		
	11	3	1				
	12	2					
	13	2					
	14	8	1	1	3		
Hank	1	3			1		
	6(7)	43	5			15	
Sam	1	6	1	1	1	2	
	4	23		1	11	8	
	5	8		1	3	4	
	8	4					7
Walt	1	2					
	2	1					
	3	1					
	4(2)	8	3	1	5		
	5	4	3	2	1		
	6	6	2	2			
	7	3	2	1			
	8	3	3				
	9	4	1				
	10	6	4	3			
	11	2	3				
	12	1					
	13	2	2				
	14	3	1	1			

*Use over a period of approximately 45 minutes*

**Table 3 Profile of Program Use: Dyads**

Student	Chapter	Time (mins)	Model	Dictionary	Grammar	Recording	Selection (mins)
Ken & Dawn	6(2)	36	3	1	1	4	
	9	3	1				7
Ruth & Troy	4	21	3	1		9	
	5	21	3	3		10	2
Vic & Fay	1	45	10		1	10	1

*Use over a period of approximately 45 minutes*

**Table 4 Comparison of Program Use: Individuals & Dyads**

	Individuals	Dyads
No. of Chapters watched	7.75	1.66
Time spent on each Chapter (mins)	6	25
No. of times Models selected	9.50	6.66
No. of times Dictionary selected	3.75	1.66
No. of times Grammar selected	9.00	0.66
No. of times Record selected	7.25	11.00
Total number of Options selected	29.50	20.00

*Numbers are averages for the group over a period of approximately 45 minutes.*

Dyads not only spent more time on each chapter than individuals but they also spend sufficient time selecting the chapters that they worked on for this to appear in their profiles of program use. From this it could be concluded that dyads indulged in discussion and negotiation prior to deciding on the particular chapter that they worked on and that this careful selection resulted in a willingness to expend more time on each chapter. This point will be returned to later.

There are very few common factors in the usage demonstrated by the seven groups, and few generalisations that can be made. In comparing the use of the program between individuals and dyads it can be said that individuals watched more chapters, and used more support for each of the chapters, than did dyads. Individuals tended to be at the extremes of the range of usage and to be represented by more idiosyncratic profiles than dyads who tended to demonstrate greater uniformity of usage and to be represented by a more

consistent profile.

The videos of one individual (Hank) and one dyad (Vic and Fay) were reviewed in order to identify any other data that might provide further information about the way in which individuals and dyads differ in their use of interactive multimedia. These two groups were selected because each of them effectively viewed only one chapter in the 45 minutes that they used the program. This seemed to offer an opportunity for closer comparison between these two groups of users.

## 1.2 Comparison between an individual and a dyad

Hank systematically viewed Drama Chapter 6 seven times. When he reached the end of the chapter he returned to the menu and selected the chapter again. In the first viewing he played the video paused, and without subtitles, i.e., the video paused automatically at the end of each sentence and gave the viewer time to select the various options in order to facilitate comprehension or retention of the language, the video only played on when the viewer pressed the required key, there were no subtitles on screen. For the second viewing he selected unpaused, with no subtitles, which is the same as watching a standard video. During this viewing he picked up a pencil and made notes. He appeared to be concentrating on the dialogue, and as there were no subtitles on the screen he may have been treating this as a dictation type exercise. Hank continued to hold the pencil in his right hand as he operated the keyboard with the same hand. For the third viewing he selected paused with subtitles. This is the option combination that provides the most learner control and support and was most frequently selected for the first viewing of a drama chapter by the majority of the groups. For the fourth viewing Hank initially selected the paused, video only, no subtitles, option. Although he subsequently added subtitles he maintained the sound off option during this viewing. After starting the chapter Hank interrupted it to spend three minutes reading the chapter

summary and the information about all three of the characters featured in the chapter. He made notes while this information was on screen. He also referred to the explanation of key functions that was beside the screen and spent some time studying the function keys. In the fifth viewing Hank extended the chapter by selecting the models option six times. A random count showed that he repeated one of the models seven times and another fifteen times. Hank rehearsed some of the models and recorded three of them. After recording Hank listened to his own voice and then moved immediately to the next model. He did not compare his performance with that of the model. The models that Hank selected were modelling the dialogue of the company manager; Hank switched between the British and American models. For the sixth viewing Hank selected paused, with subtitles, and made extensive use of the recording option. He repeated and rehearsed some segments of language from the drama many times before recording and it soon became apparent that he was concentrating on the language used by the manager. When the end of the chapter was reached Hank replayed it from the beginning and was able to hear his own voice, rather than that of the manager. In this, the sixth, viewing Hank extended the chapter to eleven minutes, the longest time he spent on a single viewing. For the seventh, and final, viewing Hank selected the Role Play option from the Viewing Options Menu. Role play enables the user to play the part of a selected character in the drama. Not surprisingly Hank chose the role of the manager. This option may not appear to be very different from the previous option but it places considerably more pressure on the learner as the drama is unpaused and the learner must try to maintain the pace of the dialogue without the benefit of subtitles. If memory or improvisation fail there is help in the form of a word by word cue, and Hank took advantage of this help.

Hank's viewing style appeared to be systematic and controlled. He spent a considerable amount of time considering how to use the system and he explored different combinations of options. He occasionally used the

"repeat current phrase" key. He often looked thoughtfully at the screen or rehearsed language aloud without recording it. He made notes on at least two occasions; this information only became available after the interview had taken place so it was not possible to discuss the purpose of the notes with Hank. Hank's approach was linear - beginning to end, start again, beginning to end, start again. It could be described as linear repetitive since at the end he had viewed the chapter from beginning to end seven times.

In contrast Vic and Fay did not even reach the end of the first viewing in 45 minutes. Their approach was much more leisurely than Hank's. They watched a scene, repeated the phrase several times, rehearsed the phrase, went to the models, where they again repeated and rehearsed, and then they recorded and finally listened. Vic and Fay made extensive use of the "repeat current phrase" key. They stopped to debate grammar or points of pronunciation from time to time but referred to the grammar option only once, and that very briefly. They didn't seem particularly intent on mastering the technology and there was no evidence of the systematic practice with various options that characterised Hank's approach. Their use of the options was distributed fairly evenly throughout the period that they were using the program. In contrast to this, Hank's use of a particular option tended to cluster, e.g., he only used the models in the fifth viewing. When Vic and Fay had exploited one scene they continued the drama. Their use suggested casual exploration from within the drama itself, rather than the objective investigation from outside that seemed to characterise Hank's use. Vic and Fay frequently used "repeat current phrase" as a means of extending the drama, whilst Hank only occasionally used this key. There were two options available for extending the time spent on a chapter that were carried out by a keystroke. These were "repeat current phrase" and "repeat previous phrase". No record was made of how frequently these keys were used because of the difficulty of recording from keystrokes alone but a general picture of their use emerged from successive viewing of the videos.



The viewing styles of these two groups of learners provided some interesting points of comparison. In general it was much more difficult to chart the route taken by Vic and Fay because there were fewer obvious markers along the way. Whilst it could not be claimed that each group was typical of its particular group each did demonstrate characteristics that were later observed within similar groups. The most obvious of these was the sense of purpose that characterised the way individuals worked, an approach that was in marked contrast to the more leisurely style and pace of dyads. The "repeat current phrase" key was frequently used by dyads as a way of extending the time spent on a particular chapter whereas individuals chose more specific options.

## 2.0 Data Derived from Interview Transcripts

The number of information units generated in each of the categories cognition, socio-affective responses, and technology is presented in Table 5. From the total recorded for each individual and dyad it can be seen that individuals generated both the greatest number and the smallest number of information units. In the profiles of program use the extremes in each of the categories tended to be occupied by individuals. The same tendency for individuals to mark the extremes was again noticed here. While dyads tended towards greater conformity individuals tended towards greater diversity. Averages for individuals and dyads are presented in Table 6. Individuals generated more information units than dyads in all categories except socio-affective responses. The greater use of socio-affective responses by dyads can be attributed primarily to the fact that there were specific episodes of cooperation that occurred during the stimulated recall for all three of the dyads. These episodes of cooperation were a focus for stimulated recall and information units occurring under cooperation were coded as socio-affective responses. Such episodes were not available to individuals. Effectively individuals had fewer opportunities for revealing socio-affective responses.



After the broad categories had been identified each was then broken down into its constituent parts. For example, when the students talked about technology the data that they provided fell into four sub-categories: use, description, evaluation and suggestions. The sub-categories are presented in Table 7. It was the fine categorisation that rendered the interview data amenable to analysis and interpretation. The interview data were returned to and reviewed category by category in order to facilitate the interpretation of the learning experience of individuals and dyads in this particular environment.

When reviewing the interview data, category by category, it became apparent that sometimes data that appeared in one category also had particular relevance in another category. In the study carried out by O'Malley et al. (1988) they dealt with this issue by assigning multiple strategy names to a single description. It was not possible to do this in this study so instead a measure of flexibility was adopted to ensure that the categorisation was not so rigidly enforced that it hindered the interpretation of the data.

Quotations from the Interview Transcripts (Appendix C) follow the format name of participant:page.line, and occur in brackets immediately after the quoted lines.

**Table 5 Broad Categorisation of Interview Data**

	Beth	Hank	Sam	Walt	Ken & Dawn	Ruth & Troy	Vic & Fay
Cognition	141	125	133	64	71	54	101
Socio- affective	46	24	24	11	72	37	54
Technology	132	74	76	81	85	67	67
Miscellaneous	114	160	112	55	112	69	57
Total	433	383	345	211	340	227	279

*Numbers represent information units recorded over a period of approximately 45 minutes*

**Table 6 Comparison of Interview Data: Individuals and Dyads**

	Individuals	Dyads
Technology	90.75	79.66
Socio - Affective	26.25	54.33
Cognition	115.75	75.33
Miscellaneous	110.25	79.33
Total	343.00	288.66

*Numbers represent average information units recorded for groups over a period of approximately 45 minutes*

**Table 7 Fine Categorisation of Interview Data.**

Technology	Beth	Hank	Sam	Walt	Ken & Dawn	Ruth & Troy	Vic & Fay
1. Use	68	52	26	27	44	34	31
2. Description	38	5	8	30	13	10	25
3. Evaluation	20	10	42	23	23	23	8
4. Suggestion	6	7		1	5		3
Socio-Affective							
1. Co-operation					32	17	40
2. Self	14	16	9		17	2	3
3. Learning Pref.	32	8	15	11	23	18	11
Learning Strategies							
1. Advance Organizer	15	3	4	2	7	9	1
2. Directed Attention	23	3	9		5	4	6
3. Selected Attention	20	10	10	1	1	1	10
4. Self Management	22	25	46	28	14	9	20
5. Self Monitoring	9	12		4	13	7	9
6. Self Evaluation	26	19	29	17	19	12	27
7. Repetition	2	11	6	3	4	9	5
8. Resourcing			11				1
9. Translation	6				2		
10. Grouping	7	1	3				
11. Deduction					2		5
12. Recombination		3					
13. Imagery							8
14. Audio/Visual		7	4	8	3	2	3
15. Key Word		8	2				
16. Contextualisation		5					
17. Elaboration							2
18. Transfer		5	2				
19. Inference	11	3	1				1
20. Absorb		2			1		
21. Think		4	4	1			2
22. Remember		4	2			1	1
Other	114	160	112	55	112	69	57

*Numbers represent information units recorded over a period of approximately 45 minutes*

## 2.1 Technology domain

### 2.1.1 Use of technology

There were considerable data recorded under "use of the technology" for both individuals and dyads (coded 1t in the transcripts). The greatest range of information was provided by an individual, Beth, who explained how she had used, or was using the technology, and how it could be used. She indicated an awareness that both the size of the group, and the particular plan being followed, could influence the use of the technology "they can use it together but if they just do it by themselves they can practice their listening" (Beth:1.15,16). Much of the data provided by Beth was common, to a greater or lesser extent, to all participants. However, there were a number of differences between individuals and dyads that became apparent.

Only individuals talked about covering as many chapters as possible and the efficient use of time. Two individuals, Beth and Walt, did not use the record option and they reported that recording would take too much time and would limit the number of chapters they were able to view:

I want to see everything (Beth:10.13)  
 don't waste any time (Beth:21.18)  
 You can see I want to finish (Beth:24.15)

Because record will be, will spend much time  
 But I want to go for more chapter so that's why I not record  
 (Walt:5.4-6).

Beth and Walt both viewed a large number of chapters (11 and 14 respectively). Although the other individuals watched fewer chapters they also expressed concern about the efficient use of time. Sam said he would advise friends "not to spend too much time on see the description ... and

more do on work recording" (Sam:1.21-29). He suggested that if they became too involved with seeing the picture that would not help them to improve their English. The fourth individual, Hank, also talked about the use of time. However he discussed time in the context of the time needed to gain mastery over the technology.

But I don't know this improve my English or not  
because it must be have time have time to use it to handle  
what the system (Hank:2.21-24)  
Try to use the keyboard. Try to know how to use it, how to  
control the keyboard (Hank:10.21-23)

Individuals explained their use of technology quite specifically and there was a clear correlation between what they said they did, and, or, what they said they would advise their friends to do, and their own profile of program use. It was Sam who drew the researcher's attention to this when, having given his advice he added "I, I also" meaning, this was what he should do too. The profile of program use shows that Sam did indeed take his own advice; he watched only four chapters, thus demonstrating that he did not become too involved in seeing the drama, and, as he advised, he made frequent use of the recording facility. Although Sam's preference ran counter to the preferences of Beth and Walt, both of whom eschewed the use of the recording option in favour of watching as many drama chapters as possible, their profiles of program use show that they too followed their own advice. Hank's concern for understanding and controlling the technology was reflected in his profile of program use which shows Hank adopting a rigorously systematic approach to his work (Hank viewed one chapter seven times, each time choosing different viewing options).

Dyads, on the other hand, did not demonstrate this same degree of awareness about what they considered to be the best way to use the program. Their focus seemed much less sharp than that of individuals and

to lack the specificity of purpose demonstrated by individuals.

Although Hank was the only individual to talk specifically about control of the technology it may have been the absolute control of the technology that led to the heightened awareness of its use by individuals. Two of the dyads raised the issue of control. In the interview with Ken and Dawn, Ken said "so I think if I can control the people, and say again, say again again and practice many times" (Ken and Dawn:8.25-28) and in the interview with Ruth and Troy, Ruth said "because using computer some new, some new equipment some new machine I didn't understand how to control it, I want to know how to control it (Ruth and Troy:6.21-26).

Both Ruth and Ken seem to be expressing ideas about how they might use the technology if they were working alone since there is no evidence to suggest that they experienced this degree of control as a member of a dyad.

In general it seems that the absolute control experienced by individuals may have contributed to their higher level of awareness in two areas: the management of time and the use of the technology. Dyads, with their shared responsibility for outcomes, appear to be less focussed and more tentative when talking about using the technology and to want more control.

### 2.1.2 Description of technology

Descriptive information (coded as 2t in the transcripts) covered a range of aspects of the program including the characters' accents and speed of delivery, male and female role models, meaning, ideas, descriptions of characters in the drama, non verbal clues, interpretation of the drama, description of language used in the drama, comparison between the models and the characters in the drama, and learner support. In describing the technology both individuals and dyads talked about accents and speed of delivery and learner support, i.e., the dictionary, the models and the

grammar. Generally the models were described in the most favourable terms, while the dictionary and the grammar were less well received. The following extract from the interview with Walt is fairly typical of the data in this category:

This is a new technology.

Each chapter is not too long and you can learn each chapter and another you can next time to learn another chapter (Walt: 1.14-28)

and then to learn this method by themselves (Walt:2.1)

ah most of the chapter the model of the ah.. they haven't the model only the little one have the model

(So you like the models do you?) yeah the models (Walt: 3.8-12)

it's because it's interesting and I can learn the pronunciation (Walt:5.26,27)

if the sentence has a model (then I will go to the model)

because the they ah the drama may some is fast

some is slow

the model is speaking more clearly and not too fast (Walt: 7.19-25 )

(Which of the models did you prefer?) the fat one

Because he pronounce more clearly.

the single word option is not pronounce

it only display the word (Walt:9.4-10)

the characters some some may speaking not clearly



and some is good (Walt:10.10,11)

One of the main differences between individuals and dyads was in the way in which they described the characters in the story. Individuals were much more perceptive than dyads. Beth described Hopkins as very aggressive and ambitious and explained "When I find that guy is not very good I just want to make sure he is not very good, that he's a bad guy, too aggressive, ambitious, nasty, especially his eyes. He, he can't finish his job. He try to impress his boss" (Beth:17.14-34; 18.1). She described Kate as "dependable and doing her job very well. In the previous drama you can see her face while they mention Hopkins. There's some argument during these meetings" (Beth:19.13-17).

In contrast to Beth's positive assessment of Kate, Sam was somewhat negative saying " Kate I don't like. I don't know how you say her because the conversation is is not a male, is the woman" (Sam:18.6-8). However, Sam didn't like Hopkins, either, because he considered Hopkins' conversation was not clear and he spoke too fast (Sam:18.1,2). Sam did approve of the director, though, because he thought the director spoke clearly and not too fast. Walt also approved of the director "Because he speak more clearly and I'm the man here I can try to learn his pronounce" (Walt:10.21-23). All individuals expressed fairly strong opinions about the characters in the drama. Individual male participants showed a preference for the character in the drama with the most senior position in the company and this was perhaps best summed up by Hank who said "It's interesting. It give me an idea I can do it like Roger" (Hank:21.10-12).

Dyads did not make any reference to liking or not liking the characters in the drama when describing the technology. However, recorded under "evaluating the technology" liking for a particular character was expressed by both Ruth and Troy. Nevertheless, this does not substantially alter the earlier observation that individuals were more perceptive in describing the

characters within the program because neither Ruth, nor Troy, indicated in any way that their liking had any substance to it beyond its expression. Indeed, the character that Troy liked, Ito San, did not feature in either of the chapters that Troy and Ruth worked on during the 45 minute period, but was remembered from the earlier training session. Nevertheless, it should be noted that Ruth and Troy were the least inhibited of all the participants when using the technology with Troy, in particular, mimicking the characters with flamboyant recklessness. Fun seemed to be the main objective for Troy, and whilst this is not to be decried or discouraged it does highlight one of the problems of observing students using technology. Extrovert behaviour, whilst having the appearance of dynamic interaction, may not be indicative of significant involvement with the technology. The same type of behaviour was observed in one of the participants in the preliminary study. In that instance it was noted that when the student found himself without an audience he was not able to take advantage of the opportunities that the technology offered.

### 2.1.3 Evaluation of technology

Both individuals and dyads commented on a variety of aspects of the technology (coded as 3t in the transcripts). Extracts from Walt's interview illustrate the type of data provided by individuals and extracts from Ken and Dawn's interview illustrate the type of data provided by dyads. The technology was referred to as "a good method to learn English" (Walt:1.5) and as being "very useful to improve my English" (Ken and Dawn:8.17-29). The drama was approved as "an interesting drama to learn English" (Walt:1.17) and "interesting, interesting looking at the video" (Ken and Dawn:8.3-5). Both groups also commented on its relevance. Walt said it was useful "for daily communication" (Walt:8.22) while Ken and Dawn rated it "very useful to help our real life" (Ken and Dawn:1.21,22) and considered that it was "almost the same as talking to foreigners" (Ken and Dawn:22-25). However, individuals evaluated the options with much

greater frequency, and in more detail, than did dyads.

In the following extracts it can be seen that Walt criticised the grammar for being "not very clearly" and he then compared the grammar option with the dictionary option and approved of the greater ease with which he could find information in this latter option. However, whilst Walt found the dictionary useful he found two problems with it: the first was that the words that appeared in the dictionary were not words that he was interested in and the second was that there were no meanings given in the dictionary.

The grammar, I think the grammar is not very useful.  
Because not very clearly  
I can find the words on the dictionary more clearly  
Ah dictionary is useful  
but most most of them not is the word, is not my thing  
(Walt:3.12-25)

the dictionary is not very clearly to explain the meaning  
(Walt:13.3,4)

Evaluation of the technology made by dyads tended to be non-specific and to be related to listening and conversation as Ken and Dawn illustrate:

useful to follow the pronunciation,  
especially on the difference on North Britain and South  
Britain and also Americans,  
their sound, also the intonation,  
intonation can also be improved

and also it is very useful to help our real life,  
what they say is very useful to our real life (Ken and  
Dawn:1.11-22).

Dyads appeared to be generally less critically aware than individuals and tended to focus their attention on presence, rather than absence, within the technology. Their evaluation of the technology was less technocentric and more people centred.

The main differences between individuals and dyads were that individuals were more specific in their evaluation of the technology and were more critical of the technology for not providing any meaning for vocabulary. Possibly dyads, because of the social context in which they were working, were less focussed on the technology than individuals. The social dimension may have absorbed some of their attention and resulted in a lower level of expectation from the technology. It could be hypothesised that dyads were not concerned about the absence of meaning for vocabulary because they could ask their partner for help, but as will be discussed later, they did not do this. The overall impression was that dyads were less concerned about this aspect of learning than individuals.

#### 2.1.4 Suggestions for improving technology

There were a number of suggestions made for improving, or using, the technology (coded as 4t in the transcripts). Suggestions included the use of a transcript and advance preparation, i.e., knowing about the story prior to using the system in order to select a story that was personally interesting, and the use of a mouse.

The lack of meaning was frequently raised by individuals when they were talking about the technology. It seemed to be a real concern for them. Not surprisingly they suggested that the inclusion of a dictionary with meanings would be a good idea. Only one dyad drew attention to the desirability of having a dictionary: "I think if the system had a dictionary for the difficult word or some special word it's more better (Vic and Fay:10.20-23). However, whereas individuals initiated the discussion on the

absence of meaning in the dictionary when they were talking about the technology, dyads did not. Vic and Fay only provided the information after close questioning by the interviewer who was trying to ascertain the participants level of cognitive involvement with the program. It was not raised spontaneously.

Suggestions for improving the technology could be inferred from comments made elsewhere in the interview data, particularly in the evaluation on technology. The main areas of concern were the grammar and dictionary options. The usefulness of the dictionary for pronunciation was appreciated but the need for meanings to be included was stressed on a number of occasions. The words that were included in the dictionary were not necessarily the ones that were difficult for the participants. This suggests that there may be a need to consider the needs of different groups of learners when compiling a dictionary. A number of comments were made regarding the grammar option, which is a recent addition to the program. Although this option provides a lot of information it was criticised for lacking the ease of access provided by the dictionary and for being "still not very detail, not in my point of view" (Beth:3.6,7). This suggests that there was too much information, with too few sign posts, and that the content may not have been entirely appropriate to this particular group of learners.

As individuals were more specific in the way they evaluated the technology their suggestions for improving the technology were more numerous and more detailed than those made by dyads.

## 2.2 Socio-affective domain

The socio-affective category contains less data than the other categories but those data are crucial to a comparison of the experience of individuals and dyads. This category provides valuable insights into learners' perceptions of themselves and their peers.

### 2.2.1 Self

This category produced a mixed response with one individual and two dyads contributing virtually no data (coded as 2s in the transcripts). However, three individuals and one dyad provided a variety of insights about themselves. They appraised their own performance, needs and level of confidence with regard to using the technology. One individual and one dyad mentioned their culture. Sam said "If the drama is Chinese, has more familiar face it's better" (Sam:8.1-5) and Dawn explained that "Chinese people always the idea is from Chinese. And translate English and Chinese. And translate what's their idea. I think it's wrong but I don't know how to change this because we always involved in the Chinese situation" (Ken and Dawn: 7.14-21). A number of participants expressed a lack of confidence in using English and Ken thought the technology would help him overcome this because "actually if I I talk to a real people maybe he or she will angry with me because my English is quite bad (Ken and Dawn:8.21-24). Hank and Sam provided contrasting views from the point of view of the individual learner using the technology:

Because it's quite feeling alone  
working without any respond  
without share any questions and so on (Hank:8.4-8)

Because when there's a quite funny, funny process  
without share with friends or classmates,  
and because my work,  
I'm I'm a programmer  
only just work with the computer haven't any response for me  
so um, in the school or in the project I don't want to,  
I don't want to have this situation again (Hank: 8.15-21)

Hank referred somewhat poignantly to the sense of isolation that he felt

when working by himself but Sam, whilst supporting the principle of working with somebody else, for practical purposes would choose to work by himself.

because my English is, I think is need to improve my English  
(Sam:2.24)

so if my partner is same as me it's better (Sam:6.1)

(Int: Would you prefer to work by yourself or with  
somebody?)  
by myself (Sam:6.33).

This is discussed in greater detail in 2.2.2 below.

As two dyads contributed virtually no data in this category the greater part of the data were contributed by individuals. This can perhaps be attributed to the constraint that membership of a dyad imposed on its members as Ken's dilemma illustrates. Ken was clearly reluctant to refer to himself alone, and included Dawn by using "we." However, he changed to "I", no doubt when he realised that it would not be appropriate for him to describe his partner's level of English as elementary. Ken said "I think we, we, I mean I'm, in the in the elementary level (Ken and Dawn:12.26,27).

## 2.2.2 Learning preference

This category (coded as 3s in the transcripts) provided significant insights into how the learners perceived the learning environment in terms of an individual or a group experience. Beth explained how she would use the technology if she were working with a partner.

If I go there with my friends



I'll start I'll record the conversation  
 and discuss the meaning of the words  
 and the tenses and something like that  
 and the meaning of the whole drama  
 and idea  
 and try to match with my partner.

We can share our ideas and learn from each other.

For me I think a discussion will be a little help  
 because this is only my own idea, too. —

We can share our ideas  
 and learn from each other.

I think that would be better.

(Would you like to use the system again yourself, Beth?)

Yeah. I would use it with my friends. I just discussed it  
 yesterday with Ruth and she said maybe we can use it again  
 after the project.

Especially when you are two or three or four friends  
 or two friends together we can laugh, and we can discuss, we  
 can talk, we can practice. I think we can all benefit.

(Beth:pp.6,7)

The way in which Beth would work with friends was imagined and described in some detail. Other individuals were perhaps less articulate than Beth but nevertheless all had some comment to make. Hank acknowledged that he would have preferred to work with a friend, "It's better. It's better" he said (Hank: 7.31). In talking about himself he described in some detail the sense of loneliness that he felt when working by himself and this is referred to in the previous section. Walt, too, preferred the idea of working with a friend.

I can't listen is this correct or any wrong.

I can discuss my friend

the friend will tell me what what the problem (Walt:4.2-8)

I can ask him.

If he understand then he will explain to me (Walt: 13.24-26)

When Sam was asked if he thought it would have been better if he'd been working with somebody else he replied "It depend the other guys, what the aims, what the aims of his study. So if the level if if my partner is same as me it's better" (Sam:5.22-24;6.1). However, Sam went on to say that he would prefer to work by himself and later he reinforced this by saying "I think on this system not suitable for two partner" (Sam:16.22). It seems that Sam would choose to work with a partner if it were possible to find one whose aims and performance level matched perfectly with his own but rather than work with an imperfectly matched partner he would choose to work by himself. Sam was the only one of the individuals in this study who did not mention any advantages in working with somebody else.

Of the four individual participants three expressed a clear preference for working with friends. However, two of the three seemed to perceive the benefits in a purely personal way "I can ask, he will explain" "it's better" (too lonely by myself) and only one described the mutual benefits of working with others "we can help each other". One individual expressed a clear preference for working alone. In general there was a perceptible degree of self interest in the way in which individuals talked about the benefits of working with others.

The responses of dyads showed a similar degree of self interest. Ken said that there were advantages in both working individually, and with a group. However, while he cited an advantage to the individual he did not cite any advantages of working with a group. On the contrary he implied that working with a partner was something of a liability:

If two people and one people is also on this programme

then I think one people is also has its advantage two people  
also has its advantage

One person is we can take more practice  
and no need to to bother again about another partner (Ken  
and Dawn:4.23-28)

Dawn dismissed working individually as boring and went on to explain  
"You cannot knowed what you are wronged, what's you done wrong.  
I preferred to have both, or more." (Ken and Dawn:5.6-12). Dawn  
expressed a preference for working with others because they could act as  
monitors for her performance. The interview data relating to cooperation,  
which will be discussed in the next section, supports the somewhat  
contradictory views expressed by Ken and Dawn: a partner is a liability, a  
partner is useful as a monitor.

Vic spoke in more detail of the problems of working with a partner.

If I working on at once by myself I will learn  
and say it more correctly  
because I have not to hear the partners what saying  
did not have to worry about she or he cannot get the meaning  
or get the correct pronunciation  
or something like that (Vic and Fay:3.24-30)

Vic seemed to perceive working with a partner as a case of double  
jeopardy: unlike Dawn who expressed a preference for working with others  
because they could monitor her performance Vic suggested that he would  
"learn and say it more correctly" without the presence of others, and  
furthermore, working with others seemed to cause a degree of anxiety.  
From this it could be inferred that Vic was the stronger of the two and that  
he was disadvantaged by working with a partner who needed a lot of  
support. There was no evidence to suggest that this was the situation and

the other member of the dyad certainly did not see herself in need of support. When asked if she would work in the same way in the future she replied, without hesitation "Ah work alone" (Vic and Fay:4.34).

The data from these two dyads offer a number of insights: dyads do not necessarily perceive learning with a partner to be mutually advantageous. There is a possibility that an individual within a dyad will feel burdened by a sense of responsibility towards the other member and that this feeling will be expressed as a perceived advantage in working alone. Even if no such burden is expressed an unequivocally expressed preference for working alone "next time" suggests a certain measure of dissatisfaction with working with another.

Interestingly, no member of a dyad suggested that they themselves might be responsible for impeding their partner's progress. However, the third dyad, Ruth and Troy, present data that are, perhaps, more compatible with our expectations of learning in a socially supportive environment.

In both Ruth and Troy's responses there was an absence of self interest (but not self-awareness) and a concern for the affective dimension of learning: Ruth mentioned interest and liking and Troy mentioned shyness. Ruth believed that the system would interest all students because "many students like to see movies" (Troy and Ruth:4.21) and Troy thought that it would be best "for someone they have poor English. Because they can learn learn from the system individual" (Troy and Ruth:4.26-29). This he saw as being useful "Because I think some people is poor in English, he very shy to speak English to the others (Troy and Ruth:5.1,2).

Troy's spoken English was quite weak and he struggled to make himself understood. During the interview Troy and Ruth spoke in Cantonese at times in an effort to clarify points; at other times they pooled their English resources to provide an answer. Thus, the interview itself became an

exercise in cooperative learning. The way in which one started a sentence, and the other continued it, is particularly interesting:

Ruth because the people is (Cantonese)

Troy: (Cantonese)

Ruth: Ah make the people use the system for a long time first then

Troy: he has some improvement,

he has then, ah he can

Ruth: open himself to

Int: become more relaxed perhaps

Ruth: Yes.

to other people (Ruth and Troy:5.18-31)

And the result of this cooperative response seems to emphasize this dyads concern with the affective domain in learning. The interviewer's effort to provide help was acknowledged by Ruth's "yes", but she, nevertheless, insisted on completing the sense that she and Troy intended. And this was fortunate because it was a much richer response than that suggested by the word "relaxed" that the interviewer provided. It actually seemed to reinforce this dyad's recognition of the importance of the socio-affective domain in learning. Even individual study was perceived as preparatory to working with others and there was no implied criticism of learning as they had just experienced it. This was particularly interesting in view of the way in which Troy performed. His use of the system was characterised by a highly flamboyant, almost slapstick, performance which was in sharp contrast to his professed and demonstrated shyness in the interview. It was also in marked contrast to the more restrained use of the technology demonstrated by the other participants in this study. Ruth and Troy placed a strong emphasis on enjoyment and fun, and Troy's shyness seemed to dissipate when he used the system. When Troy was asked if he felt shy as he worked he replied, "No. She is my friend" (Troy:14.6-8). Neither Ruth nor Troy considered the program to be a game, and, in fact, Ruth expressed

a strong dislike for games, and yet they obviously both appreciated its potential for fun. The benefits to a shy student, as both stated and demonstrated by Troy, were mentioned by one of the members of a dyad as well: "I think the student was shine (shy) to talk English that will help them most and they do not have to shine (to be shy) so they will learn more" (Vic and Fay: 5.29,34). Ken and Dawn also implied that the system offered certain benefits to students who were lacking confidence. The data that they provided appear under 2.2.1 because they expressed their opinions in terms that made it appropriate to that category, however, it also has relevance here (Ken and Dawn:8.21-24; 12.15,16). A large number of the members of the cohort to which these participants belong claim, during consultations with counsellors, that a lack of confidence hinders them in learning English. A system that is perceived by the students as increasing their confidence warrants closer study.

Among dyads there seemed to be considerable support for working alone and a belief that partners could pose something of a liability. This was particularly interesting in view of the evidence of cooperation provided by all three dyads and discussed below.

### 2.2.3 Co-operation

This category (coded as 1s in the transcripts) was only available to dyads as it referred specifically to examples of co-operation observed and discussed during the stimulated recall, or to particular examples of co-operation discussed during the interview. Despite the relative brevity of the stimulated recall session each of the dyads demonstrated specific examples of co-operative learning during the 15 minutes of video that was reviewed.

In the first example Ken identified the source of a problem - linking, or juncture, between words. Cantonese speakers tend to have difficulties with this phonological feature of English. It has been noted that "The

monosyllabicity of basic Chinese units leads to learners' separating English words rather than joining them smoothly into a "stream of speech" (Chang, 1987, p.227). In the example that Ken identified the final "r" of "sooner" is sounded in order to form a smooth transition between "sooner", and the word following, "or", which begins with a vowel. If the sound is exaggerated then in saying "sooner or later" the sound "ro" is heard between "sooner" and "later". Ken both modelled the correct version and pointed to the screen to indicate where the link was to be made. During the interview he talked in terms of a shared problem and illustrated his understanding of the cause of the problem. He demonstrated both verbal modelling and how he referred to on-screen information to identify the problem. He explained to the interviewer what he was doing in the video:

Oh Ah just tell her how to  
 Oh I just point to sooner ro ro just point to the word  
 because I  
 we think we are understand it is linking  
 we can't say it because  
 I think we are not experienced  
 not very experienced (Ken and Dawn:15.1-5)

Ken seemed to perceive the problem as a shared problem, but a problem about which he perhaps had greater insights. He demonstrated his willingness to share his insights with Dawn as they both tried to master the problem.

In the second example Ruth monitored Troy's performance. She told Troy where he had made a mistake and although Troy's response was somewhat defensive he did check and correct the problem. It was interesting that his defensiveness was directed towards the program and not towards his partner. Ruth explained to the interviewer what she was doing: "He speak a missing word so I tell him he is missing a word but he said the drama have



missed a word first" (Ruth and Troy:12.25-31). Troy agreed that he did not just accept Ruth's word that he had made a mistake but rather he checked with the drama to "find out the reason" (Ruth and Troy:13.2) and then corrected the problem.

The third example provided another type of co-operative learning and one that raises a number of problems. Vic explained how he and Fay were working.

I think I was clever than her  
 So she had to learn it again and again  
 and then if she think it's enough  
 then the next sentence  
 so he (sic) control (Vic and Fay:7.25-29).

Vic allowed his partner to control the system so that she, as the weaker partner, could determine when she had learned something sufficiently to move on. This seems to be very generous of Vic and yet Fay, it may be recalled, said that she would prefer to work by herself next time. This suggested that there may have been a difference between the control that Vic thought he was conferring on Fay and the control that Fay perceived that she had. This seems to be closely related to the next point, the authority of the learners.

When learners are under the direct supervision of a teacher there is a certain degree of conferred authority. In a situation such as the one studied here there was no obvious hierarchy. Vic was convinced that he was superior to his partner. This has already been discussed in the previous section but there the data were drawn from the semi-structured part of the interview and were interpreted in a general sense. However, the above data were drawn from the stimulated recall and Vic was no longer talking about "partners" and whether "he or she" can get the meaning or the

pronunciation. He was now talking about "I" and "she" and explaining what they were actually doing and how they were working. Vic said that he listened to his partner most in response to the question "Did you listen to Fay as well or did you just listen to yourself?" (Vic and Fay:3.33,34). Yet during the stimulated recall when both Fay and Vic were facing towards the screen and repeating language from the programme they were asked if they listened to each other. Vic replied, "No" whereas Fay replied, "Sometimes". This apparent discrepancy in Vic's responses may be explained by his use of the word listening: in the first instance he may have used it to indicate that he was waiting while Fay practiced, and in the second instance he may have used it to refer to monitoring Fay's performance. This interpretation is entirely compatible with the video of Vic and Fay working together which seemed to be characterised by a certain lack of vitality; there was more evidence of individual turn taking, and waiting, than dynamic interaction. Considering Vic's perceived superiority there was little evidence to suggest that he actively helped his partner. The extent of his help seemed to have been confined to allowing Fay to control the technology. There was, however, evidence that Fay actively helped Vic. It was observed that at a later point in the stimulated recall Fay assumed the role of leader and insisted upon the correctness of her interpretation of a point within the drama. However, surprisingly, during the stimulated recall it was Vic who explained what was taking place. Vic said " No no I misunderstand. And then I I know that she say that. So I I accept that "reasonable" is in the straight form" (Vic and Fay:15.29-33). "I know the meaning of what she's saying" (Vic and Fay:16.6). When Vic talked of "the straight form" he was talking about a regular pattern of intonation. Vic was so confident that he explained what was taking place even though Fay provided the authority that sparked the interaction.

Despite Vic's confidence, he conceded that he had misunderstood a particular point and that Fay was right. In reviewing the entire video after the interview/stimulated recall it was apparent that there were a number of

occasions on which Vic would have benefitted from Fay's help and yet she did not offer it. Fay seemed to be naturally reticent whilst Vic was confident so it is interesting to speculate on what may have prompted her to offer help in this instance. Simon, a participant in the preliminary study, was also very shy, and yet he too quietly referred to the authority of the computer to make a point for him when he insisted "let's listen one more time" and thus persuaded his partner to listen more critically and change her performance. It is not the Chinese way to be confrontational and it is possible that the computer provides a neutral authority that can be appealed to by less confident learners who are not assertive in their own right. Fay offered help, not at the beginning, but towards the end of the session, and she may have gained confidence in her own ability in the interim. In contrast to the other dyads in which the one who initiated the help explained his or her actions and thinking, here it was Fay who initiated the help and Vic who explained it. Although Vic felt that he was superior to his partner and so assumed authority, and then used that authority to confer control of the technology on his partner, Vic's judgement was open to question. It is also interesting that in the semistructured phase of the interview when Vic and Fay were asked how they decided what to do Vic explained in some detail:

If I have a new idea I will tell her  
 and if she say it's a good idea and we try it both  
 and if he she have a good idea he also tell me and we will practice  
 together  
 and say this sentence is not that say in that way  
 and then we will hear it again  
 and then we find out which is the true.  
 I think two of us is better (Vic and Fay:2.29)

Here Vic did seem to acknowledge the help he received from his partner. However, there appeared to be a degree of perverseness in Vic's responses.

On the one hand he felt he would achieve more if he were working by himself and not having to take responsibility for his partner and on the other hand he acknowledged the help he had been given and the advantage of two people working together.

Different patterns of cooperation were observed between members of dyads. These included working together to solve common problems, monitoring and helping, allocating control of the technology and simply waiting. Sometimes the cooperation seemed to be mutually beneficial while at other times only one member of the dyad seemed to benefit. This raised questions about the very nature of cooperation.

### 2.3 Cognitive domain

There is often a close similarity between the verbal data categorised under Technology, and those categorised under Cognitive Strategies. However, there are two main differences: most of the verbal data under Technology came from the semistructured part of the interview schedule where students were talking about the technology in an objective way; most of the verbal data relating to technology, and appearing under Cognitive Strategies, occurred during the stimulated recall and was integrally linked to the particular learning task that the students were engaged in and was therefore both more subjective and more immediate.

The data will be discussed under two categories, metacognition and cognition. In Table 7 Learning Strategies 1-6 refer to metacognitive strategies while Learning Strategies 7-22 refer to cognition. Table 7 shows the number of times that particular strategies were used by individuals and dyads. The high use of metacognitive strategies indicated in Table 7 suggested that there would be some merit in looking at average figures for individuals and dyads for comparative purposes. Table 8 shows the average use of metacognitive strategies for each of the two groups of participants.

No table is given for the average use of cognitive strategies because the use of cognitive strategies was quite low and too widely scattered across all categories for this to be helpful. A different approach has been adopted for comparing cognitive strategies.

### 2.3.1 Metacognitive strategies

Despite the fact that all the participants, with the exception of one dyad, denied having a plan, all participants went on to explain the way in which they organised their time, and the particular aspects of the program to which they directed their attention. This is supported by the high level of use recorded for the first 3 metacognitive strategies: advance organisers, directed attention, and selected attention. Some of the planning decisions related to an overall plan whereas others were formulated on a more ad hoc basis.

**Table 8 Comparison of Use of Metacognitive Strategies: Individuals and Dyads**

	Individuals	Dyads
1 Advance Organisers	6.00	5.66
2. Directed Attention	8.75	5.00
3. Selected Attention	10.25	4.00
4. Self Management	30.25	14.33
5. Self Monitoring	6.25	9.66
6. Self Evaluation	22.75	19.33

*Numbers represent average information units recorded for groups over a period of approximately 45 minutes*

Beth had a general plan which was to see the whole drama. Within that plan she intended to focus on meaning: "just trying to rush everything before I finished the program because I want to finish. It's very interesting. But not that rush. I have to understand the meaning, what they say in the program, and words of course. I check it up very often" (Beth:3.23-34). Beth later explained that she was not focussing on oral practice because she could "speak fair English" (Beth:5.13). She mentioned the importance of the plan, with respect to using the program, several times during the interview and always emphasized the way in which the plan would change to suit the situation and the intended outcome. Beth explained her plan in terms of the idea (in my mind), the execution (I just done) and the purpose (I want). She says "The plan that I, I in my mind, or I just done" before going on to explain "I want to clarify, I want to make sure" "I want to know the meaning" (Beth:9.1,2; 11.21). Beth demonstrated a high degree of engagement with the program and a sense of purpose in the way she worked. Beth agreed that when she went to the menu she was looking for particular help.

Hank was most emphatic in his denial of a plan "No, no I haven't got any plan" (Hank:3.6) but it soon became clear that he was actually explaining why he was too busy to devote time to studying English. When Hank's attention was directed back to the time in question his response changed from apologetic to authoritative as he asked "Within this 45 minutes?" and then went on to explain:

Okay my plan is just select one of the chapter I like  
and go over, go through it,  
go through it without, without um, without pause  
and without title, title,  
and go over it  
and try to get some idea from it  
try to get some idea (Hank:4.5-23)

During the stimulated recall Hank indicated that he was focussing on one character and if he was interested in the statement he used the microphone (Hank:16.22). Hank made greater use of the recording option than any of the other participants in the study. He also demonstrated a high degree of control over the technology. It was only during the stimulated recall that Hank indicated that he was focussing on one character, and indeed the degree to which this was so only became apparent when the video was viewed in its entirety at a later date. Then it could be seen that Hank's total focus was on assuming the role of the manager.

Sam said he had no plan but he then went on to explain that in the beginning he had to remember how to use the system and he then evaluated the shortcomings of the program commenting particularly on what he thought were the inadequacies in the descriptions of the chapter and the characters in the drama. Sam was the only participant who built control of the technology into his plan. Sam explained that he had a plan: "I had prepared. The first plan is to improve my conversation, but I just see the sentence, um interesting, um, some interesting one" (Sun:4.4-18). Sam explained that he stopped to study things that interested him and then he returned to his plan. However, he seemed rather vague about his plan and didn't ever elaborate.

Walt did not articulate any general plan, even going so far as to say "I don't want to understand the drama very clearly" (Walt:11.32) and saying that he wanted to understand "Just the sentence" (Walt:12.3). Walt said he didn't have a plan "I only take one step at a time. I will see the more interesting chapter one after another" (Walt:2.24-27). Walt's use of the word "interesting" is probably a little doubtful in view of his earlier comments and the fact that he viewed the chapters in strict sequence from 1 to 14, thus not giving any indication of selection according to interest. Beth, who expressed a high degree of interest in the story, did not repeat the chapters that she had already seen in the teaching session. Although, like



Beth, Walt viewed a large number of drama chapters his reasons seem to have been quite different: when asked how far through the drama he had got he replied "About 5 minutes of each chapter" (Walt:2.31) and when he was later asked if he was disappointed that he didn't reach the end he said "No". When asked if he tried to think about what might happen next in the drama he replied "No" and when asked if he could imagine what might happen he said "No" (16.19-28). Beth when asked if she had been distracted by someone coming into the room said "I'm not focussing on the camera. You can see I want to finish" (Beth:24.11-15). The way in which Walt worked seemed to be largely governed by the mechanics of time management and this may account for the almost total absence of the first three metacognitive strategies from his repertoire of strategies. Beth, who recorded the highest number of strategies in these categories, expressed the strongest interest in the program and was vigorous in her pursuit of her stated goals.

When asked if they had a plan for using their time two of the dyads said they did not. Only Ken replied in the affirmative "Yes. I just have little plan" and when asked "Did you follow your plan?" replied "Yes I think we are follow my plan" (Ken and Dawn:2.12-27). Ken and Dawns' plan was to role play, with each of them assuming a gender appropriate character from the drama, and this was what they did. Although Ken and Dawn both explained their plan (Ken and Dawn:2.12-27) it is doubtful whether Dawn actually contributed to its formation because Ken is quite careful in his use of "I" and "we" and elsewhere he corrects himself when he seems to feel that he is including Dawn when it may not be appropriate (Ken:12.26,27). Nevertheless, they did have a plan that both agreed to, and they were the only dyad that both articulated, and demonstrated, unity of purpose.

Ruth and Troy said they did not have a plan but then in response to being asked how they decided what they would do first Ruth explained:

Continue the last Saturday  
 see the drama practice  
 and then use the microphone  
 to re, re um, to record my voice  
 and his voice. (Ruth and Troy: 2.23-27)  
 five start from five  
 (see) as many as possible  
 I want to see the whole drama (Ruth and Troy:3.19-31)

It could not be established how this plan was decided upon; although Ruth and Troy agreed that they had decided together their answers seemed more a matter of expediency than certainty. Ruth seemed to have a clearer idea of what she wanted to do and she indicated that she would work in the same way in the future "because the drama is quite interesting. I want to see the whole drama." Troy confined himself to agreeing by simply saying "Yes." However, Ruth and Troy only viewed two chapters, which rather contradicted Ruth's desire to see the whole drama. It seems that the way in which both of these dyads worked was articulated by one member, and simply agreed to by the other, who then focussed on his or her own personal agenda. Troy was keen to have fun and Dawn was keen to demonstrate her persistence, goals that were not necessarily incompatible with the agreed plan unless they were pursued to excess.

The third dyad, Vic and Fay, explained how they worked in terms of "I": Vic and Fay seemed to work on an ad hoc basis responding to the screen and their individual needs. Both seemed to want to improve their oral performance but there is no suggestion of a mutually agreed plan or a dynamic strategy. Vic says "I think firstly I would look at the screen and then I one sentence and sentence" while Fay says "When I saw that there is a sentence is very difficult to say, or something is difficult to me, I will try to study it" (Vic and Fay:2.22-24).

Members of dyads appeared to be supportive of each other but there was no evidence that they negotiated mutually agreed plans. Rather it seemed that the plan offered by one was accepted by the other. This lack of commitment to negotiated goals may have contributed to the apparently relaxed atmosphere that prevailed and the way in which dyads extended the time spent on each chapter. It may also have encouraged a general tendency towards acceptance of whatever the other member of the dyad chose to linger over. For example, Ken and Dawn directed their attention to linking, or juncture, an aspect of the phonological system of English, with the utmost intensity. The phrase "sooner or later" dominated a large portion of the stimulated recall (Ken and Dawn:pp. 9-16). It occurred to the interviewer that there was a point beyond which the effort expended became futile, and furthermore, that the learners' focus seemed to be on persistence itself as a goal, rather than on a particular aspect of the program. Both participants expressed an interest in linking, or juncture, but Dawn actually selected this phrase, and for three very good personal reasons: she considered the sentence difficult; she couldn't hear it clearly; she was role playing the character who was speaking (Ken and Dawn:9.17-31). Ken was totally supportive of Dawn, and whilst she, too, supported him at other stages, there can be quite a measure of disparity between the attention claimed by, or accorded to, members of a group. This may be reflected in the way in which participants talk about the advantage of working alone as "not having to bother about the partner."

The lack of a plan that was mutually negotiated, and included some element of time management, may have made it difficult for members of a dyad to signal that it was time to move on. Although individuals were divided in the attention they seemed to have given to thinking about their goals and use of time (two worked with a general plan while two adopted a more ad hoc approach) in general, they seemed to work with a greater sense of purpose, and to be more aware of the use of time and the system, than did dyads.

The next three metacognitive strategies relate to self. They are: self management, self monitoring and self evaluation. Under self management three individuals mentioned the importance of time: Beth reminded herself not to waste time (Beth:18.20) while Sam was very specific about time and talked about reviewing the procedure for 5 minutes (Sam:2.9) and also about spending 30 seconds on particular aspects of the program before playing on (Sam:15.16-20). He also talked about the possibility of spending too much time on one sentence (Sam:15.13-15). Walt talked of spending about 5 minutes on each chapter and explained what he would do in this time, but he did add that the chapters were of different lengths so the 5 minutes was not absolute (Walt:2.31; 7.19,20). He said as he worked he "would think the time" (Walt:9.26,27) and this influenced what he did. Two dyads mentioned time but they spoke in much more general terms. One dyad said they just chose one chapter because of the time limit (Ken and Dawn:3.15,16) and the other said "I think after half an hour I will think that I must overall one drama ... but we do not have enough time to run through (Vic and Fay:2.9-16; 5.16,17). The dyads were not only less specific than individuals when talking about time, but they didn't seem to relate time, in any dynamic sense, to the way they worked. Dyads did not seem to have the same sense of immediacy about the use of time that characterised the way individuals worked. For them it was more of a theoretical consideration.

Sam explained that if he found a difficult sentence he concentrated, then checked the various options for help, and if he still didn't understand then he skipped the particular problem and continued the drama (Sam: pp 19,20). Walt was quite explicit about how he dealt with the problem of understanding "If I listen twice or three times and, but I don't understand, and the dictionary not clear to to to explain the meaning then I skip (Walt:12.25-27). One dyad explained that they paused "at this word so we can know the meaning but sometimes it's no dictionary so we cannot know the meaning. We skip it. It's only one word or something, just the last word

something like that" (Vic and Fay: pp.9,10). The individuals seemed to include "skipping" as a conscious part of self management, and were quite brisk in describing their use of it, whereas the dyad conveyed a slight sense of helplessness, and injected a note of apology into their explanation. When asked if they tried to work out the meaning together they said "No" and when asked if they thought about the meaning the reply was "I think it's hardly (hard) to think" (Vic and Fay:10.3-9).

Meaning was mentioned more frequently by individuals than by dyads and they provide evidence of an integral relationship between self management and meaning as the following examples show:

There's something I don't understand and I want to check  
(Beth:23.14,15)

Try to get some idea and then I, I change the selection  
(Hank:4.7-23).

I just see the screen is not good to understand what is say  
(Sam:p.9). Sam is explaining that he is reading aloud, and not just silently reading from the screen, in order to promote understanding.

If no the English title I can't understand (Walt:11.9). Walt has just explained that he has tried not using the subtitles and found that he couldn't understand so therefore he is using the subtitles.

All individuals showed a concern with meaning and linked it to self management. In contrast "I think it's hardly (hard) to think" (Vic and Fay:10.3-9) was the only mention of meaning, in relationship to self management, provided by dyads.

Other data on self management suggested that, as well as being more conscious of time, and more concerned about meaning, individuals

employed a greater range of self management strategies, and were more self aware, than dyads. Beth indicated that she considered the situation from her own point of view (Beth:3.8). Hank insisted "I like to speak, speak, speak" and then went on to explain the aspects of work that he found tedious (Hank:16.8-11). Sam, as has already been mentioned, read aloud from the screen as he worked and Walt said that if the talking speed was too fast "then I press more, much time" (Walt:15.12). Dyads seem to have been more constrained in the individual strategies that they used and, except for one dyad, did not make use of the social dimension as a strategic learning resource. Ken referred to the screen to point out mouth movements to Dawn. Ken and Dawn worked cooperatively whereas the other dyads often operated more as individuals and self management for them was characterised by turn taking and waiting.

All participants, except Sam, showed some indication of self monitoring. The main areas that were monitored were: checking for meaning of words and longer expressions, pronunciation of individual words and trying to speak correctly over longer stretches of dialogue. Members of dyads did monitor each others performance but not always as actively as might have been expected. Ken and Dawn provide an example of monitoring within a dyad:

Dawn: this is a difficult sentence

we hear

Ken: sooner

Dawn: sooner or later

Ken: sooner or later (Ken uses different intonation)

Dawn: We hear, we hear

we try and tries to hear what's she say

because I cannot hear

Ken: clearly hear the sooner or

Dawn: sooner or later

cannot hear sooner or later



Ken: the linking

Dawn: it's too fast (Ken and Dawn:9.15-30)

The collaborative explanation has much in common with the one quoted earlier in which Ruth and Troy also used the interview as a vehicle for interaction. There is extensive monitoring taking place and it begins with Dawn's assessment of the difficulty of the sentence. It is not immediately apparent what the difficulty is but Ken later identifies it as linking, or juncture. In order to appreciate the extent of the monitoring it needs to be understood that there was considerable variation in the pronunciation that Ken and Dawn were using. They were monitoring their own performance against the program, and additionally, Ken was modelling for Dawn. Although Dawn used "hear" several times, when she repeated "We hear we hear" she actually meant "we listen" a difference in meaning that is often ignored by Hong Kong students. This adds an active dimension to the monitoring. It was difficult to gain access to the particular type of monitoring that participants were undertaking and this example helps to illustrate the way in which a dyad used both the program and the social dimension to monitor a particular aspect of the program. There was a close relationship between cooperation and monitoring when the data provided by dyads was examined and examples discussed under that category have relevance here. Potentially dyads may have richer resources for monitoring if they combine the help that the program offers, with their own personal resources and those of their partner. However, individuals seemed to have had a greater inclination or opportunity for self evaluation.

Beth made a general evaluation of her strengths and her needs and emphasized that she stopped to check her understanding and pronunciation frequently. When asked how she checked she said she checked in her mind. Later when Beth was asked why she was nodding her head as she worked she said "That's what's in my mind" (Beth:21.6) thus seeming to confirm that there was agreement between her own internal measure of



evaluation and the program. Other individuals also talked about checking, usually referring to it as comparing. All seemed to use both the program and an internal measure against which to evaluate. Hank said "I think I have something wrong from the statement compared with Roger" (Hank:13.26-28). He then explained that he thought about whether his guess was right or wrong and that he accepted "some words I may speak wrong but it's just a minor mistake" (Hank: 23.2-6). Sam also spoke of comparing and said "Ah the second the second is better than, its slightly different, better than before." He then explained "if I feel this is slightly different, I will skip this to another sentence" (Sam:11.18). Walt, who it may be recalled did not use the recording option at all, indicated throughout the interview that he was concentrating on listening as the key to understanding. At one point he seemed to suggest that the reason he didn't practice speaking aloud was "Because "I can't listen very clearly and I don't know how to pronounce the sentence (Walt:9.15,16). Later, Walt demonstrated to the interviewer that he could in fact pronounce the single word, "negotiation", correctly, as he had assured the interviewer that he could after listening to it twice. Walt was generally very controlled in the number of times that he repeated language from the program so it was a surprise to see him repeating one sentence over and over, hitting the "repeat key" quite forcefully as he did so. When Walt was asked what he was doing he said he was trying to say the sentence in his mind. When he was asked if he was saying it correctly he said "No correctly" (Walt:15.19). As Walt evaluated his performance on a single word fairly, it seems likely that the apparent frustration he seemed to be expressing as he hit the key forcefully may have been indicative of an equally fair evaluation of his ability to pronounce at the sentence level. This seems to suggest that the internal measures against which individuals evaluated their performance, whether available to external scrutiny or not, have considerable authority.

Dyads also talked about following in the mind. Ken said "in my mind just follow how to say" and assessed that he was improving a little. (Ken and

Dawn:14.23). Dawn indicated that she was not satisfied with her performance but was at a loss to explain why she was not satisfied "Only is the feeling only is the feeling that I I I" (Dawn:15.21). Ken spoke for her and said "I think she cannot for 100%" (Ken:15.22). Ken repeated "in my mind" and referred to percentages as measures of evaluation on a number of occasions: "In my mind I think I can follow 100% but actually just 50%". Later when Ken was asked to explain why he had pulled a face he said he was not satisfied "because we cannot follow 100%." Ken was quite analytical and although Dawn adopted his language, saying at one stage, "I will practice in my mind" and even using a percentage as an estimate of her performance level, she actually appeared more affective in the way she evaluated performance as the following dialogue illustrates:

Int: You say "good, fine"

Dawn: I say fine his, his, his

Int: his pronunciation?

Ken: What I am saying (Ken and Dawn:18.19-22)

The way in which Ken and Dawn evaluate seems to suggest that both individual and dyadic monitoring are possible. However, the other two dyads did not appear to be overly concerned with evaluation and monitoring.

Ruth and Troy were less rigorous in the way in which they commented on their own and each others performance although Ruth did say that "sometimes I will play the .. play the sentence back and compare the voice and the speak" (Ruth and Troy:9.20,21) but she did not provide any explanation of the way in which she monitored or assessed her performance. She did, however, note that "the sentence is quite long but it's quite easy to understand the meaning." When Troy was asked if he understood the meaning he said "No. I have problem" and yet he didn't ask Ruth for help, but said that he just left it.

Vic and Fay seemed to work very much as individuals in the context of monitoring and evaluation with Vic showing a certain degree of complacency: "I listened to the partner the most because I think I can know what I am saying" (Vic and Fay:4.1-3) and when Vic was asked if he could understand what was being said he replied "Most of it". When Vic was asked if he was monitoring and evaluating his own performance he replied "I think it is similar to her voice that the drama is, that's okay (Vic and Fay:13.17) which, from Vic's intonation, seemed to suggest that Vic was referring to a hypothetical similarity, rather than an actively evaluated similarity. When the video was reviewed it was apparent that Vic's performance would have benefitted from more rigorous monitoring and evaluation. It is also interesting that later, when Vic was explaining how he and Fay used the program he explained that sometimes the model and the drama used different words "And then we look at the models and see the American and British what's wrong and we pronounce, but we hear is not the same, so we look at it and find that it's not the same" (Vic and Fay:17.12-19). Vic's critical focus was on the program but only rarely did he monitor himself. Fay was more aware of her own needs and reported that when she saw that there was a sentence that was very difficult to say, or something that was difficult for her she would try to study it. (Vic and Fay:2.22,23). She also distinguished between how she sounded when she practiced and how she sounded when she recorded: "My sound is not my practice one. My sound is not good when I record" (Vic and Fay:12.29-33). Fay explained that she listened to find out if her voice was "okay or not" and that she was listening for "just smoothly is the sound." Vic and Fay were not particularly rigorous in the degree to which they monitored individually and they did not provide the peer support that Ken and Dawn enjoyed.

Individuals appeared to make greater use of an internalised measure of completeness or correctness than dyads did in monitoring and evaluating their performance. Members of dyads did not use internalised measures to

the extent that they were used by individuals and nor did they utilise peer monitoring and evaluation to any significant extent. However, one dyad demonstrated that it was possible to use both individual and peer monitoring and evaluation within this learning environment.

### 2.3.2 Cognitive strategies

The number of cognitive strategies that were identified for each individual or dyad ranged between 3 and 11. Again individuals were to be found at the upper and lower extremes of the range, although one dyad also shared the place at the lower extreme. Repetition was the only sub-category that was common to all participants; it was the first or second most frequently used strategy for five out of the seven groups. The occurrence of repetition was fairly similar for both individuals and dyads: individuals average 5.5, dyads average 6.0. However, given the nature of the program, and the criticism levelled at it that students can only listen and repeat, this seems to be a very low average. Some explanation is perhaps necessary. Although the video of the students working showed frequent examples of repetition, when students explained their particular intention during the stimulated recall the information unit was categorised to reflect this intention, e.g., what seemed to be repetition was categorised as Socio-affective:cooperation if a member of a dyad explained that he or she was modelling the language for the other member of the dyad. There were also frequently cited examples of repetition "in my mind" and as their purpose was commonly to monitor or evaluate performance they were often categorised as metacognitive strategies. Although audio visual representation was common to the majority of the groups (6 out of 7) in general there were too few examples of most of the learning strategies to make significant comparisons between individuals and dyads. For this reason it was decided that the comparison of sub-categories within each domain, the practice adopted up to this point, would not be followed. Instead, the transcript for each group would be reviewed for all aspects of cognition in order to see if

it were possible to make any comparisons between individuals and dyads working in the interactive multimedia environment.

Beth was concerned about meaning (the word "meaning" occurred 21 times, and "understand" 16 times during the course of the interview). Her two most frequently used strategies were inference and grouping "I can guess but not very sure, single words. And if there's a long phrase I can guess the meaning" (Beth:2.2-8). Beth drew on her own prior knowledge to understand the drama: whilst not understanding some of the idiomatic expressions used in the drama she recognised that the mode of expression was "Just like we speak in Chinese" and when confronted by a French segment in one of the chapters Beth reported "I know that she translate something and asking something" (Beth:19.31,32). At another point Beth reported "That's the accent what I very familiar with, just like my friend" as she mimicked the tone of voice used by her friend when speaking on the telephone. Beth seemed to draw on her own resources to understand and enjoy the drama but she also took advantage of all available help, saying "I learnt a little by each time" (Beth:16.1,2). At one point during the stimulated recall Beth was seen nodding slightly. She explained that she had been agreeing with what was being said. In a later viewing of the video Beth was seen to laugh quietly, signalling that she understood the drama's subtle humour. Beth recorded a low range of strategies use but she was the most frequent user of inference. This was probably a reflection of her concern with meaning and her level of confidence; she seemed to be prepared to guess, or draw inferences, on the basis of knowledge gained in situations.

Hank recorded the greatest range of cognitive strategies and the highest use of repetition. One instance was prefaced by a detailed explanation of what he had been comparing and listening for "the phrase between the words and the vowel." He then modelled for the interviewer what he had heard, and explained that he had forgotten to put this into practice when he recorded

and said, so "When I hear my record, I know there's something wrong. So I try to, try try again. Record it and compare." He expressed satisfaction with the result "Because I know there's a improvement" (Hank:20.1-13). There was often evidence of a high degree of metacognitive activity accompanying repetition. However, at one point Hank seemed to be mouthing the words he had just heard. By way of explanation he said "I don't like this work, this tedious work. I like to speak speak speak" (Hank:16.8-11). As empty repetition didn't seem to hold any appeal for Hank it was uncertain why he was doing it. Perhaps Hank accepted the fact that sometimes "tedious work" was a prerequisite of success. For the most part repetition, for Hank, and the other participants in this study, was an active learning strategy.

Hank talked about transferring knowledge into new situations "if that situation appear so I use this" (Hank:7.14,15) and "it's quite general to interrupt someone so I want to get this also. If I've a meeting with my friends, speaking English, it's quite useful" (Hank:10.20; 17.19,20). But Hank seemed to be taking in more than just the language "I absorb the video information" (Hank:7.10) and Hank explained that first he would try to get an overview of the story, and later he would try to remember the statement, and relate it to the character and their "attributes".

I absorb, I absorb the video information  
and then thinking it  
and remember it  
and so if on that  
if that situation appear  
so I use this (Hank:7.10-15).

Hank seemed to be building up a network of understanding based on the past, the present, and the future. Like Beth, Hank showed that it was useful to draw on prior knowledge in order to understand the present situation:



"culturation I heard, but she say acculturation "and" "It's not as simple as that', it's similar to Chinese 'Ni di mo gam gaan daan' so I try to learn it" (Hank:20.16-30). In an attempt to clarify what Hank meant by "think" he was asked to elaborate and he said:

try to use  
try to use and remember it  
say it over again  
say it over again and try to think it  
think it (Hank:7.19-29)

and later he revealed more of his strategies:

I select Roger  
Try to think what he says  
and press delete key to remind to remind (Hank:22.8-10)  
press  
and think  
press and think (Hank 22:19-21).

Here there seems to be a partnership between technology and cognition.

Sam made considerable use of resourcing as a learning strategy, i.e., he used reference material from the program to understand particular points. At one point he said that he was surprised by the written form when he saw the subtitle on screen so he referred to the grammar "to explain me the, the unexpected" (Sam:4.13,18). In seeking to understand vocabulary Sam acknowledged the multiplicity of meanings that words have but seemed pleased to be able to say "I think I understand then some meaning" (Sam:12.32,33) and at another point "I don't know this meaning of "angle" (Sam:18.29). Here the target language reference material is as Sam explains, "the drama, the person, the conversation, and then I I will try to



get the meaning, for the key word" (Sam:13.2-6). Although Sam mentioned key word, he explained that he didn't want to spend too much time on key words because he was interested "in the meaning of what the whole conver, the whole sentence, but it is too difficult." (Sam:14.11-16). Hank and Sam were the only participants to refer the use of key words as a strategy. When asked if he used the single word option Sam said "I prefer the whole title is display and then I thought the whole title." Sam explained that he didn't always keep the subtitles on the screen and when asked about a particular time during which he was looking at the screen for quite a prolonged period, he said that his plan was to improve his concentration. Although it was difficult to know exactly what he meant by this, it seemed that it may have been this concentration that enabled him to notice what he referred to as "some imprecision" (Sam:15.5) and then to focus his attention and "try to compare with my memory, and how to, with the sentence writing" (Sam:15.7-11). Although Sam varied his level of concentration, saying at one point "because it's only like you see the picture, we see the movie, not need to concentrate" (Sam:19.15,16), in general he seemed to favour "thinking. I thinking what the conversation is". And finally, if attention to keywords and focussing on identified imprecisions were of no particular help to Sam, then as a final resort he explained "I really want to understand I will at that time only try to continue the drama, to guess" (Sam:20.15-17).

Walt provided few insights into the cognitive strategies that he used beyond "I want to listen the model more clearly" (Walt:6.14) and "Listen more clearly means listen more times" (Walt:7.7-9) followed by "I only very careful to listen." When asked what he was thinking about, the reply was "To understand the drama" (Walt:14.23). Walt recorded the lowest total number of information units for all participants in the study and did not seem to be generally inclined to verbalise. He tended to give responses that were substantially similar to the ones quoted and did not seem to be inclined to probe any more deeply.

Ken and Dawn explained on a number of occasions that they were repeating in the mind: "I in my mind just follow how to say" (Ken and Dawn:14.20) and "I will only practice in my mind" (Ken and Dawn:16.27). With reference to meaning Ken said, on one occasion "I didn't know that before I came. I just ... " but unfortunately this thought was neither completed nor pursued so what contributed to his understanding must remain unknown. However, Ken was sure that he had learned something from the learning environment. Whether this was the result of visual or verbal input, control of the technology, social interaction, or greater receptiveness to meaningful input in a non-threatening environment, is cause for conjecture. All are available to the learner in the interactive multimedia environment.

Ruth and Troy recorded a high use of repetition but provided few insights into their learning strategies

Listen to the character first and then try to speak at her speed  
(Ruth and Troy:7.3,4)

I'm trying to pronounce the same (Ruth and Troy:12.19)

Pronounce it because I want to speak the same (Ruth and  
Troy: 13.23,24).

However, both expressed an interest in using the program again. Ruth said "I want to know if I have ... can I use the system again because this is quite interesting" and Troy asked "Ah this is.. can I buy, buy the disk?"

Vic and Fay provided more insights into learning strategies than the other two dyads. Whilst their use of repetition seemed to be rather mechanical, "I just repeating. I just practice" (Vic and Fay:7.6-13) and to have no particular purpose or focus, they made some reference to meaning, particularly for difficult words. They explained that if it were "just the last word or something like that we can thinking what is the meaning" (Vic and Fay:10.1,2) but they favoured more certainty "I think if you immediately

know the meaning you will more hardly to remember and have sometime later" (Vic and Fay:10.26-28). Here "hardly to remember" means to remember with greater certainty; "hardly" is commonly used to mean "firmly", in the Hong Kong context. Whether immediate knowledge should be derived from the situation in which the learning is embedded, or some other source, was not made clear. However, access to immediate knowledge did seem to be associated with ease of future recall, i.e., to "have sometime later." Vic and Fay were at their most assured when articulating their use of imagery and audio/visual representation:

The first thing I will think  
is there any other video I .. to listen this way  
or at the Pearl  
or some movie that someone say,  
and I have not mentioned it,  
which time I will say this sentence.  
Some of it I can remember. (Vic and Fay:12.1-11)

Here a wide range of resources is being mentally searched through in order to establish meaning, usefulness, and context, for new language. These resources include: video, English language television (Pearl is one of Hong Kong's English television stations) and movies. Vic seems to be trying to recall situations in which he may previously have heard the language that he is now hearing, but which he has not previously used himself. It is as though he is trying to establish the validity of the language through reference to other sources, and then to identify a context in which it would be appropriate for him to use the language. Having gone through this process he says "Some of it I can remember" which seems to refer to the recall of relevant contexts and language. Fay agreed that she, too, sometimes tried to recall previously seen TV programmes, but she did not elaborate.

As stated earlier, repetition was the only sub-category that was common to all participants and audio visual representation was common to the majority of the groups. Beyond this, the distribution of strategy use was very wide. However, there tended to be some reporting of the use of the same strategy by individuals. Three out of four individuals reported using grouping, inference and thinking. Two out of three dyads reported the use of deduction and remembering. Over all there was a greater average number of cognitive strategies reported by individuals than by dyads: individuals 34.0 dyads 15.33.

### 3.0 Summary of Differences Between Individuals and Dyads

There were a number of differences in the way in which individuals and dyads experienced the interactive multimedia language learning environment.

#### 3.1 Data derived from video recordings

##### 3.1.1 Student profile of program use

The learner profiles of program use are highly idiosyncratic. One of the few similarities between all groups was that all used the chapters in sequence, although this was sometimes a broken sequence. In comparing the use of the program between individuals and dyads it was found that individuals watched more chapters, and used more support for each of the chapters, than did dyads. Dyads watched fewer chapters and spent significantly longer on each chapter than individuals. Individuals tended to be at the extremes of the range of usage and to be represented by more idiosyncratic profiles than dyads who tended to demonstrate greater

uniformity of usage and to be represented by a more consistent profile.

### 3.1.2 Comparison between an individual and a dyad

The videos of one individual and one dyad were reviewed in depth because each of them effectively viewed only one chapter in the 45 minutes that they used the program. As there was such a wide range of patterns of profile use it was difficult to decide on how to make a more detailed comparison of patterns of use between individuals and dyads. The fact that these two groups each spent the whole 45 minute period on one chapter offered a unique opportunity for the study of how they extended the chapter they were working on. Close analysis revealed very interesting differences.

The individual's viewing style was systematic and controlled. He spent the time watching the same chapter seven times, each time employing a different range of options, and working towards a planned outcome. The goal towards which he was working became apparent to the observer as the video was being viewed. The dyad, surprisingly, and in complete contrast, did not even complete the first viewing of the chapter. Their exploration of the chapter was leisurely and difficult to chart systematically. They frequently used "repeat current phrase". It was probably the use of this key, more than any other, that accounted for the time spent on the one chapter. Although the videos of the other participants were not reviewed in this way there were ample opportunities to observe them during the several viewings that were carried out in order to check other data. It seemed that certain stylistic features of the viewing patterns demonstrated by this individual and this dyad were characteristic of the group that they represented. Individuals had a sense of forward momentum and always appeared to be moving towards a clearly articulated goal. Dyads seemed to operate within a comfort zone that was leisurely and relaxed. They were more prepared to spend a greater period of time on an aspect of the program that took their attention and less inclined to be concerned about time and the need to move

on.

### 3. 2 Data derived from interview transcripts

#### 3.2.1 Technology domain

Individuals explained their use of technology quite specifically and there was a clear correlation between their explanations and their profile of program use. Dyads, seemed much less sharply focussed than individuals and to lack the specificity of purpose demonstrated by individuals. The absolute control of the technology experienced by individuals may have led to their heightened awareness of its use. Individuals also demonstrated a greater degree of emotional engagement with the characters in the drama. Both individuals and dyads commented on a variety of aspects of the technology. However, individuals evaluated the options with much greater frequency, and in more detail, than did dyads. Evaluation of the technology made by dyads tended to be non-specific and to be related to listening and conversation whereas individuals were more specific in their criticism and frequently cited the lack of help with meaning as a major source of concern.

As individuals were more specific in the way they evaluated the technology their suggestions for improving the technology were more numerous and more detailed than those made by dyads. The main areas of concern were the grammar and dictionary options. The dictionary was valued for the help it provided with pronunciation and for the ease with which that help could be accessed. However, the need for meanings to be included in the dictionary was raised on a number of occasions. Furthermore, the selection of words in the dictionary was raised, with some participants expressing the view that the words that were included in the dictionary were not necessarily the ones that were difficult for them. A number of comments were made regarding the grammar option: these related to the large quantity of information, the difficulty of location and the appropriacy of the content



to this particular group of learners.

### 3.2.2 Socio-affective domain

Personal responses were rather mixed with one individual and two dyads contributing virtually no data so this made comparison between the groups difficult. However, culture was mentioned by both groups in the context of both the affect it has on learning and the value of programmes with greater cultural familiarity. A number of participants expressed a lack of confidence in using English and thought the technology would help to build learner confidence.

When talking about working in a group three of the four individual participants expressed a preference for working with friends while the other expressed a preference for working alone. Of those who expressed a preference for working in a group, two of the three seemed to perceive the benefits in a purely personal way, i.e., they described how their partner could help them. Only one described the benefits of working with others in terms of mutual benefits. In general there was a perceptible degree of self interest in the way in which individuals talked about the benefits of working with others. The responses from dyads showed a similar degree of self interest and partners were considered to pose something of a liability.

The data from dyads revealed that dyads did not necessarily perceive learning with a partner to be mutually advantageous. An individual within a dyad sometimes felt burdened by a sense of responsibility towards the other member and this feeling may have been expressed as a perceived advantage in working alone. Even if this sense of responsibility was not openly expressed an unequivocally expressed preference for working alone in the future suggested a certain measure of dissatisfaction with working in a group.



Individuals appear to have experienced the environment in a more positive way than dyads. Despite this more positive experience individuals, nevertheless, expressed a general preference for working with others in the future. Meanwhile, dyads did not indicate with any degree of certainty that they would work with others in the future. Clearly this raised something of a problem with regard to the social context of the interactive multimedia environment. It was hoped to resolve this by recourse to the data that referred to cooperation, a category not available to individuals. It was important to closely scrutinise the dyads in action to see if the benefits of working together that individuals imagined, actually materialised in this environment, or if dyads had reason for preferring a change in social context.

Different patterns of cooperation were observed between members of dyads. Sometimes the cooperation seemed to be mutually beneficial while at other times it seemed to benefit only one member of the dyad. The different patterns of interaction raised questions about the very nature of cooperation. However, although the benefits that individuals talked about, particularly those relating to discussion, were not necessarily apparent there was, nevertheless, always an atmosphere of goodwill and support.

### 3.2.3 Cognitive domain

#### Metacognitive strategies

The use of advance organisers, directed attention, and selected attention indicated that despite the fact that most of the participants denied having a plan all were able to explain the way in which they organised their time, and the particular aspects of the program to which they directed their attention: this is supported by the high level of use recorded for these 3 metacognitive strategies: Some of the planning decisions related to an overall plan whereas others were formulated on a more ad hoc basis.

Although individuals were divided in the attention they seemed to have given to thinking about their goals and use of time (two worked with a general plan while two adopted a more ad hoc approach) in general, they seemed to work with a greater sense of purpose, and to be more aware of the use of time and the system, than dyads. Members of dyads appeared to be supportive of each other but there was no evidence that they negotiated mutually agreed plans. Rather it seemed that the plan offered by one was accepted by the other. This lack of commitment to negotiated goals may have contributed to the apparently relaxed atmosphere that prevailed and it may have been a significant factor in extending the time that dyads spent on each chapter.

The use of self management, monitoring and self evaluation showed interesting differences between the two groups. Individuals made much greater use of self management strategies than dyads and they were more conscious of time, more concerned about meaning and more self aware, than dyads. Dyads were not only less specific than individuals when talking about time but they didn't seem to relate time, in any dynamic sense, to the way they worked. Although dyads did work cooperatively self-management for them was more often characterised by turn taking and waiting rather than shared management. It was characterised by individual, rather than a shared, effort.

The average use of self-monitoring was higher for dyads than individuals. The main areas that were monitored were: checking for meaning of words and longer expressions, pronunciation of individual words and "trying to speak correctly" over longer stretches of dialogue. There was one example of a dyad using both the program and the social dimension to monitor a particular aspect of the learning but members of dyads did not always use the social dimension to monitor as actively as might have been expected. There was a close relationship between cooperation and monitoring. Potentially dyads may have richer resources for monitoring if they combine

the help that the program offers, with their own personal resources and those of their partner.

Individuals appeared to make greater use of an internalised measure of completeness or correctness than dyads did in monitoring and evaluating their performance. Evidence suggested that those internal measures had considerable authority. Members of dyads did not use internalised measures to the extent that they were used by individuals and nor did they utilise peer monitoring and evaluation to any significant extent. Monitoring and evaluation tended to be solitary pursuits. However, one dyad demonstrated that it was possible to use both individual and peer monitoring and evaluation within this learning environment.

### Cognitive strategies

The fullest accounts of cognitive learning strategies were provided by two individuals and one dyad. Surprisingly, one of the individuals who provided fewer insights was the most articulate of all the participants. She provided a wide range of information in the other categories. The cognitive strategy that she used most was inference; this may have influenced her conscious use of other strategies and resulted in a narrower range of strategies being used. The investigation of cognitive strategies is, by its very nature, individual. This seems to be exemplified by the dyad that provided the greatest range of cognitive strategies: the cognitive strategies that were revealed by the dyad were contributed on an individual level. It seems that both individuals and dyads had the opportunity to reflect on the cognitive strategies that they used but the degree to which they did so may have been influenced by other factors. This will be discussed in Chapter 5.

## CHAPTER 5 DISCUSSION

### 1.0 Introduction

In the discussion two important aspects of the methodology will be reviewed. They are the use of English as the interviewing medium and verbal reports as interview data. This will be followed by discussion of the results of the study with reference to the three areas surveyed in the literature review, control in the computer learning environment, adult second language learning, and the social context of learning. Finally, some of the advantages and disadvantages of this type of study will be discussed.

### 2.0 Methodology

#### 2.1 English as the interviewing medium

Verbal facility is a major concern in using verbal reports since it is recognised that there are considerable individual differences in the tendency to verbalise. Furthermore, verbalizing difficulties can mask strategic strengths. Any problems that exist for speakers making verbal reports in their mother tongue must surely be compounded for those who are using a second language.

Interviewing non proficient speakers of English presented a number of challenges: questions had to be simple enough for students to feel competent to answer them; general enough to invite a range of responses; searching enough to elicit data that would lead to a better understand this learning environment as experienced by individuals and dyads. The researcher had minimal contact with the students prior to the interview and she had no prior information about their oral language competency or their general inclination to engage in oral discourse. The interview schedule was

loosely structured in order to accommodate the students' level of oral English competency. If students were unable to understand a question it was reworded, or sometimes abandoned. When participants misunderstood a question their response was treated with respect, even if this meant deviating from the research topic, until such time as the interviewee could be directed back to the question in hand. This minor inconvenience ensured that the participants did not lose confidence in their ability to communicate in English and sometimes the interviewer was rewarded with learner insights that would not have arisen in response to a direct question. Because the participants had very few opportunities to speak English they often needed time to think and to talk their way through to their eventual answer. Sometimes it took some time to work out just what this was. On occasions, when replaying the tapes it became clear that the interviewer had misunderstood a response. However, overall, there are enough examples of very clearly stated opinions to encourage the belief that the voice of the participants was heard. The following extract from the interview with Sam is used to illustrate this point. Sam had just been asked if he thought it would have been better if he'd been working with somebody else (Int=Interviewer):

Sam: It's important

Int: If you'd had a partner to work with

Sam: I think it's no difference

Int: No difference? So if you'd had somebody sitting beside you to talk to

Sam: Yeah because it depend the other guys what person

what, what the aims, what the aims of his study

because the aim is different

maybe the aim is maybe he is understanding is very well

only just want to improve ah the pronunciation

each sentence how to more accuracy

to to or more ah ah I don't know how to say

more more like speaking ah fluently

more more like speaking ah fluently

Int: more fluently

Sam: more fluently yes so if the level if if my partner is same as me it's better than

Int: so if you could choose, and you could choose to work by yourself, or you could come along with a friend, which would you prefer to do

Sam: I prefer one grouping

Int: One grouping. So you prefer to work with one more person or two more people

Sam: I think it's three ah three person is ah or four person

Int: You'd like three or four would you. That's interesting. (Sam:pp.5,6)

And the confusion continues with the interviewer not quite sure of Sam's preference as he starts describing another scenario. Finally the interviewer says "So if you were just working with the programme as it is, would you prefer to work by yourself or with somebody?" and Sam says, without any hesitation "By myself." Later, during the stimulated recall, he reinforces this preference. He is explaining what he is doing and when he is asked if it would have been easier if a partner had been listening to what he was saying he replies "I think on this system not suitable for two partner."

Sam's response was somewhat confusing from the beginning. His initial reply "It's important" seemed to suggest that it was important to work with someone else, but then he went on to add that there was no difference, which was interpreted by the interviewer as meaning there was no difference between working with a partner and working alone. In an attempt to clarify Sam's position the interviewer asked "so if you could choose, and you could choose to work by yourself, or you could come along with a friend, which would you prefer to do? Sam's response "I prefer one grouping" was interpreted by the interviewer as meaning that Sam preferred to work in a group. Subsequent questions were based on this assumption but the interviewer sensed that there was an underlying



confusion so she asked "So if you were just working with the programme as it is, would you prefer to work by yourself or with somebody?" and Sam replied very firmly "by myself." Sam reinforced this later on when he said "I think on this system not suitable for two partner."

A careful examination of the interview transcript reveals two points at which Sam's replies were misunderstood by the interviewer. The first was that when Sam said "I think there is no difference" he did not mean between working individually or with a partner but rather he was referring to a situation in which the people working with the program shared similar goals and levels of performance: "it depend the other person, what, what the aims, what the aims of his study, because the aim is different..."; "so if the level, if if my partner is same as me it's better than." Sam didn't complete this last utterance but it seems clear that he was going to say "it's better than working alone." The next point of confusion was that Sam's response "one grouping" led the interviewer to believe that Sam was referring to working in a group. It was only after a number of false starts and hesitations that it became clear that Sam's preference was for working alone and that he was not referring to one group but rather a group of one. And Sam reinforced this later on when he said "I think on this system not suitable for two partner."

After careful reflection upon the opinions expressed by Sam the interviewer was convinced that Sam would prefer to work with a partner if it were possible to find one whose aims and performance level matched perfectly with his. There seemed to be a tacit acceptance that such a person would be difficult, if not impossible, to find and therefore Sam's preference was to work by himself rather than with an imperfectly matched partner. Sam was the only one of the individuals in this study who did not mention any advantages in working with somebody else. When asked at the end of the interview if there was anything else he wanted to say about working with the program Sam replied "I think it in my home have one whole set of



equipment is better." He then went on to explain how he would use it: he would spend more time selecting each chapter so that he could find one that really interested him, spend more time on each sentence and he would find supplementary information from the dictionary and other text books. There was no mention of working with family or friends.

The interview with Sam illustrates some of the problems of interviewing non-proficient speakers in the target language. However, it also supports the claim that the interview structure did make it possible for the views of the participants to find expression. Furthermore, in the data classified as "Other", which was not analysed, there was evidence to suggest that some of the participants regarded the oral interview as a valuable opportunity to practice English:

but interviewing with you or with some person, I think it can increase the confidence, because they can try to express what they think (Dawn:7.11-13).

The interview may have been of direct benefit to the participants for this reason, and also because it signalled to them that the interviewer believed that they could cope with the demands of an English language interview. It therefore seems that there were valid reasons to support the use of English as the interviewing medium.

## 2.2 The interview data

Verbal reports are widely used to investigate learners' own tuition and insights (Cohen, 1987). The reservations about their use were discussed in the Literature Review and were duly noted in collecting the verbal data.

Much of the discussion on verbal reports focusses on how reliable the learner's recall is after the event has taken place. It is generally accepted

that events can be recalled accurately from short term memory. However, the period of time before the information passes into long term memory is very short (Cohen suggests 20 seconds or so). To achieve this level of immediacy "think aloud techniques" would be required but these were not a viable option for this study. However, there is also considerable support for verbal data when the retrospective report is given immediately after the task is completed. In this study the retrospective verbal reports were given immediately after the participants had used the technology. None of the participants had used interactive multimedia before and so there was no risk of their reports being distorted by previous experience. There was a high degree of certainty that their comments and observations, made so soon after using the technology, would be close to the comments and observations that they might have made as they were actually using the technology, had such a data collecting method been possible. In so far as it was possible to verify the verbal reports, the students' recall was accurate. For example, during the semistructured interview participants explained how they used the technology, and this was invariably confirmed when the video tapes were reviewed. At one point during the stimulated recall, when one of the participants could not remember what he had been doing, he simply said "I forget." There was no pressure on the participants to recall events.

One of the reservations about verbal reports focuses on whether processes that have become automatic are amenable to this type of scrutiny. In this study the availability of automatic processes to scrutiny was clearly a concern. However, the importance of gaining insights into nonautomatic cognitive processing in this environment was also of considerable interest. If verbal report data are limited to learning strategies that the learner is conscious of then their use is confined to language learning. They cannot purport to give access to language acquisition (if Krashen's distinction between learning and acquisition is accepted as valid). However, until learners have actually experienced this environment, and their experience has been studied in some depth, it is not possible to comment on the

automatic and/or nonautomatic cognitive processing that the environment might support. Results indicated that high levels of metacognitive strategies were used during the study. This suggested that quite a lot of the cognitive processing was non-automatic and therefore amenable to scrutiny.

Cognitive strategies were less amenable to investigation and although this may have been partly due to automaticity it is more likely that it was due to other factors. These may have included the general difficulties associated with investigating cognitive processes and the relatively short period of time available to do this. A cognitive strategy that was added to the original O'Malley et al. list of learning strategies was "absorb". This, together with some of the other data provided, suggested that some participants were aware that the environment supported language learning in a broad and non specific sense. This will be discussed in greater detail later.

The interview data was derived from two knowledge extraction tools: semistructured interview and stimulated recall. Both are frequently used research instruments and in other circumstances there would have been advantages in exploiting either, or both, to a greater extent than was possible here. The decision to combine the instruments was made when small pilot studies suggested that the language proficiency of the students, together with the unfamiliar learning situation, made it unlikely that sufficient data would be collected through stimulated recall alone. Furthermore, time restrictions did not allow for participant involvement beyond the four hours of this study so the methodology had to be responsive to the volunteer status of the participants. The interview and the stimulated recall were treated as one for the purpose of categorisation and analysis. Although the approach was somewhat unusual it did facilitate collection of the required data and it did have some advantages.

The main advantage of the semistructured interview was that it gave the participants the opportunity to express their opinions on a range of issues related to their experience before commencing the stimulated recall. During

participants wanted to raise. The semistructured interview gave them the chance to do so and then enabled them to focus on the stimulated recall without distractions. It has been observed that in verbal reports it is often difficult to know whether the action or thought reported did in fact take place during the time under consideration or whether another time reference was superimposed upon it. The semistructured interview also served to filter out the time references that were not the 'here and now' of the stimulated recall and deal with them first.

In considering the appropriacy and, or, reliability of verbal reports, there is a need to consider the overall structure and objectives of the study. The study sought to gain insights into the total interactive multimedia experience and to this end the verbal reports were invaluable.

### 3.0 Discussion of Results

#### 3.1 Control in the computer learning environment

Control in the interactive multimedia environment is a complex issue. At its simplest it does seem to offer the benefits in social or emotional terms that have been observed by others (Pellegrino, 1987 in Ryba, 1992; Ryba and Chapman, 1983). Ken and Troy were both quite explicit on this point

I think it is, although it is not living  
 but actually if I talk to real people  
 maybe he or she will angry with me  
 because my English is quite bad  
 so I think if I can control the people  
 and say again, say again, again  
 I can practice many times  
 I think it is very useful to improve my English (Ken:8.21-29)

I think it is very useful to improve my English (Ken:8.21-29)

Troy thought that the system would be most suitable:

for someone they they have poor English  
 Because they can learn from the system individual.  
 Because I think some people is poor in English  
 ah he (Cantonese) ah very shy to speak the English to the others  
 (Ruth and Troy:4.26-34).

Ken and Troy felt that the anger they might incur, or the embarrassment that they feared, when they spoke English, could be overcome with adequate individual practice. This did not rule out group practice as a means of increasing learner confidence, but it did suggest that the participants saw some aspects of individual control as personally beneficial, and conducive to enhanced levels of confidence.

Although Ken and Troy expressed somewhat similar views with regard to the system as a confidence booster they demonstrated quite different ways of responding to this control. Troy who was extremely shy during the interview and relied very much on the other member of the dyad to provide information beyond the most basic was undoubtedly the least inhibited in the interactive multimedia environment. His wholehearted exuberance was responsible for the great sense of fun that permeated the learning environment for Troy and his partner, Ruth. Ken's approach was much more serious and he and his partner, Dawn, demonstrated a much more earnest approach. Ken and Troy's reasons for approving the use of the technology were similar: both saw the benefits in terms of their increased confidence. Troy offered insights as both a member of a dyad and an individual. He supported the use of the system by individuals but he did not appear shy when he was working with Ruth. He credited his confidence to the fact that Ruth was his friend, although it should be noted

that they had never met before this study. This suggests that second language learners can gain confidence from using the technology in both individual and group situations. Although the work of Krashen (1985a) will be discussed later (3.2) his hypothesis of an "affective filter" is pertinent here. According to Krashen "The 'affective filter' is a mental block that prevents acquirers from fully utilizing the comprehensible input they receive for language acquisition" (p. 3). Learners with a high affective filter may lack self-confidence, or be anxious. Lack of confidence was mentioned by the participants in this study on a number of occasions. It seems that the interactive multimedia environment may reduce learners' fears and thereby enhance their capacity to take advantage of the language learning opportunity it presents. In this sense control has positive implications for the learner. However, control in a wider context is controversial.

There is disagreement among researchers about the outcomes of learner choice; those who endorse learner choice support the learner as able to make choices that lead to favourable outcomes (Paske, 1972. Cited in Jacobs, 1992; Laurillard, 1984, 1987). Others suggest that learners do not make wise choices (Jonassen, 1990. Cited in Jacobs, 1992). Marchionini (1988) observes that "one of the exciting potentials of hypermedia is the quantity of learner control it allows". Undoubtedly Marchionini is right when he talks about the quantity of control that the newer technologies offer. It was clear from this study that for every individual or dyad there were different choices leading to different pathways. When one further considers the myriad of pathways that learners could have forged if the whole range of program options had been available to them the result would have been staggering. Laurillard (1984, 1987) referred to the wide range of routes that students followed in negotiating their way through the same material and credited learners with finding their own "optimal routes." However, Laurillard was working in content domains in which, she says, "The pedagogic challenge has to be the same as it is for all didactic learning - to discover empirically the forms of misconception, and to



logically deduce the forms of crucial experiment that will motivate a change in conception to the preferred form" (Laurillard, 1987, p.16).

The problem is that in the interactive multimedia environment where language learning is the focus it is virtually impossible to talk about optimum routes since the destination of the learner is unlikely to be known, and nor is it likely to be constant. It is very likely that it will change in response to moment by moment changes within the multimedia environment. And indeed there were examples to indicate that this happened.

Marchionini (1988), when discussing the high level of learner control that hypermedia systems provide observes that "Freedom can be confusing because it increases decision-making load. Cognitive resources may be diverted from content and relationships as learners attend to navigational decision-making" (p.10). From this perspective learner control may appear to be a threat. However, as was explained in Chapter 1, the study reported here had its genesis in the establishment of a self-access language centre, the aim of which is to encourage tertiary students to take greater responsibility for their language learning and to become, in time, autonomous language learners. A self-access centre provides a range of learning opportunities and the learner is helped to cope with the "decision-making load." In this context the high level of learner control that interactive-multimedia offers must be perceived as a challenge. Certainly there was no evidence to suggest that the participants in this study found the choice that they were offered confusing. Rather they seemed to have a stage/situation approach to choice, i.e., the participants indicated that they had done certain things the first time, and next time they would work on other aspects of the program; there were also indications that this would change according to the social structure of the group. In this study choice and control were perceived as positive. Part of the reason for this may have been the approach taken in the study. The limits on the options available to the participants fulfilled two roles. Firstly, they were a practical



consideration made to accommodate the scope of the study. Secondly, they conformed to an underlying principle in helping learners move from a state of dependency to one of autonomy, which is to help the learner to cope with the decision making load. Choice and control must be manageable, and clearly they were in this study.

However, even if the learners perceive control in a positive way it is still likely to be regarded with suspicion by those who rely on established methods, which are a feature of traditional learning environments, for evaluating the outcome of learning. The problem of evaluating learning in environments in which learner choice and control are integral is recognised (Marchionini, 1988; Spiro and Jehng, 1990). One of the challenges relates to the degree of direction that is appropriate. Marchionini, says:

In traditional environments, evaluation is based on determining whether students met the instructional objectives. If our goals in providing hypermedia assignments are related to processes and interactions, then we must invent new strategies of evaluation that address interactions. Both quantitative (e.g., time, number of nodes connected, number of key paths discovered) and qualitative (e.g., appropriateness of path, satisfaction of experience) measures must be used if we are to gain true images of how students are augmenting their intellect with hypermedia (Marchionini, 1988, p.12).

It should be noted that Marchionini says "If our goals in providing hypermedia assignments are related to processes and interactions ..." This raises the question of whether there is a substantive difference between providing assignments and setting tasks. Since both imply teacher imposed objectives this may be a crucial debate in responding to the challenges that newer technologies, with their vast range of learner control, offer. Ideally this should be expressed as "If their (the learners') goals in working in a

hypermedia environment are related to processes and interactions ..."

In seeking to understand the way in which individuals and dyads experienced this environment the goals that they set, when free to make their own choices, are of interest. The quantitative data analysis provided evidence of the paths that the participants chose. The interview data provided both quantitative and qualitative data. After considering the results of this study it became apparent that data pertaining to metacognition may be integrally linked to control. Although it was initially intended that it would be discussed together with cognition under adult second language learning (3.2) it seems that it may have greater significance here, for two reasons. Firstly, metacognitive strategies have a great deal to do with planning and as such may provide insights into the outcomes of learner control, and secondly, the above reference to finding out how students are augmenting their intellect with hypermedia suggests that some discussion pertaining to metacognition is relevant here.

In discussing the relationship between control of the system and metacognition, control will be considered as an outcome of the physical manipulation of the computer system. Obviously other types of control can operate, e.g., a member of a dyad explained that his partner was controlling the technology because he thought she was weaker and needed more practice, thereby signalling that he, rather than she, was in control, despite appearances to the contrary. This possible conflict regarding control did not arise with individuals. Individual learners had complete control of the computer system including the keyboard, the microphone and the laser disc player, whereas dyads did not. There is a tendency to regard control in the computer environment as vested in the person controlling the technology and this was reinforced in this study where it was observed that a member of a dyad, having relinquished physical control of the technology, often waited until it was returned to him, or her, before becoming involved again. This appears to have been in part responsible for the greater period of time

that dyads spent on each chapter. However, this physical control may help to explain other differences that were noted between individuals and dyads. The effect of sharing, when there is an absence of mutually negotiated goals, may result in a less dynamic exploitation of the potential opportunities of the computer environment. The first question that participants in this study were asked in the semi-structured interview related to planning.

The question asked was "Before you started using the program how did you plan to spend your time?" Only one participant answered without hesitation that he had a plan before he started using the system. He said that he told his partner his plan, she agreed to it, and they followed it. With the exception of one individual, who asserted "No plan" and maintained this answer even when the question was reworded, all the groups supplied details of their plan in response to the reworded question. The plans outlined could all be verified by referring to the profiles of program use. What was less certain was the point at which the plan was decided upon. It is possible that the plans were retrospective reports and indicated what had been done rather than what it was intended to do. However, close reading of the transcripts suggests that the participants did have a plan although they may not have thought of it as such. Sam said that he had "no plan because in the beginning 5 minutes I only need to remember the procedure" and he then went on to evaluate the system and how it could be used to address his needs and said "so I will plan." He then added "the plan is, the first plan is improve my conversation, but and I just see the sentence interesting, some interesting one...". Sam was not simply distracted by an interesting sentence but rather he made a decision to understand an aspect of the tense that surprised him, "so I see the tense so this explains me the unexpected." Sam said that he then returned to his plan and added "but express and express some condition." Sam exemplifies the problem of identifying optimum paths in a dynamic learning environment where plans may be long term and at the same time immediately responsive to

unanticipated opportunities.

In general it seemed that individuals were quicker to respond to the dynamics of the computer environment while dyads seemed to be constrained by the social situation that denied them absolute control of the technology. This may have accounted for the differences that were apparent in the metacognitive strategies between the two groups of participants. The number of information units related to planning, i.e., advance organisers, directed attention and selective attention was higher for individuals than it was for dyads. The interview data suggested that individuals had a greater awareness of the technology and a greater sense of control than did dyads. They accommodated a greater range of temporal possibilities within their plans, some of which were long term and general, whilst others were immediate and specific.

Members of dyads may have failed to exploit the dynamics of the learning environment after having agreed to a general plan. This is not to deny that there was cooperation between members of dyads, in fact, Hong Kong students are, in general, remarkably cooperative in a group learning situation. They are fair minded in sharing work among group members and they often cite "division of labour" as one of the benefits of working with others. However, this division of labour may mitigate against members of a group in certain situations; hands-on the technology may signal "at work" while hands-off may signal "resting". And, indeed, this seemed to be the situation quite frequently. Negotiation through dialogue did not seem to take place to any significant extent, therefore, the anticipated benefits of dynamic discussion did not occur. Whilst individuals gained from control of the technology there was no compensatory gain for dyads. In fact, shared control may have had a direct influence on metacognitive strategies.

Shared control of the technology, may have led to a diminution in the use of metacognitive strategies which have been found to lead to a high degree

of learner control (Babbs & Moe, 1993; Paris & Winograd, 1990; Brown, Bransford, Ferrara & Campione, 1983). However, in one of the metacognitive strategies dyads recorded a higher rate of use than individuals. The greater use of self-evaluation (the descriptor included evaluation of self or partner) by dyads requires some comment. Although there did not appear to be a great deal of discussion and negotiation going on between members of dyads, and despite the earlier comment that hands-off the technology may have signalled "resting", there may have been other types of cognitive activity going on at this time. It is possible that while a member of a dyad was apparently resting he, or she, was actively evaluating the performance of his, or her partner, but not commenting on it, or considering alternative ways of working with the technology. This would account for the less confident partner gaining confidence through quietly evaluating and comparing their own performance, with that of their partner, and with the computer. This point is more fully explored later (see 5.2.3). It would also explain the preference that some members of dyads expressed for working alone in the future.

Salomon, Perkins and Globerson (1991) discuss the role of mindful engagement in the partnership between a human and technology. They describe partnerships that will lead to higher levels of cognitive performance as requiring tasks to be non automatic, and under the learners volitional control, rather than that of the task, or the materials, and the importance of such tasks being effort demanding. They define the state of mindfulness as the employment of nonautomatic, effortful, and thus metacognitively guided processes (p.4). The greater use of metacognitive strategies, in order to fulfil more clearly articulated plans, better describes individuals than dyads and suggests that individuals were more mindfully engaged than were dyads when using interactive multimedia for second language learning. This tends to suggest that hands-on control of the technology leads to more mindful engagement with it and in this regard there appear to be greater benefits for the individual than for the group.

The plans encompassed a range of options including enhanced performance in macro skills and micro skills, understanding a situation and, preparing to transfer learning to a new context.

However, there are other aspects of this complex learning environment that need to be considered since they provide different ways of knowing about it that cannot be overlooked or underestimated. In seeking to understand the way in which individuals and dyads experienced this environment the goals that they set, when free to make their own choices, are of interest. Perhaps of even greater interest are the goals that the learners don't set, the goals that become apparent to the perceptive observer as unrealised opportunities.

### 3.2 Adult second language learning

The model of language learning proposed by Legenhausen and Wolff (Cited in Little, 1994) offers a great deal to reflect upon in relation to the interactive multimedia environment. Legenhausen and Wolff have proposed a model of language learning as language use and in this model language proficiency combines communicative skills with language awareness and is underpinned by language learning awareness. This implies that language learning requires an environment in which a whole range of learner interactions can occur. Although many computer programmes offer an interactive component this cannot be compared with the opportunities for communication that are present in real world situations. To address this need the opportunities for language communication are often provided by encouraging group learning with, and around, the computer. The communicative use of language, as it relates to this study is discussed elsewhere (see 5.2.3). However, it is important to note here that because a particular skill is not demonstrated in a given situation, e.g., when students are working individually there is no opportunity for verbal interaction but it cannot be assumed that such a skill is not part of the language learner's repertoire.



The components of the Legenhausen and Wolff model that are of interest here are language awareness and language learning awareness. These were reflected in the cognitive strategies that the participants used. Language learning awareness has already been discussed (see 3.1). In looking at the participants level of cognitive involvement with the program the focus was primarily on the language learning strategies that they used. Data were drawn from the semi-structured interview and stimulated recall.

A wide range of language learning strategies was used although the number of instances of any one strategy used tended to be small. Repetition was the single most commonly used strategy although as was explained earlier, the incidence of repetition was lower than may have been expected because information units were categorised according to their primary intent. The result was that examples of repetition that were intended for a particular purpose, e.g., repetition to provide a model, were categorised accordingly to their intended purpose. If the data had been collected solely from the videos, and without the benefit of verbal data from the participants, then many more of the information units would no doubt have been categorised as repetition, since this is how they would probably have appeared to an observer. This illustrates the importance of consulting the learners themselves in order to ascertain the significance of their actions, rather than relying purely on observed behavior.

Repetition is usually considered one of the lesser cognitive skills and there is a tendency to overlook its value. Here repetition will be discussed as a factor of internalisation of a second language. Little (1994), in supporting the Legenhausen and Wolff model suggests that one of the main purposes of memorisation is the internalisation of target language forms and the development of analytical skills. There are a number of conditions that affect internalisation and one of these is multiple exposures to the target language. Multiple exposure might reasonably be expected to be an aid to memory, particularly as students tend to repeat the target language. This



rote learning may extend to the rote learning of chunks of the target language. The importance of such language to the learner has tended to be dismissed and hence the rather dismissive description of the European Connection as a "language lab with pictures in which students can only listen and repeat" (Coleman, 1991, p.105). However, the importance of the memorisation of sentences, whole and partial, is gaining support for a number of reasons. The two most important arguments in support of memorised language are: it has an immediate communicative purpose, it is useful as raw materials for the internal mechanism to work on. This suggests a route from memory to mindful engagement. The interview data for one individual, Hank, will be discussed. Hank was selected because he recorded the highest use of repetition and also the greatest variety of learning strategies.

During the semi-structured interview Hank explained how he worked.

Hank: I absorb, I absorb the video information  
 and then thinking it  
 and remember it  
 an so if on that  
 if that situation appear  
 so I use this (Hank:7.10-15)  
 say it over again  
 say it over again and try to think it  
 think it (Hank:7.27-29)

Hank placed considerable emphasis on repetition and thinking. It was not clear what distinction he made between the two; it is possible that both are in fact repetition with "say it" meaning to speak it out loud, while "think it" means to repeat it in his head. But clearly Hank had a purpose in mind. He wanted to remember "chunks of language" for future use in similar situations.

The following verbal data were extracted from the stimulated recall and provides an example of the language that Hank selected for committing to memory.

Hank: Kate has asked him, asked him um,  
       Kate is speaking something but Roger,  
       is it Roger?  
       Roger disturb him, disturb her,  
       so I try to get the respond from Roger.  
       He say "Could I interrupt you Kate," he say

Int: Why are you interested in Roger's response there?

Hank: Because, um, ah  
       it's quite general to interrupt someone  
       so I want to get this also (Hank:13.10-20)

Note that initially Hank didn't say that Roger interrupted Kate, but rather that he "disturbed her" which in this context was incorrect. After Hank had repeated "Could I interrupt you Kate," to the interviewer, he then said "It's quite general to interrupt someone." He seems to have added a word to his active vocabulary and also to have learned a sentence that will help him to better communicate. This suggests that repetition is not idle or random but rather quite mindful. Hank seems to have compared the video enactment with personally familiar situations in order to identify points of similarity, and departure, and to have focused on those items for which he was able to foresee a use. He used the interactive multimedia system as a resource to be drawn on in order to supplement personally identified needs.

The role of memorised language as an aid to the development of analytical skills will now be discussed. Hank has been practicing a short sentence "Hold on."

Int: Can you hear a difference there between what you're saying and

what he's saying?

Hank: Yes. That's correct.

Int: That's correct.

When did you hear it Hank?

Hank: Um I compared the, the um, the phrase between the words  
and the vowel, and the vowel

and so I, I

I know him say hold hold on

hold on

this word is um combined

Int: Linked

Hank: Like combined but I I forgo (note the absence of the final 't' and its  
presence in the next utterance).

I first time forgot it

first time "hol on: hold on" (Hank is demonstrating his version in  
comparison with the drama as he heard it when he played it back)

but, um I hear my record,

I, I know there's something wrong.

So I try to, try try again

Record it and compare.

Int: Do you feel pleased with yourself?

Hank: Yeah. Because there's some improvement.

Hank provides an example of analysis the phonology of the target language,  
using a short piece of memorised language as his focus. There were a  
number of examples of the participants using some form of analysis. Sam  
provides an example of grammatical analysis

Sam: My plan is to improve my concentration

but I see some sentence

maybe the tense is, some precision is in

I don't know

I will try to compare  
 with my memory  
 how to how to with the sentence writing (Sam:15.3-9).

Here Sam is comparing the written and oral forms of the language with the grammatical help that is available and trying to reconcile them with his memory. After this Sam made an interesting comment to the effect that the system was not suitable for him because he would spend too much time on each sentence trying to understand the meaning. Whether this would necessarily be a bad thing is debatable. There is probably a need for students to pay greater attention to the language than generally they have been accustomed to doing. But of course, in a system like this, whether or not students spend time on a particular aspect of language learning, and how much time they spend, is their choice. Hank provides an example of repeating an item that he wanted to learn only once, in order to commit it to memory. The video was paused after "It's not as simple as that" had just been said.

Int: That's interesting. I don't think you listened, did you?

Hank: Yeah ah "It's not as simple as that" is you mean?

It's like ah, ah Chinese word

ah ah "mo gam gaan daan"

it's similar to Chinese, to Chinese speaking

so I try to um learn it.

Int: "It's not as simple as that"?

Hank: Yah. Like a Chinese word. "Ni di mo gam gaan daan."

Int: You didn't practice saying it, you only said it once.

Hank: Yah, enough. I remember

Int: Oh I see, okay. You remember it because you can relate

Hank: Relate it to Chinese

Although Hank wanted to commit the expression to memory he did not

simply repeat it. He used other strategies where these appeared to be more efficient. In this case he made the association between the target expression and a similar expression in Chinese. This reduced the time needed to memorise. The decision about whether to focus on a particular aspect of language, and how much time to spend on it was entirely a matter for the participants.

Although Sam expressed some reservations about spending too much time on one sentence there did seem to be many advantages in repetition of the target language. Repetition helped the participants to commit language to memory against future needs. It also gave them time to reflect upon their language learning and provided the opportunity for them to use a range of strategies, hence it increased their language learning awareness. The model of language learning proposed by Legenhausen and Wolff (Cited in Little, 1994) with its concern for internalisation of target language forms and the development of analytical skills appears to be well suited to the interactive multimedia environment. However, the discussion thus far has been concerned with non-automatic language learning for which individuals and dyads both recorded a similar level of varieties of strategies used.

There were examples of the participants saying that they learned, not by focusing on a particular aspect of the program, but by absorbing the information. Beth said "I learn a little by each time" and Hank said "I absorb. I absorb the video information." Ken and Dawn made a similar comment. This is difficult to assess in terms of whether the input is serving the target language needs of the learner or providing a general level of information or entertainment. However, it is worthwhile comparing Beth and Hank because although they both expressed similar sentiments with regard to what would appear to be multiple exposures to the material they revealed quite different learning strategies. As was said earlier, Hank employed a wide range of strategies that were open to analysis. Beth used a very narrow range of strategies and recorded the highest level of use for

inference, regarded as a high level cognitive skill. Her use of inference was far higher than that of any of the other participants. Inference is difficult to evaluate in such a short interview but throughout Beth stressed that the meaning was important to her. She expressed a keen interest in viewing the whole video and clearly enjoyed it. She was sufficiently relaxed to laugh at "I don't suppose you have free seats for secretaries do you?" a line intended to inject a note of humour into the business environment. Beth appeared to enjoy a high level of comfort in working with the system and it was anticipated that she would not consider that it held any challenges for her. Yet this was clearly not so. In the interview Beth described her problems:

Sometimes I can't express myself very well  
because I know that my English is not very good  
ah so I find that I have some difficulties  
and some Chinese thought in my mind  
and I translate it in English  
That's the problem.  
And the tenses (Beth:5.18-24).

She also explained in considerable detail how she would use the system in the future and concluded by saying:

I would use it with my friends.  
I just discussed it yesterday  
with Ruth  
and she said maybe we can use it later.  
After the, after the project (Beth:7.20-25).

There was considerable interest in using the system again. By way of comparison, the participants in the preparatory study each used it for approximately 6 hours after having spent 2 hours learning how to use it. This represents a considerable investment in time for adult learners with

full-time jobs and three nights of study competing for their attention. It is unlikely that an interest in the purely analytical aspects of language learning would have evoked that level of interest. However, the subconscious learning of language may be fostered by extended use of programs similar to the one that served as the focus for this study. According to Krashen (1985a) the adult second language learner has two means of internalising the rules of the target language. One is acquisition and the other is conscious learning. It would seem that conscious learning fits within the model discussed above while acquisition may be served by the process that the participants referred to as "absorbing" or learning "little by little". They were not able to be more precise than this but their willingness to invest time in multiple viewing suggests that the subconscious and intuitive process of constructing the system of a language that Krashen refers to may have been operating.

Again, repetition, but of a significantly different kind, may have had a considerable part to play. One of the major attractions of the interactive multimedia environment is the wealth of information that it presents. There is a multilayered embedding of language in a context rich environment. Multiple viewing, that is repetition, of the whole scenario, may contribute to acquisition of language over a period of time. As one of the participants said "I learn a little by each time". This raises an important point.

One of the criticisms levelled at verbal interviews as data is that learners can only comment on processes that are non-automatic. There was a high number of non automatic processes reported; this is reflected in the number of information units relating to metacognition reported by both individuals and dyads. However, there were also data to suggest that participants moved between conscious and unconscious modes of viewing, e.g., "there is no need to concentrate because it is just like watching a movie." There seem to be similarities between what is referred to here as an absence of concentration, and automatic processes. Salomon et al. (1991) suggest that



only non-automatic mental processes can lead to mindful engagement. However, those same participants who reported an absence of concentration were able to change mode and concentrate when they reported there was a problem, or a gap in their understanding. This suggested that even though there may appear to have been a lack of mindful engagement during those times when students were "just watching" there was, nevertheless, a degree of subconscious processing going on. The observation of Bransford et al. (1971) that certain activities such as drawing inferences, supplementing and interpreting are common, if not automatic, in the processing of verbal data, appears to be borne out in the interactive multimedia environment.

It is at the point of disjuncture between the learner's current state of knowledge and the demands of the input that the viewer becomes mindfully engaged as he or she tries to make sense of the vicarious language experience. The learning strategies that are employed at points of disjuncture are indicative of cognitive involvement in an immediate sense. Individuals recorded higher levels of strategy use than did dyads and this was probably because they were able to respond immediately at points of disjuncture. Metacognitive strategies were more amenable to scrutiny than cognitive strategies, and more readily compared for the two groups. Cognitive strategies were more widely scattered and presented more of a problem for analysis. Yet it is probably the learners' cognitive processes that hold the key to their deeper involvement with this learning environment. The challenge for the researcher is in identifying what these processes might be. Whether the processes are made up of discrete strategies or some other organising structure is of considerable interest. A part of the question that this research set out to answer related to how individuals and dyads experience the interactive multimedia environment from the cognitive perspective. Information units related to cognition were considered with reference to quite specific learning strategies. However, the verbal data also gave intimations of processing that may be better understood with reference to the work of John Bransford and his colleagues

at Vanderbilt University.

Bransford and his colleagues have focussed their attention on the presence of "organising schemata", which may include stories, scripts and other inferential and organising processes. Such schemata acknowledge that the previous experience of the learner influences the way in which new knowledge is manipulated. Organising schemata are of interest here for two reasons. Firstly, they suggest ways of organising knowledge that take account of the need to deal with mass and complexity rather than just discrete items. Secondly, the different cultural experiences that exist between the participants in this study and the learning opportunities inherent in the materials may influence the presence and use of schemata.

A number of the participants drew attention to their cultural background and the way it affected them. Beth distinguished between translating, listening proficiency and an ability to understand the drama at a deeper level.

Some Chinese thoughts in my mind  
and I translate it in English (Beth:5.21,22).  
Because for some of the students  
their English is not very good.  
They might find it's quite difficult to listen  
to the conversation  
cause they have accent  
or they speak fairly fast I think.  
For some of them, maybe me,  
I think it is acceptable, the speed.  
And some, the meaning of the drama,  
the meaning of the drama and the ideas,  
I can catch it.  
It is quite easy to catch but for some of the student,  
they might not get the idea (Beth:pp.6,7).

Beth was right about some of the students "not getting the idea." Hank despite, the rich insights that he provided into his use of learning strategies, was much less forthcoming when it came to revealing any deeper involvement with "getting the idea." When asked to comment on the characters in the drama he replied "I haven't any idea. But just three characters have a discussion." When asked if he liked or disliked the characters he replied "Not. No comment." Sam also expressed some reservations about the program.

Maybe some persons  
 some people have relative working  
 relative for their working  
 and maybe he can concentrate  
 because the working  
 their job is similar to the environment  
 he can concentrate more on doing this system.  
 But, or the drama is the Chinese,  
 make more some familiar face  
 it's better  
 because I not interested in advertising  
 advertising agents (Sam:pp.7,8).

Sam, like Beth, touches on a number of issues. The working experience that he talks about could refer to the use of computers but as all the students in this study were enrolled in a computer studies course this should not have been a problem to any of the participants. From this it can be assumed that Sam is referring to working in an office environment similar to the one depicted in the video. To emphasise his point he adds that he is not interested in advertising agents. By focussing on this incidental detail of the drama Sam seems to have missed "the big picture". He then goes on to suggest that more Chinese faces would be preferable. Whether it would help Sam's language learning is uncertain.

The problem for learners like Hank and Sam may reside in part in a tendency to compartmentalise learning and to be either unwilling, or unable, to transfer learning from one situation to another. Of course it is also possible that their previous language learning experience has not included conscious opportunities for transfer. However, this explanation fails to account for the fact that Hank and Sam were the only two participants to use "transfer" as a learning strategy (See Table 7). It therefore seems likely that they recognise the importance of transferring learning "if this situation occur again then I use this." What they may not recognise are situations that are similar, but not exactly the same.

None of the other participants indicated the specific use of transfer but there were suggestions that some of them were sufficiently relaxed to range across learning experiences in their search for meaning through engagement with more familiar situations. Vic explains how he searches for familiarity:

The first thing I will think  
is there any other video I listen this way  
or at the Pearl (English language TV channel).  
or some movie that someone say  
and I have not mentioned it  
which time I will say this sentence.  
Some of it I can remember (Vic and Fay:121-6).

And Beth, who found a high level of comfort in using the program, moved backwards and forwards between the present learning environment and previous experience with ease. She commented on the frequent use of idiomatic expressions "just like we speak in Cantonese" even if she didn't fully understand their meaning in the present context. She was not worried by the drama chapter that was set in France and included a fair measure of French. Beth was confident that she understood what was being said because of the context: "I know that she say ... " She recognised patterns

of intonation: "It's very interesting. 'David' (mimics intonation). It's just like my friends. That's the accent what I very familiar." Most of all Beth wanted to see the whole drama but she insisted that the meaning was very important. Of all the participants Beth was the one who appeared to be the most comfortable and confident, not to mention competent, in dealing with the content of the drama. And yet she revealed the use of very few learning strategies outside the metacognitive range. The way in which the data relating to cognition was categorised may have been appropriate for Hank's style of thinking but it may not have been as appropriate Beth's style.

According to Gardner (1985) the schematic approach to cognition directs attention to the depth with which information is processed:

On this view, a subject has the option of paying attention only to the superficial aspects of the stimulus (say, the sounds of words or the precise syntactic form of phrases) or of assimilating it to various schemata that have already existed: the more information is enveloped in earlier ways of knowing and embedded with rich associations, the deeper the level of processing; and hence, the more likely that the information will be firmly encoded and adequately remembered. Whether the stimulus is processed at a shallow (surface or sensory) level, or at a more semantically integrated level, depends on the nature of the stimulus, the time available for processing, and the subject's own motivation, goals, and knowledge base (p.127).

The schematic approach to cognition has relevance to the second language learning environment because of the role that it ascribes to previous learning experience and to the individual's own motivation, goals and

knowledge base. When this learning has moved beyond the introductory level, which it had for the participants in this study, then it becomes increasingly difficult to know on which particular goals of language learning to focus. The models of language learning proposed by Legenhausen and Wolff and by Krashen include language use and social aspects of language learning that the schematic approach does not address, and both of which are considered integral to language learning in its fullest sense. The interactive multimedia environment is undoubtedly capable of accommodating these different perspectives. For those language learners who are processing "at a more semantically integrated level" different data collecting tools from the ones used in this study may have to be devised.

Whether there is a need for a theory that addresses "random access instruction" as a special case of cognition is beyond the scope of this study. However, Cognitive Flexibility Theory (Spiro, Coulson, Feltovich and Anderson, 1988) and the claim made by Spiro and Jengh (1990) for the suitedness of the theory for "random access instruction" has considerable appeal.

### 3.3 The social dimension of the computing environment

Verbal data provided some interesting insights into how the learners perceived the social dimension of the computing environment. There was a general tendency for individuals to talk about the benefits of working with friends and for dyads to talk about the benefits of working alone. This indicated that there was some measure of reflection on, and evaluation of, different social groupings. This was often linked to comments about the learner's aims in using the system. One individual was quite emphatic about the need for common aims among members of a group. He personally rejected the idea of working in a group because he thought that the likelihood of finding others with similar aims was negligible. In contrast, another individual did not want to work by himself again because

he worked in a solitary occupation and did not want the loneliness repeated in other activities.

In viewing the last fifteen minutes of the video with each of the dyads clear examples of cooperation between members of the dyads were found. This cooperation took different forms and included turn taking, monitoring, encouraging and tutoring. Of particular interest in the context of social interaction were the roles of encouraging and tutoring.

Among dyads there were examples of the value of social support, particularly as it related to encouraging. In one such example Dawn says "Good, okay" and then explains that she is telling Ken that his pronunciation is fine. Ken was asked how he felt when Dawn praised him and he replied "I think she encourage me." Among dyads there was appreciation of the support that the social interaction provided. Individuals generally felt the absence of such interaction and described what they might have done had they been working with another person. However, members of dyads also perceived the sense of responsibility for the other member of the dyad as a burden at times. The interaction between dyads also served to highlight a problem that can arise in a group situation.

The sociohistoric view of learning perceives learning as a network of relationships in which regulative outcomes are based on social interactions with others. Vygotsky's conceptualisation of a "zone of proximal development" has led to an interest in the social and cognitive interactions in educational environments. Parents, teachers and peers, operating at a level just beyond that of the learner, are said to be operating in the learner's "zone of proximal development". With their support and encouragement the learner strives towards new cognitive awareness. Pea (1987) argues that the social support provided by "more competent others" can be broadened to include computer systems. Whilst no specific questions or data were dedicated to this particular dimension of the study, questions that occurred,



or evidence that appeared to be relevant, were noted.

One of the most tantalising questions arose when viewing the whole video of one dyad working (this viewing took place after the participants had been interviewed so it was not possible to consult the participants again). During the stimulated recall one member of the dyad, when explaining why his partner had greater control of the technology, said "I think I was clever than her. So she had to learn it again and again and then if she think it's enough, then the next sentence. So he (sic) control" (Vic and Fay:3.25-29).

During the interview, which, it may be recalled, took place just prior to the stimulated recall, the interviewer had no knowledge of how the interaction in the computer environment had developed. The stimulated recall focussed on the last fifteen minutes of a forty five minute session, and it was only when reviewing all the data that the problem of the "more competent other" became apparent. It was clear that Vic considered himself to be the more competent member of the partnership and he summed this up when he said during the interview "I think my English is gooder than hers". On reviewing the video there were reasons to challenge this. On one occasion the video was playing and the Japanese character was saying:

You realise I can't commit my company until I've got a clear idea of your creative and media thinking, as well as your merger proposals.

Vic changed the pronunciation of "merger" to "major." Fay repeated "merger" and Vic replied "Major! Merger, that's Japanese pronunciation." He then called the subtitle on screen to confirm his judgement. When the word "merger" appeared he was not at all phased and with obvious annoyance at the incompetence of everyone else reasserted "Major m-a-j-o-r" as he spelled out his version and pointed at the text. He shook his head in amazement at the evidence of incompetency confronting him, and moved on, thereby signalling that the matter was closed. There were other

instances of Vic claiming the correctness of his version over that of the original and Fay apparently accepting, or certainly not challenging, his authority. There seems to be an acceptance of the zone of proximal development as unproblematic and yet in observing students working it became clear that this is not so.

In the view espoused by both Vygotsky (1976) and Rogoff (1990) there is an implicit acceptance of who holds the role of more experienced other, or who is the expert. In both adult-child and novice-expert relationships the roles are socially and experientially determined. However, in a situation, such as the one studied here, and indeed in many real life situations, there is no one to accord the role of more experienced other to a participant, or to validate expertise.

In group learning where the role of expert is not clearly defined, difficulties can arise, especially as it is likely that confidence rather than authority will determine leadership; this was the case with Vic and Fay and clear examples were also found in the preliminary study. Although it has been suggested that this situation is resolved by the dynamics of group interaction in which authority is handed around among the learners this may not solve the problem, indeed it may compound it; in place of one "incompetent authority" there may be a roster of "incompetent authorities". Concern about zones of proximal development and the "more experienced other" is voiced by Tudge (1990) who has carried out research, the aim of which has been "to disentangle competence and confidence." Tudge's research focussed on children and indicated a surprising amount of regression for all children except lower partners. Tudge focusses on a number of issues to account for this, including what he describes as "The traditional, narrow, interpretation of the zone of proximal development." In the context of this present discussion two aspects of Tudge's work seem to have particular relevance. The first is his observation that "impersonal feedback (from the materials alone) may be as effective as interpersonal

assistance in promoting development within the zone of proximal development."

It was observed that the computer was appealed to as a neutral authority by less confident group members when they were not sufficiently confident to claim authority on their own account. There were examples in both the preliminary study and this study to support this. When Vic and Fay were working together Vic was clearly the more overtly confident member of the partnership. Fay appeared to accept his authority, even when it was ill-informed. However, during the stimulated recall Fay insisted on her interpretation of the text even though this meant opposing Vic, and Vic concedes "No, no I misunderstand. He (sic) say 'No', it means Ito San is saying the wrong, is saying like a question, and then later I know that she say that so I accept. I know the meaning of what she's saying" (Vic and Fay pp. 15,16). Fay had appealed for support to the authority of the computer. This example took place towards the end of the forty-five minute session and this raises the question of why Fay didn't challenge Vic on the earlier occasions. The most obvious answer is that it took time for Fay to feel sufficiently confident about her own ability to do this.

Therefore, her intervention came later, rather than sooner, in the session. This was the pattern observed in the preliminary study, too, where the quieter student only asserted himself after using the system for some time. It is possible that this gain in confidence is attributable to the level of monitoring carried out by the less assertive students. Individuals frequently spoke of "monitoring in my mind" but this was less frequently mentioned by members of dyads. However, dyads recorded a higher level of self-monitoring strategies (see Table 8) than individuals but it was more difficult to ascertain how dyads actually responded to the monitoring that they did. It is possible that quieter members monitored and evaluated their more confident partner's performance more rigorously than they revealed to the interviewer, or to their partner. This monitoring eventually may have led to an increase in confidence as they came to appreciate the worth of their own

judgement. The outcome of this may have been an increase in confidence that found support in the neutral authority of the commuter.

Thus, the impersonal feedback that Tudge (1990) refers to may support quieter members of a group. It may even encourage them to help their more confident peers to re-evaluate their own understanding in particular situations and so move to new levels of awareness about the target language. The other factor that Tudge draws attention to in discussing "zones of proximal development" is the fact that even if children used a higher rule to perform a task, they did not necessarily use reasoning indicative of the rule during discussion. The sharing of significant information cannot be assumed to be a natural consequence of verbal interaction. This seems to suggest that discussion does not of itself lead to predictable outcomes. Interaction may fulfil a social function and yet leave individuals free to privately negotiate their own agendas and meaning should they choose. The possibility that multiple agendas were being followed cannot be overlooked. It is important here to distinguish between a plan that is offered and accepted and one that is mutually negotiated.

It became clear in reviewing the videos of dyads at work that there was a general lack of discussion in order to reach an agreement. Negotiation seemed to be more by way of discreet nodding of the head, pointing at the screen, or using the keyboard. The interview data also suggested that plans were not verbally negotiated. In fact, in one example (Vic and Fay: 2.6-24) each of the participants appeared to be functioning as an individual. Vic's plan appeared to be more comprehensive than Fay's in that it had a temporal framework, a study focus, an objective and strategies, while Fay's plan appeared to be more ad hoc. However, it was possible for it to be accommodated within Vic's plan since it required only that Fay made a decision about the level of difficulty that she perceived in a learning situation at any one time. It is thus possible for a dyad to appear to be working to a common plan when no such plan has actually been agreed to.

There are a number of factors that may have contributed to the lack of negotiating language. Firstly, the participants may have felt inhibited by the presence of the video cameras and therefore refrained from extended discussion. Secondly, they may have found themselves caught in a dilemma with regards to the appropriate language in which to carry out the discussion; they may have felt that Cantonese was not appropriate, but that their English was not adequate, in the situation in which they found themselves. This raises the question of whether the use of the program would have been different if the participants had engaged in greater verbal interaction. Two of the dyads were established on the basis of a convenient time to attend, with the participants not having previously met and this may have inhibited discussion. However, the third dyad comprised a couple who had an established relationship and they were no more inclined to enter into prolonged discussion. If anything they appeared to have a more highly developed, and less obvious, system of nonverbal communication.

The dialogue that takes place around the computer has been the subject of many studies in second language development. An important aspect of dialogue that cannot be overlooked is the language background of the participants. Studies very often include students from different language backgrounds (Levy and Hinckfuss, 1990; Little, 1993). This makes it almost certain that discussion between the learners will be in the target language since this is the *lingua franca* of the group. However, Hong Kong students have Cantonese as their common mother tongue (the non-Cantonese speaker is rare) and consequently they don't need to resort to a language in which they are non-proficient. During the stimulated recall it could be seen that Ruth and Troy frequently spoke Cantonese. When this was remarked upon by the interviewer and they were asked if they could have spoken English they replied that it would have been too difficult. However, Ruth went on to add "But if the partner is not Chinese I must try to speak English" (Ruth and Troy 11:16,17).

Another factor that must be considered is the inclination of individuals to enter into discussion. This could relate to factors such as personality and confidence, or it could relate to the ethnicity of the participants. In a study of two groups of university students, who were non-native speakers of English, carried out in the USA, it was shown that Asian students contributed to class discussion far less than did non-Asian learners (Sato, 1990).

Rogoff (1990), while supporting the role of language in the Vygotskian perspective of cognitive development says "I prefer to view communication more broadly to include nonverbal as well as verbal dialogue rather than to focus so exclusively on words" (p.17). The role of nonverbal communication is an important aspect of linguistic study (Harper, Weins and Matarazzo, 1978;) and such gestures as nodding the head and pointing at the screen cannot be discounted in the process of negotiation. Vic provides an example when he says "I say a sentence and then I pass to her, and then if she okay I look at her, if she okay then she pick up the mic. and then we start" (Vic and Fay:11.11-18). Furthermore, Neu (1990) believes that in order to assess an adult second language learner's acquisition of communicative competence nonverbal communication cannot be overlooked. Although there was little evidence of the language of negotiation between members of dyads, their profiles of program use indicated greater similarities than did those of individual users. This raises questions about what might have brought about this tendency to conformity among dyads. In the absence of extended discussion the role of nonverbal communication should be considered. There is a need to look more closely at the interaction between learners in order to recognise, and include, nonverbal interaction that contributes to negotiation and influences outcomes.

The social dimension of the computing environment is very complex. Group use cannot be regarded as the naturally superior, or even preferred, alternative to individual use of the computer. The participants in this study



reflected on, and evaluated, different social groupings according to their experience. It seems that while students appreciated peer support, it could also be accompanied by a measure of unwelcome responsibility. Peer interaction did not necessarily include extended discussion in the multimedia language learning environment. The full extent of the discussion will only be known when the video tapes of the dyads at work have been transcribed and analysed. It will be interesting to compare them with the findings of Mohan (1992) whose research has led him to conclude that conversation is more likely to aid second language acquisition than the computer-based tasks on which he based his studies. However, this study suggests that the interactive multimedia environment offers input that is considerably richer in quality than computer-based tasks and that there is considerable scope for genuinely negotiated meaning.

#### 4.0 The Research Process

It is appropriate to conclude this discussion by examining the research process itself since there was no precise blueprint to follow. The researcher was guided first, and foremost, by her interest in the learners, and a desire to provide a channel for their voice.

One of the points that needs to be stressed is the time that such a study takes. This has been cited as one of the reasons for there being so few studies with the newer technologies. In the first instance, the data gathering process was very long. The absence of multiple work stations made it necessary for each individual and dyad to be allocated their own time/technology space for the data collection. Prior to this, participants had to learn how to use the technology. The data collection took 14 hours (2 hours for each of the 7 individuals and dyads) and teaching the participants to use the technology added another 8 hours. Time constraints dictated that the 22 hours of student contact were fitted into a period of just a few days, usually in the evening. A further consideration is the stress that the use of



complex technology imposes on the researcher, particularly if there is no technical support staff available.

The research process constantly evolved throughout the duration of the study as a result of frequent reflection on the outcome of the previous stage. This was the approach adopted from the beginning when the preparatory study was undertaken. Both the research questions and the methodology went through several transitions before assuming their final form. Even then the precise way in which the resulting data would be dealt with had not been decided. In a study such as this it is often necessary to gather and review the data in order to the precise way in which it will be used. The first step was to transcribe the audio tapes and to review the video tapes that focused on the screen only. The process of reviewing the video tapes will be discussed first and this will be followed by a discussion of reviewing the transcripts.

Several of the video tapes were reviewed in a search for patterns of use that lent themselves to analysis. It soon became clear that the screen reading provided information about the use of some of the options but not about the use of the recording option. To gather data about the use of the recording option it was necessary to refer to the video focused on the learner, and the technology, in order to ascertain whether the participant was actually recording, rather than repeating or reading. Thus for each individual and dyad it was necessary to review 90 minutes of video recording, a minimum of 10 hour 30 minutes. In the course of the research each of these tapes was reviewed approximately three times so the time taken to review the video tapes was in excess of thirty hours.

The transcribing of the audio tapes resulted in the large body of data. There were 123 pages of transcript in total. The transcribing of the tapes was quite protracted but a considerably greater amount of time was taken in the categorising and analysis of the interview data. This required, in the first

instance, reading and rereading the transcripts in order to become completely familiar with both the content and the intention of the speaker. On occasions it was necessary to refer back to the audio tapes in order to check intonation and other suprasegmental features of the language that influenced meaning. This helped to determine where divisions between information units fell. The next stage was to divide the transcripts into information units, with each one beginning on a new line. The transcripts now had a recognisable shape and it was possible to read them with greater facility.

The transcripts were read several times and notes were made in the margin. Notes included points of interest such as similarities or contradictions between transcripts (these were cross referenced), information units that either supported or contradicted references in the literature review, and information units that suggested further areas of the literature that should be reviewed. Information units were then categorised, and the categorisation went through several stages before assuming its final form. The descriptors for technology and socio-affective were derived from the data so it was relatively straight forward to assign information units occurring in these categories to a subcategory. Originally it was intended to derive the descriptors for cognition from the data, too. However, it was decided that it would be better to use a list of descriptors derived from previous language learning research, and adapt it. This would not only provide a comparison with other language learning environments it would also help to identify strategies that made particular use of the present environment.

After the data had been prepared for analysis it then had to be systematically reviewed in order to arrive at the results. Again it was necessary to return to the transcripts. Interpretive research requires an absolute familiarity with the data in order to reference and cross reference its many nuances. It is painstaking work.

Throughout the study there was a need for frequent reflection in order to review progress and decide on the next step. On occasions this meant retracing areas already covered. For example, when the results were finally teased out from the data it became obvious that the literature review would require major changes. Although a large body of literature on situated cognition and others areas had been reviewed they did not seem to have particular significance in the context of this study. Some aspects of the literature review were therefore abandoned whilst others were added or extended. Finally, the literature review focussed on three aspects of language learning that were identified as being of particular relevance to the use of interactive multimedia for tertiary learners.

The length of time that this study took may well act as a deterrent to others. However, the methodology that evolved in the course of the study may help to lessen the time needed for similar, or related studies. Suggestions for future studies are presented in Conclusion 6.0.

## 5.0 Summary of Main Findings

### 5.1 Research questions reviewed and answered

One of the questions that this research set out to answer was "Do individuals and dyads differ in how they select and process drama chapters from an interactive video program?" To answer the question specific areas of selection and processing were focused on. The first related to the number of chapters that the groups chose to do. Results showed that there was a significant difference in the number of chapters that individuals and dyads covered. In the forty-five minute period under review dyads watched an average of 1.66 chapters whereas individuals watched an average of 7.75 chapters. Individuals spent an average of 6 minutes on each chapter while dyads spent an average of 25 minutes per chapter. This difference

was quite remarkable. Initially it was speculated that dyads spent so much longer on each chapter because of the time taken for discussion and negotiation. The distinction that Damarin (1993) makes between travellers and tourists appeared to be appropriate here. Individuals could perhaps be cast in the role of tourists who had collected a lot of information while dyads were the travellers who had lingered along the way to fully appreciate the experience. A closer study of the video tapes quickly dispelled this notion. There was not a great deal of discussion and negotiation between members of dyads, and certainly not enough to account for dyads spending four times as long as individuals on each chapter. Often communication was by way of a barely perceptible nod of the head, or some other discrete sign. It was clear that dyads did not extend the time they spend on each chapter through extended discussion. An explanation had to be sought elsewhere.

The second area that was focused on was the order in which the participants worked through their selected chapters and the number of lessons they repeated. All dyads spent sufficient time selecting chapters to record a time for selection. Only one individual recorded time here. However, the amount of time that dyads actually spent on selection was not great and would only have made a small contribution to the overall period of time they spent on each chapter. Three individuals recorded no time at all for selection. They moved from chapter to chapter with great rapidity and gave a sense of being firmly in control. To a large extent it seemed to be the control of the technology that led to the shorter period of time that dyads spent on each chapter. Neither individuals nor dyads were generally inclined to repeat chapters so attention focused on the third area, the use of control keys to abbreviate or extend a chapter.

Here there was perhaps the greatest number of insights to be gained about the huge difference between the time individuals and dyads spent on a chapter. Individuals were conscious of the passing of time and frequently

spoke of a desire not to waste time. They conveyed a greater air of purpose than dyads did and they seemed to limit the number of times that they were prepared to use particular keys. Dyads, on the other hand, spent longer on particular segments, often by use of the "repeat current phrase" key. This key offered an easy option for extension of a particular chapter and appeared to require less of a conscious decision than other options available. The way in which dyads worked was often characterised by turn taking and waiting. This could effectively have accounted for dyads spending twice as long as individuals on each chapter. The additional time spent (four times as long) can perhaps best be explained by the observation that dyads simply didn't know how much time to invest in a particular activity. By not having clearly negotiated goals there were no recognisable points of achievement that signalled that it was time to move on. Damarin's (1993) distinction between travellers and tourists did not apply here.

The second question that this research set out to answer was "Do individuals and dyads differ in terms of their level of thinking about the learning experience?" To answer the question attention was focused on the learning strategies they used, the way in which they described the technology, and, the way in which they described the social experience.

Overall there was a high use of metacognitive strategies (see Table 8). Individuals recorded a greater use of metacognitive strategies in all categories except one. There were two categories that seemed to be of particular significance. The first of these was self-management in which individuals recorded more than twice the number of information units that dyads did. This confirmed the observations made earlier about the greater sense of purpose and control demonstrated by individuals. The second category was self-monitoring which was the only category in which dyads recorded a greater use than individuals. There were reasons to believe that much of this self-monitoring was directed towards reflection on the learning environment. This was then manifested as a preference for

working alone next time and, or, an increase in confidence for the less confident member of the partnership. It is likely that self-monitoring was not openly expressed as evaluation as this may have called for a response that reflected negatively on the partnership.

Repetition was the most frequently used of the cognitive strategies. In general, repetition tended to be used selectively and to fit within a larger plan. On those occasions when participants set out to memorise chunks of language they did so for use in specific situations, that is, they anticipated transfer. Audio/visual reference was the next most frequently used of the cognitive strategies. The prevalence of audio/visual reference as a strategy, together with multiple exposures to an information rich environment that exploits both audio and visual input, tends to support the language learning potential of the multimedia environment. Individuals recorded more cognitive strategies than dyads and provided greater insights into their use. However, it was difficult to make more than a tentative analysis because apart from repetition and audio/visual reference the number of strategies in any one category was small.

Individuals were more aware of the potential of the technology, and better able to exploit it, than were dyads. Nevertheless, they expressed a general preference for working with a partner in the future for reasons that included companionship and fun, but primarily focussed on the help that they would be able to ask for, and the perceived value of discussion. Interestingly, this discussion did not materialise to any significant extent between members of dyads. Nor did members of dyads ask for help. They offered help where they saw, or thought, it was needed, and there were examples of different types of cooperation within dyads. However, members of dyads did not identify areas of personal need and request help. This is probably the level at which discussion becomes crucial. For example, the narrative in *The European Connection* was, on the one hand a fairly straight forward business drama. At this level one of the participants retold the story



spontaneously and in considerable detail. However, there was a sub-plot of greater complexity and interest. Whether the participants were aware of it was not a specific objective of this study, but it falls within the general aim of reporting any interesting or important problems that arose in answering the specific research questions.

It is perhaps at the level of dealing with complex information that participants would have most to gain from discussion. How individuals might identify areas of need, or limitations in the depth of their processing, and make them available for public scrutiny in this environment is uncertain. There was evidence to suggest that some participants were very active in seeking meaning and ranged widely in an attempt to relate new information to that already held. The presence of organising schemata was suggested by some of this evidence. However, other participants seemed little inclined to move beyond the confines of the information under review. Within dyads there was no evidence that active seekers of meaning shared their meaning making process. Just how discussion that leads to deeper levels of understanding might be initiated is of considerable interest, especially if control is to remain with the learner.

Another interesting problem that arose was that of Vygotsky's "zone of proximal development" and the more competent other. Where competency was incorrectly assumed by a member of a dyad it was not initially challenged by the other member. Later a challenge was mounted and supported with reference to the computer.

It was observed that in dyads there were a number of different ways in which males tended to assume the dominant role. In what was probably the most egalitarian of the dyads the male suggested the plan. In another the male assumed the role of more competent other, and in the third dyad the male dictated the style, and, to a considerable extent, relegated his partner to the role of audience. But female members of dyads may have exerted a



more subtle form of control by deliberately, but not necessarily productively, prolonging the time that they spent on a particular option or task. This could have contributed to the greater time that dyads spent on each chapter.

## 5.2 Methodology reviewed

One of the main objectives of the study was to identify a methodology for investigating the complexities of the interactive multimedia environment as it is used for second language learning. The methodology had to be sensitive to two major requirements. Firstly, it had to generate data that would enable a comparison to be made between learners who embarked on different paths to different destinations. Secondly, the methodology had to generate data that would establish a relationship between technology, cognition and the socio-affective domain. The difficulty of making clear distinctions is supported by the observation that "The traditional distinction among cognitive, affective and social processes becomes blurred once we focus on thinking as the attempt to determine intelligent means to reach goals" (Rogoff, 1990, p.9). When technology is added to the equation the distinction becomes even more difficult.

The methodology adopted made extensive use of video recordings and verbal data. Results suggested that it is possible to investigate the interactive multimedia environment whilst respecting learner choice. Furthermore, it is possible to establish a relationship between technology, cognition and the socio-affective domain.

## CHAPTER 6 CONCLUSION

This study set out to investigate the way in which individuals and dyads responded to the interactive multimedia environment for second language learning. The participants in the study provided many insights into this complex environment. Marchionini (1988), when discussing the high level of learner control that hypermedia systems provide observes that "freedom to learn is not a sufficient condition to assure effective learning." However, this raises the question of how 'effective learning' is to be defined. Marchionini acknowledges that:

it is difficult to write objectives that require higher order thinking skills because they are often applied to complex or subjective problems. Furthermore, it is difficult to write objectives for activities that involve highly interactive processes, since we cannot anticipate all possible courses of interaction in any but the most well-defined or simple instances (p.11).

The results of this study support Marchionini's view that we cannot anticipate all possible courses of interaction. However, the results suggest that the presence or absence of peers leads to significantly different interactions. A number of the participants indicated that their usage would have been different if the social organisation had been different. This indicates that the learners themselves had a degree of sensitivity to the different opportunities inherent in different learning situations. As there was also a general willingness to work with the system again it should be possible in a future study to explore just what differences do occur when a learner changes from individual to group use of the system, or visa versa. Whether the anticipated benefits of the alternative social dimension actually occur, or whether they rather represent some idealised learning situation, can only be a matter for conjecture at this moment.

Marchionini's observation that it is difficult to write objectives for activities that involve highly interactive processes is part of the challenge of discovering what objectives might lead to greater learner awareness of the need for different levels of processing. Encouraging learners to confront their present state of knowledge with reference to the potential for deeper levels of understanding inherent in an information rich environment is a real challenge. Such deeper levels of understanding are almost certain to occur only in a social context that exploits dialogue. In a second language learning environment processing at this level should lead to insights that go beyond those that learners working individually can achieve. How such processing is to be brought about, particularly in situations in which the learners may not be inclined towards extended dialogue, is difficult to say. However, it is important to work towards discovering the conditions that might promote significant dialogue between groups of learners. Insights are likely to be gained through further observation of learners and discussion with them. In the study reported here it would have been desirable to interview the participants again in order to discuss their level of understanding at various points in the drama. A number of key scenes have already suggested themselves as being worthy of further attention. However, if the learner is to be kept as the central focus in future studies decisions will have to be made about how to ensure that these scenes are selected by the learner rather than the teacher. This is important if the control that is made available to the learners in this environment is not to be misappropriated.

There are two particular issues arising out of the study of dyads that invite further attention. The first focuses on the question of the "more competent other". When learners elect to work in a group how leadership is determined is of crucial importance. There were many examples of learners referring to the technology for information of various kinds and this is to be expected. However, there was a clear example of a less confident learner referring the technology to support her opinion where earlier she had simply

accepted the opinion of her more dominant partner. There was also a clear example of this in the preparatory study. In both examples the intervention by the less confident learner occurred after the students had been using the technology for some time. Whether this increase in confidence was occasioned by the less confident learner critically monitoring and evaluating the work of their more confident partner, and eventually appealing to the neutral authority of the computer, invites further consideration. If it should be shown that over time less confident students gain sufficient confidence to challenge the authority assumed by the "more 'competent' other" then the relationship between using computers and levels of confidence may assume new importance. Another point that would have to be considered here is the size of the group. Whether a group of three or four learners would make it more difficult for one member to assume authority on the basis of confidence, rather than competence, would be worth investigating.

The second issue arising out of the study of dyads that invites further consideration is that of gender. It was observed that in mixed gender dyads control of the overall use of the computer system seemed to be male determined even though different patterns of interaction were observed in each dyad. However, it was also observed that females may have asserted control in more subtle ways. Future studies might profitably look at same gender dyads in order to compare their response to the interactive multimedia environment with that of mixed gender dyads. Studies could also be extended to groups that contain more than two members in order to determine the affect of group size on interaction.

Another challenging area for future research suggested by this study was that of repetition as the key to developing a comprehensive understanding of the vicarious environment presented by the video. Repetition needs to be considered from many points of view and to be identified more specifically in this environment. It should include simple repetition of the target language and also repetition of scenes, chapters and the whole drama. It is

at this stage that this study may have links to work on situated cognition, particularly as participants reported that they "absorbed information" and they learned "a little from each time". The study did not permit a deeper study of these potentially highly significant comments. Future studies might try to identify how repetition, in its various forms, adds to the learners' knowledge. Whether the growth is experienced sequentially as "bits of information" or whether growth is experienced as assimilation of new knowledge with existing schemata is of considerable interest. This is of particular interest when two cultures meet, as they do in the second language learning environment. How new information is dealt with may depend not just on what is known, but on how knowledge is created and valued in the different cultures represented in that environment. It may be in the area of the shared construction of knowledge that an environment such as this has most to offer students who are grappling with an unfamiliar culture.

Finally, the importance of identifying a methodology, or methodologies appropriate to the interactive multimedia environment, is an on-going challenge. The need for inventiveness in this complex learning environment has been remarked upon by Marchionini (1988) who points out the need to invent new strategies of evaluation that address interactions. This study responded to some of the challenges that Marchionini proposed. In doing so it revealed others. As yet there are no clear indications of how the evaluation of learning outcomes is to be carried out in an environment that encourages such a high level of learner control. Also of some interest was the adequacy of the categorisation used for cognition in this environment. The prevalence of audio/visual reference as a strategy, together with multiple exposures to an information rich environment that exploits both audio and visual input, tends to support the language learning potential of the multimedia environment. However, the degree to which language learning in this environment moves beyond the level of attention to specifics of grammar, pronunciation and vocabulary and facilitates learning

that makes greater cognitive demands is of considerable interest, but may not have been captured by the categorisation used. The identification of deeper levels of cognitive processing in this complex environment is likely to be an on-going challenge.

## **APPENDIX A**

### **Student Information**

Appendix A - 1 Calling for volunteers

Appendix A - 2 Information for participants

Appendix A - 3 Questionnaire



## COPY

Dear Student,

Many students at CPHK are very keen to improve their English language skills and computer technology can be very useful for this purpose. A small research project to find out more about the way in which students use interactive video for language learning is currently being planned for July, 1993. Students enrolled in Higher Diploma in Computer Studies are invited to take part in the study.

Students taking part in the project will spend 2 hours learning, and using, the program. This will be followed by 1 hour of using the program, either individually or with a partner, and, finally, there will be a one hour interview. Students will spend a total of 4 hours on this project. Times will be scheduled to suit participants. Students taking part in the project will be credited with the time towards their Self-Access Centre study. Some students may be interested in taking part in the project before July 12, the day on which they collect their Self-Access Centre booklet, *Introduction and Orientation*. This will be possible.

The study is expected to have two main benefits. Firstly, our understanding of the way in which students this technology will be increased. This will enable us to use the technology more effectively. Secondly, students will gain mastery over a powerful tool. This will enable them to continue to improve their English throughout their study at CPHK. Students who took part in a study last year reported that their listening and speaking skills had improved and that they felt more confident.

The study will be limited to twelve volunteers (6 male, 6 female). If you would like more information please telephone me or come to my office. If you would like to be included in the study please complete the attached form and return it to:

Beverley Teague  
Language Institute  
Office: B 7613. Tel: 788 8876

Name:

CPHK ID:

Course:

I would like to take part in the study into how students use interactive video for language learning.

I will be able to start (please circle the earliest time at which you could start)

July:            week 1            week 2            week 3            week 4

The times that would suit me are (please check all times that would be convenient):

Mon    Tues    Wed    Thurs    Fri    Sat  
Day

Evening

I can be contacted at (please supply the relevant information):

Tel:

Polylink:

Other:

## COPY

Interactive Video for Language Learning  
July, 1993,

Dear (name of student),

Thank you for agreeing to take part in this study. Although you already know something about the study there are probably a number of points on which you would like further information.

First, there is quite a lot of interest in interactive video for different types of learning but very little attention has been paid to the language learner. When the language learner is using an interactive multimedia system, such as the one that you will be using, a new range of learning possibilities opens up. However, until we carry out some research we really know very little about the way learners use the technology.

The purpose of this study is to help us to find out something the way students use an interactive multimedia video program. The program designers say that there are over 100 hours of language study in The European Connection, the program you will be using. That's more time than most of you can spare so I have selected a part of the program for you to work on. The part I have selected can be dealt with comfortably in 2 hours. In that time I can give you an overview of the program and you'll have time to get hands on experience.

You'll find that even though you will be working on just a part of the program you'll have quite a lot of choice and that there are no tasks or activities that you have to complete. There is no system of scoring so you do not have to try to win against yourself or anyone else. After 2 hours spent learning to use the program I would like to arrange a suitable time for you to come and work on the program yourselves.

Some of you will be asked to work on the program individually and others will be asked to work in pairs. There will be a prompt card indicating the important function keys so you don't have to worry that you might forget - this

is particularly important if you are working individually. Also I will be available so if you need help you can ask. When you are working this time there will be a video camera recording. Later you will be asked to watch a selected part of the video.

As we watch the video I will stop it at various points so that we can talk about what you were doing and what you were thinking. Even if you worked with a partner during the recorded session the interview will be conducted individually. The interviews will be audio taped so that I have a full record of what you say. By recording the interview I will be able to listen to the tapes several times and really think about your answers and comments. With your help I hope to be able to find out something about how learners actually use interactive video. If I were to rely on notes I might miss some important information.

You will be able to take a copy of the video and watch it at home, if you would like to. Most students enjoy watching themselves on video and they can often learn something from the experience. I will give you a short questionnaire to accompany the video and if you could record your comments and observations that would be very useful, too.

By comparing the way in which different students use the program I hope to be able to find out how individual and small groups experience interactive video.

I hope you enjoy taking part in this research project. If you have any questions I will be happy to answer them for you.

Sincerely,

Beverley Teague  
Office: B 7613  
Tel: 788 8876

## COPY

## Interactive video for language learning

Dear (name of student),

When we watched the video we only had time to talk about part of it. As you watch the video again you may notice things that you were not aware of before.

You can watch the video in the way that suits you: by yourself, with friends, with family. You can watch it right through or on fast forward until you find a part that interests you.

Would you return the completed questionnaire, together with the video to my locker which is outside the Language Institute General Office (B.7620). I would appreciate it if you could do this by the first week in August. (If you would like to keep the video you are welcome to do so, in which case just return the completed questionnaire.)

1. Did you watch the video by yourself, with friend(s), with family?
2. Did you watch all the video or part of it?
3. If there were any parts of the video that you watched again could you briefly explain why you watched again?

- 
4. If you were going to choose a part of the video to show a friend (say a 5 -10 minute segment) which part would you choose? Could you explain why?  
Time shown on screen: From                      To
  
  5. As you watched the video did you notice anything, about yourself, or your partner, or the program, that you didn't notice while you were actually working?
  
  6. What did you learn about the way you used interactive multimedia?
  
  7. If you used interactive video again would you work with a partner or by yourself? Could you briefly explain your answer.
  
  8. General comments;

Thank you very much for helping in this study. I hope you found it interesting and that you will enjoy working with interactive multimedia when it is available in the Self-Access Centre.

Sincerely,

Beverley Teague.

## APPENDIX B

### Learning strategy definitions

Appendix B - 1 Learning strategy definitions - O' Malley et al.



## The Learning Strategies of ESL Students

*Learning Strategy Definitions*

Learning Strategy	Description
<i>Metacognitive</i>	
Advance Organizers	Making a general but comprehensive preview of the concept or principle in an anticipated learning activity.
Directed Attention	Deciding in advance to attend in general to a learning task and to ignore irrelevant distractors.
Selective Attention	Deciding in advance to attend to specific aspects of language input or situational details that will cue the retention of language input.
Self-management	Understanding the conditions that help one learn and arranging for the presence of those conditions.
Advance Preparation	Planning for and rehearsing linguistic components necessary to carry out an upcoming language task.
Self-monitoring	Correcting one's speech for accuracy in pronunciation, grammar, vocabulary, or for appropriateness related to the setting or to the people who are present.
Delayed Production	Consciously deciding to postpone speaking to learn initially through listening comprehension.
Self-evaluation	Checking the outcomes of one's own language learning against an internal measure of completeness and accuracy.
<i>Cognitive</i>	
Repetition	Imitating a language model, including overt practice and silent rehearsal.
Resourcing	Defining or expanding a definition of a word or concept through use of target language reference materials.
Directed Physical Response	Relating new information to physical actions, as with directives.
Translation	Using the first language as a base for understanding and/or producing the second language.
Grouping	Reordering or reclassifying and perhaps labelling the material to be learned based on common attributes.
Note-taking	Writing down the main idea, important points, outline, or summary of information presented orally or in writing.
Deduction	Consciously applying rules to produce or understand the second language.
Recombination	Constructing a meaningful sentence or larger language sequence by combining known element in a new way.
Imagery	Relating new information to visual concepts in memory via familiar easily retrievable visualizations, phrases, or locations.
Auditory Representation	Retention of the sound or similar sound for a word, phrase, or longer language sequence.
Key Word	Remembering a new word in the second language by (1) identifying a familiar word in the first language that sounds like or otherwise resembles the new word, and (2) generating easily recalled images of some relationship between the new word.
Contextualization	Placing a word or phrase in a meaningful language sequence.
Elaboration	Relating new information to other concepts in memory.
Transfer	Using previously acquired linguistic and/or conceptual knowledge to facilitate a new language learning task.
Inferencing	Using available information to guess meanings of new items, predict outcomes, or fill in missing information.
<i>Social-affective</i>	
Cooperation	Working with one or more peers to obtain feedback, pool information, or model a language activity.
Question for Clarification	Asking a teacher or other native speaker for repetition, paraphrasing, explanation and/or examples.

## **APPENDIX C**

### **Interview Transcripts**

Appendix C - 1 Individual (Hank)

Appendix C - 2 Dyad (Ken and Dawn)

- 1 Int. Hank what I'd like to know is if you had a friend who said to you,  
2 Hank I'd really like to improve my English, what would you tell  
3 them about the system that you've just been working on?  
4 Hank. This system? o  
5 Int. Mmm.  
6 Hank. Umm What, what function I introduce to him or her... o  
7 Int. Mm mm. Just what would you tell them if they said that they would  
8 like to improve their English and you've just been working on a  
9 system supposedly to help you improve your English. So what  
10 would you tell them about that system?  
11 Hank. This system? o  
12 Int. Mmm the program if you like the whole thing if you like, the  
13 technology the program.  
14 Hank. I would introduce him what this program like first mm o  
15 Int. So what would you tell him the program is like?  
16 Hank. Um it it must be improve his, this conversation. 3t  
17 Um help him, give an idea to him. 3t  
18 Int. What sort of idea would it give him Hank?  
19 Hank. Mm what sort of computer can help him to learn English. 1t  
20 Um not like the school, 1t  
21 the formal one. 1t  
22 Int. So if he said I've no idea how a computer can help me what would  
23 you tell him?  
24 Hank. has no computer? o  
25 Without any computer knowledge? o  
26 Int. No, if he said that he didn't know how a computer could help him  
27 what would you tell him?  
28 Hank. Um not this system. o  
29 Int. Mm  
30 Hank. Speak more o  
31 write more and o  
32 try to listen more, for improve o  
33 Int. So what else would you tell him about the system that you have just  
34 worked on?

- 1 Hank. Um I I I can't explain him detaily 1t  
2 because I'm not get in habit for using it. 1t  
3 Int. Okay then.  
4 Hank. It's because is different 3t  
5 from the former one. 2t  
6 Int. Different, Okay then.  
7 Hank. Its difference, I just only study myself, 1t  
8 I haven't got any ideas for using computer to improve my English, o  
9 so it's quite a new idea. 3t  
10 Int. Okay then, so after you've worked on this system downstairs, the  
11 interactive video ....  
12 Hank. Mm mm  
13 Int. can you think of how you could use that to improve your English?  
14 Hank. I don't think so. o  
15 Int. You don't think that it will help you to improve your English?  
16 Hank. Ah yeah. o  
17 Int. Okay then. Um, so if your friend says that, "I'd like to improve my  
18 English...  
19 Hank. Mm mm  
20 Int. you would tell him  
21 Hank. But I don't know this improve my English or not, 3t  
22 because it's it must be have time, 1t  
23 have time to use it 1t  
24 to handle what's the system. 1t  
25 Int. Mm mm that's true.  
26 Hank. So far I have no o  
27 Int. It's too short, it's too short that's right.  
28 Hank. Yeah o  
29 Int. Do you think it might improve your English if you used it for a  
30 longer period of time?  
31 Hank. Yeah. 3t  
32 Int. Yeah, obviously if you, no matter what you do if you use it for only  
33 45 minutes it wont make a difference will it, it's just to get the idea.  
34 Hank. Mm mm

- 1 Int. Okay then. Before you started using the program Hank, did you have  
2 some plan in mind for how you were going to use it?
- 3 Hank. Before, before this meeting? o
- 4 Int. Before this meeting or when you actually sat down but before you  
5 actually started.
- 6 Hank. No no I haven't got any idea, o  
7 I only just know the CD Rom o  
8 to uh, for learning English. o
- 9 Int. Okay. But did you have any plan yourself about how you were  
10 actually going to use it. I mean you used it last Saturday with some  
11 friends and you saw what it could do. Now you knew you were  
12 coming back tonight, did you have any idea in your mind or any  
13 plan for what you would do with it.
- 14 Hank. No. c
- 15 Int. No.
- 16 Hank. No. o
- 17 Int. Okay. So when did you decide what you would do?
- 18 Hank. Mm mm. Went. Ah so far I haven't got time to concentrate for learn  
19 English o  
20 because I'm busy on my work and o  
21 assignment and project uh o  
22 I haven't got any idea o  
23 but um um I means I've no time to spare on it, o  
24 on this project, but I, o  
25 but only thing I can do is uh on the bus, o  
26 I have time to read the magazine o  
27 or book o  
28 and or at home o  
29 just use a little time to read the newspaper, o  
30 and do something o  
31 but I haven't a lot a lot of time. o
- 32 Int. A lot of time..
- 33 Hank. No o
- 34 Int. So because you didn't have a lot of time, when you sat down to use

1 the interactive video tonight you only had 45 minutes.

2 Hank. Mm mm.

3 Int. How did you actually plan to use that 45 minutes? Did you have

4 some idea what you would do in the time?

5 Hank. Within this 45 minutes? o

6 Okay my plan is just select one of the chapter I like 1c

7 and go over, go through it, 4c

8 go through it without, without um, without pause 4c

9 and without title, title, 4c

10 and go over it o

11 and try to get some idea from it, 4c

12 try to get some idea o

13 and then I, I change the selection, 4c

14 change the selection, o

15 select pause 4c

16 and with title 4c

17 and um go through the drama again 4c

18 and um, and see how, how much I got it 5c

19 from the drama, 5c

20 I catch from the drama, o

21 and know what things I didn't got it 6c

22 and try to think something, 4c

23 do something from it. 4c

24 Int. So do you think you managed to get most of the story from

25 watching the drama?

26 Hank. What? Pardon? o

27 Int. Did you manage to understand the story when you watched the

28 drama.

29 Hank. Yeah. 6c

30 Int. Mm mm

31 Hank. I understand the story. o

32 Int. Okay then. Which chapter did you choose Hank?

33 Hank. Discussion ah ah ... 1t

34 Int. That's interesting.

1	Hank. Lively discussion.	1t
2	Int. What made you choose that one?	
3	Hank. Um, there's a discussion	o
4	pretraying three characters,	o
5	one is the directors of the company,	o
6	and the other twos is the accountant,	o
7	is the accountants,	o
8	and they are going to discuss the project	o
9	with another company	o
10	but um they haven't do research before,	o
11	so um ah there's a great discussion,	o
12	there's a great discussion between them	o
13	and at the end the directors have made a decision	o
14	for, for um, going to a research first	o
15	and then further their discussions.	o
16	Int. Okay then you liked that chapter. Did you watch that chapter on	
17	Saturday Hank?	
18	Hank. No.	o
19	Int. No, so on what basis did you choose it? What made you choose a	
20	lively discussion? Did you choose it from the title, or from the	
21	summary of the chapter.	
22	Hank. From the title.	1t
23	I I I look at the title first	1t
24	without ah reading the intro information first,	1t
25	I I I select the title	1t
26	and after go through the story	1t
27	and I try to know the information from the story	1t
28	and the character information,	1t
29	like that.	o
30	Int. Did you read about the characters as well?	
31	Hank. Yeah.	1t
32	Int. Okay. Um. Did you look at any other chapters before you chose that	
33	one? Or was that the right choice first time?	
34	Hank. First time mm, I haven't, I haven't got it	1t



1           because the one I select is not working .           1t

2    Int.    Oh I see which one ...

3    Hank.   It's use to change the side                   1t

4    Int.    Oh I see, you didn't know how to follow the instructions.

5    Hank.   Yah.   o

6    Int.    If you'd come to get me I'd have told you. Usually if people want to

7           change they don't want to change until later.

8    Hank.   Uh ha

9    Int.    Okay then.

10   Hank.   Because I'm lazy.                           2s

11   Int.    If you hadn't been lazy could you have followed the instructions on

12           the screen for changing the disk?

13   Hank.   No, no I don't want                       1t

14           because I want to select one               1t

15           without having doing something           1t

16           you're not...                               o

17   Int.    technical, you're not familiar with it? Okay fair enough.

18   Hank.   Yeah.                                       o

19   Int.    Okay then you worked by yourself Hank. Was there any time when

20           you thought it would have been better working with someone else.

21   Hank.   Any time?                                   o

22   Int.    Mm while you were working did you think this would be better if I

23           had somebody else to talk to?

24   Hank.   Mmmmm what what I don't catch your meaning, sorry.           o

25   Int.    You were working by yourself Okay? So you recorded your voice

26           and watched the video.

27   Hank.   Yes.                                       o

28   Int.    Were there any times while you were doing that that you thought, oh

29           I wish that there was someone sitting beside me that I could talk to

30           about the video or about the recording or ask them how to change

31           the disk or some such thing.

32   Hank.   Mm mm. You means that um...           o

33   Int.    Would you have preferred to have worked with a friend.

34   Hank.   On the meeting.                           o

- 1 Int. On the...  
 2 Hank. Conversation? o  
 3 Int. To sit by yourself and work with it or to work with somebody else.  
 4 Hank. What's the system given me, you means? o  
 5 Int. Um yes.  
 6 Hank. Okay. Um it gives me a respond having 2t  
 7 haven't, haven't, haven't think it over. o  
 8 Having over. o  
 9 The video gives me that respond. o  
 10 Int. Okay so you think it over and the video gives you that response.  
 11 Hank. I absorb, I absorb the video information 20c  
 12 and then thinking it 21c  
 13 and remember it 22c  
 14 and so if on that o  
 15 if that situation appear 18c  
 16 so I use this, ha ha. 18c  
 17 Int. Okay, so when you say I think it over and remember it, what say  
 18 you thought it over and weren't quite clear about what it meant, what  
 19 would you do?  
 20 Hank. Um, try to use, 7c  
 21 try to use and remember, 22c  
 22 try to use and remember it. o  
 23 Int. How would you use it Hank?  
 24 Hank. How do I use... o  
 25 Int. Yes. When you say how do I use it.  
 26 Hank. Ah,  
 27 Int. What do you mean, do you mean say it over again or read it again.  
 28 Hank. Say it over again, 7c  
 29 say it over again and try to think it 21c  
 30 think it. o  
 31 Int. Would it have better sometimes to have had a friend to work with?  
 32 Hank. It's better, it's better. 3s  
 33 Int. The video that we watched downstairs, there's two people working  
 34 together.

- 1 Hank. Uh ha.
- 2 Int. Do you think that you would have liked to work with somebody else  
3 or is it better by yourself?
- 4 Hank. Ah. I select the former one, 3s  
5 because it's quite feeling alone 2s  
6 working without any respond. Ah ha. 2s
- 7 Int. Ah ha.
- 8 Hank. Without share any questions 2s  
9 and so on. o
- 10 Int. So if you'd had someone sitting beside you, when would you have  
11 asked them a question Hank?
- 12 Hank. Mm
- 13 Int. You say nobody to share, no response.
- 14 Hank. Ah.
- 15 Int. What sort of questions would you ask?
- 16 Hank. Because when there's a quite funny, funny process 2s  
17 without share with friends or class mates, 2s  
18 and because my work, 2s  
19 I'm I'm a programmer 2s  
20 only just work with the computer haven't any response for me 2s  
21 so um, in the school or in the project I don't want to, 2s  
22 I don't want to have this situation again. 2s
- 23 Int. Ah ha. You probably would have been better working with a friend.
- 24 Hank. ya ya. o
- 25 Int. So if you were going to do it again would you choose to work by  
26 yourself or with a friend.
- 27 Hank. With friends. 3s
- 28 Int. With a friend, Okay. What sort of student do you think would get  
29 most benefit from using this system, Hank?
- 30 Hank. Um, what kind of student? o
- 31 Int. Yes what kind of student.
- 32 Hank. They must be interest in this program. 3s  
33 Interest in this program o  
34 and feel they need to improve their, improve their English. 3s

- 1 I think this sort of student is, is a, is need this. o
- 2 Int. What kind of student do you think wouldn't be interested in it?
- 3 Hank. What sort? o
- 4 Int. Mm.
- 5 Hank. Um, you means the, what fockerty o
- 6 Int. What quality for a student.(Int. thought Hank was saying quality but  
7 realised later the word was faculty)
- 8 Hank. What quality, mm above, above, you means what quality, just a ... o
- 9 Int. What sort of characteristics perhaps is a better word. So you told me  
10 that a student who is interested in improving their English and  
11 interested in the system would benefit from it. Um, but if we think  
12 back to the friend that you were going to ask, that asked you for  
13 help, if your friend was interested in improving his English and was  
14 interested in this system. Then you would say ah yes this is for you.  
15 But maybe your friend is a different sort of person and you would  
16 say no no this isn't a good system for you.
- 17 Hank. Okay, um, I think at least um above form five, 3s  
18 above form five o  
19 and get the results on English is a grade D, 3s  
20 grade D or above. o
- 21 Int. Okay.
- 22 Hank. At least in Cantonese, ha ha. o
- 23 Int. What about you Hank, would you like to use the system again?
- 24 Hank. Yuh I like it. 3t
- 25 Int. Mm mm
- 26 Hank. I like to have a try. 3t
- 27 Int. Okay would you like to have a try for a longer time?
- 28 Hank. Mm, what what do you mean a longer time? o
- 29 Int. You don't have to commit yourself I'm just interested.
- 30 Hank. Not fixed. o
- 31 Int. Not fixed no no no. Would you like to go back and use it again?
- 32 Hank. Yeah. o
- 33 Int. I mean this time it was just 45 minutes and that's quite brief.
- 34 Hank. Mm mm.

- 1 Int. So if you had more time, would you like to go back and use it for a  
2 longer period of time?
- 3 Hank. Yes I would like it. 3t
- 4 Int. You would like it but with a friend?
- 5 Hank. Ha ha, ha ha ha. 3s
- 6 Int. Okay then. Just let's stop there for a moment.
- 7 Stimulated Recall:
- 8 Video: It's not quite as simple as that
- 9 Hank. It's not quite as simple as that
- 10 Int. Okay, now you've moved on, you've repeated and you've moved on
- 11 Hank. What made you decide to move on?
- 12 Hank. Try to get the intonation from the character, 14c
- 13 and know him what he's saying. 19c
- 14 Int. So then as soon as you're happy you move on.
- 15 Hank. Yuh. o
- 16 Int. Okay then. Did you find it useful to compare what you were saying
- 17 with what the character was saying?
- 18 Hank. Um, not such. 4c
- 19 Int. Not such mm, could you hear a difference.
- 20 Hank. Um. a little. 4c
- 21 Int. A little, Okay then. Okay, what are you choosing here Hank? You've
- 22 got a couple of menus there, you're changing the options are you?
- 23 Hank. Mm mm, try to use the keyboard. 1t
- 24 Try to know how to use it, 1t
- 25 how to control the keyboard. 1t
- 26 Int. Okay then.
- 27 Hank. Uh ha. Because last time so many key to press. 1t
- 28 I forgot some. 1t
- 29 Int. Okay then. Did you find once you got working, um that it was
- 30 simple to use or you had to keep thinking about the keyboard.
- 31 Hank. Umm, umm, I must remember what key for what function, 1t
- 32 um because there's many many, many key I used to know, o

1 but some key I haven't seen. 1t  
2 Int. Okay.  
3 Hank. so I forgot the function. 1t  
4 I know, I know o  
5 I know the function provided from the computer o  
6 but I forgot what key to control the function. 1t  
7 Int. Ah Okay then. Fine, did you read the prompt card there then Hank  
8 or did you just practise  
9 Hank. Ah, I haven't read before o  
10 I just look a few key that's important. 1t  
11 Int. Okay then. You're actually reading it quite carefully. You look as if  
12 you're reading it quite carefully.  
13 Hank. Mm m. After I selecting the chapter 4c  
14 and, and read the selection from, from this screen, 4c  
15 and detail my, what sort of option. 4c  
16 Int. So because you're reading it quite carefully does that mean that you  
17 tended to change your options each time?  
18 Hank. Ya. o  
19 Int. Okay. Because quite often people just continue with the same  
20 options but you're studying the options.  
21 Hank. I want to ah, I did my press (pause) 4c  
22 and unpress (unpause) 4c  
23 with title 4c  
24 or untitled, 4c  
25 an another option is drama and um ... 4c  
26 Int. Role play  
27 Hank. Role play. o  
28 Int. Did you do role play?  
29 Hank. I, I have use it. 1t  
30 Int. Okay then.  
  
31 Video: So far as the Latin countries are concerned..I'm sorry Barry, can I  
32 just come in here..

- 1 Int: Is this the lively discussion chapter is it Hank?  
2 Hank. Yah. o  
3 Int. Okay then, fine. Okay. Have you got subtitles, yes.
- 4 Video: I completely disagree. It would be dangerous..  
5 The most obvious..
- 6 Int: Okay, you listen to what she said twice.  
7 Hank. Yah. o  
8 Int. Why was that Hank?  
9 Hank. I can't catch what she say. 14c  
10 Int. Okay. After she said it twice you could catch it could you? Okay  
11 then.  
12 Hank. With the title. 4c  
13 Int. With the title. Did you actually take the title off or was that your  
14 next stage.  
15 Hank. The next stage. 1t  
16 Int. Next stage then, Okay.  
17 What about the characters then Hank. What do you think about the  
18 characters?  
19 Hank. What? o  
20 Int. What's your impression of Rodgers and Hopkins and Kate?  
21 Hank. I haven't any idea o  
22 but just three characters have a discussion. o  
23 Int. Did you like the characters or not like the characters?  
24 Hank. Not. No comment. 2t  
25 Int. No comment? Okay then.
- 26 Video: ..let me finish. It's more a question of acculturation.
- 27 Int: Have you heard the word acculturation before, Hank?  
28 Hank. Culturation I heard 12c  
29 but acculturation she says. 12c  
30 Int. Acculturation, one word, acculturation. So you had the general idea



- 1 of the meaning for that?
- 2 Hank. Mm m. 12c
- 3 Int. Okay then.
- 4 Video: Sooner or later Europe will be one market..
- 5 Int: Okay that's interesting now. You've just repeated what he said, but
- 6 you didn't record your voice?
- 7 Hank. Yeh. o
- 8 Int. Uh ha.
- 9 Hank. I'm lazy ha ha. 2s
- 10 Int. Why did you repeat it? Was it just that you weren't sure of what he
- 11 was saying?
- 12 Hank. I'm I'm o
- 13 Kate has asked him, asked him um, o
- 14 Kate is speaking something but Roger, 14c
- 15 is it Roger? o
- 16 Int. Aha
- 17 Hank. Roger disturb him, disturb her, 14c
- 18 so I try to get the respond from Roger. 14c
- 19 He say, could I interrupt you Kate, he say. 14c
- 20 Int. You're interested in .. why are you interested in Roger's response
- 21 there?
- 22 Hank. Because, um, ah o
- 23 it's quite general to interrupt someone 16c
- 24 so I ah want to get this also. 16c
- 25 Int. That might be useful?
- 26 Hank. Ha ha ha ha. 18c
- 27 Int. Okay.
- 28 Int: Now you look a bit troubled there. What are you worried about,
- 29 what are you thinking about there Hank?
- 30 Hank. Um, I think I have a, um, something wrong 6c
- 31 from the, from the ah statement, 6c
- 32 when the statement compared with Roger, 6c

1	so I try to solve it.	5c
2	Int. Okay then. So what did you do to try to solve it?	
3	Hank. Try to speak correctly	5c
4	Int. Could you have gone to the models. Did you go to the model or to	
5	the dictionary.	
6	Hank. Ahm, no I haven't.	1t
7	Int. You didn't think to do that?	
8	Hank. Mm, I want to try myself.	7c
9	Int. Okay, fair enough.	
10	Video: ..it's dangerous to make any assumptions	
11	Int. But you moved on?...	
12	Hank. Yeah	o
13	Int. You had problems	
14	Hank. Mm m, I tried, I tried, I tried twice	7c
15	Int. Tried twice?	
16	Hank. Yeh.	o
17	Int. Twice is enough?	
18	Hank. Enough.	6c
19	Int. Do you think you still had problems?	
20	Hank. Um, just a little, just a little	6c
21	and I think I tried twice is enough.	o
22	Int. Okay, then. Right, so what are you more interested in doing. You	
23	obviously have something you want to do?	
24	Hank. Mm m.	o
25	Int. So what do you actually want to do, you know you have 45 minutes,	
26	you've tried that twice. You say twice is enough, so what do you	
27	want to move on and do Hank?	
28	Hank. Um, in this, in this 45 minutes?	o
29	Int. Mm m.	
30	Hank. Um, try to overview the story	1c
31	and have a general idea	1c
32	and next time	2c

- 1 I will, I will get something more 2c  
2 from this stor, from this story. 2c  
3 Int. Okay then fair enough. Let's see.
- 4 Video: I think it's dangerous to make any assumptions
- 5 Hank. At this time I try to remember to remember 22c  
6 the statement. 3c  
7 Int. Ah ha. That's interesting then.  
8 Hank. Uh ha. o
- 9 Video: ... dangerous to make assumptions
- 10 Int. You did well.  
11 Hank. Ha ha ha o  
12 Int. It's quite difficult.  
13 Hank. Ha ha o  
14 Int. Did you try to remember them all Hank or just some of them?  
15 Hank. Some of them, 3c  
16 from one character. 3c  
17 Int. Ah ha, which character were you choosing?  
18 Hank. Roger. 3c  
19 Int. Roger?  
20 Hank. I choose Roger. o  
21 Int. Roger, okay then, so why did you choose Roger?  
22 Hank. He's director 3c  
23 Int. Okay fair enough.
- 24 Video : Before the basic research is done.
- 25 Int. Can you hear a difference there?  
26 Hank. Um, not such 6c  
27 Int. Not such, okay, then. You look as though you're really concentrating  
28 quite hard so what are you concentrating on?

1	Hank. Um, thinking the statement	21c
2	and looking at the, the phrase of the character.	14c
3	Int. Mm m.	
4	Hank. What, what attribute they'd like.	10c
5	Int. What...?	
6	Hank. What attribute, what attribute.	o
7	Int. Okay. Then what did you decide?	
8	Any decision?	
9	Hank. Mm m.	o
10	Video: It would be up to us to change some of those ....	
11	Int. Now here you're not saying the words you're just mouthing the	
12	words.	
13	Hank. Yeah.	7c
14	Because um, it's quite, quite uh ah um,	o
15	I don't like to..	o
16	this work, this work um, this tedious work.	3c
17	Int. Okay then.	
18	Hank. I like to speak, speak, speak.	4c
19	Int. So maybe you'd just like a microphone going there all the time,	
20	would you?	
21	Hank. Ha ha.	o
22	Int. Okay.	
23	Hank. But this wrong ...	o
24	Int. It's the wrong microphone of course. You can't ....	
25	Hank. You can't catch, can't catch the voice	o
26	Int. On this one you can't replay it.	
27	Hank. mmm	
28	Video: that's still way in the future .	
29	Hank. If the statement I'm interest, so I use the microphone.	3c
30	Int. A ha. Okay then. So what decides then which ones. Okay you tell	

- 1 me if you're interested then you use the microphone, what would ...
- 2 Hank. To have a compare, 6c
- 3 to have a compare with the character, 6c
- 4 and um catch what mistake I make. 6c
- 5 Int. Okay then. So which statements or phrases might you be interested
- 6 in? You say if you're interested. Why would you be interested in
- 7 some ...
- 8 Hank. A short statement 16c
- 9 and um and always used statement. 16c
- 10 Int. A short statement?
- 11 Hank. And always used. o
- 12 Int. Okay then. So when you say always used Hank, would that be that
- 13 you've heard the statement used before, or it sounds to you that it
- 14 would be useful for you to use?
- 15 Hank. Mm m. Um what? o
- 16 Int. Is it a phrase or an expression that you've actually heard before, or
- 17 one that, because of the situation you think ah that would be useful,
- 18 I'd like to learn that?
- 19 Hank. What kind of phrase, you means? o
- 20 Int. Um, just let's say, the statement before could..... (end of side1,
- 21 comment lost)
- 22 Int. When might that be useful for you Hank?
- 23 Hank. Um, what. o
- 24 Int. Can I interrupt you or could I interrupt you?
- 25 Hank. It's quite useful. 18c
- 26 Int. Okay.
- 27 Hank. Uh ha. Um, if I've a meeting with my friends, speaking English, 18c
- 28 it's quite useful. 4c
- 29 Ha ha ha. o
- 30 Int. Okay,
- 31 incomprehensible. close to beginning of side 2)
- 32 Hank. For a long sick man. o
- 33 no tunch man o

- 1 Video: - what we're talking about is knowing the market.
- 2 Int. Did you go to any of the grammar or dictionary or pronunciation,  
3 supporting ...
- 4 Hank. No. o
- 5 Int. No,
- 6 Hank. No. o
- 7 Int. No, grammar at all?
- 8 Hank. No. o
- 9 Int. No, okay.
- 10 Hank. Because I forgot the function, function key to control. 1t
- 11 Int. Oh I see.
- 12 Hank. So I haven't select ... 1t
- 13 Int. If you look down here it says space bar.
- 14 Hank. Uh ha. o
- 15 Int. Just the space bar.
- 16 Hank. Space bar. o
- 17 Int. So if you'd remembered would you have used it?
- 18 Hank. I would use it. 1t
- 19 Int. Uh ha.
- 20 Hank. But at the first time I would try myself first. 4c
- 21 Int. So you prefer to use it like this and then perhaps next time to add  
22 another function?
- 23 Hank. A ha. o
- 24 Video: Get the spade work done first.
- 25 Int: What about the meaning for that Hank, "get the spade work done  
26 first".
- 27 Hank. Um, I think it's like a research, is it? 15c
- 28 Int. Mm m. Spade work is the first work that you have to do. So for  
29 example if you're planting a tree ....
- 30 Hank. The route work, the route work. o
- 31 Int. Yes, the basic work that has to be done. The first job. For example

- 1 if you're going to plant a garden the first thing that you have to do is  
2 to dig with a spade.
- 3 Hank. Uh ha. o
- 4 Int. So spade work is the first work.
- 5 Hank. Mm m. Because uh um at the beginning they're discuss to have a  
6 research, 15c  
7 to do a research, o  
8 and so I think the spade work is means, means a research. 16c
- 9 Int. Ah ha, okay. Well it's sort of the same isn't it, the initial work,  
10 whoopsy.
- 11 Video: Then we talk about specifics.
- 12 Int. Um, that's a tricky one.
- 13 Hank Because I'm not sure the last few words so 6c
- 14 Int. It's the wrong one. Let's go back a wee bit. Ah play. We'll see how  
15 we're getting on. Fast forward if necessary. Now I've gone too far. I  
16 think we've missed the start, never mind we'll go on from here. The  
17 word specific, it's quite difficult.
- 18 Hank. Mm. I I'm not so sure so I try, 7c  
19 try again again and again. 7c
- 20 Int. If on here you'd seen the coloured dots and I think you'll find there's  
21 a dictionary one there.. so ...
- 22 Hank. On the middle one. 1t
- 23 Int. Yes.
- 24 Hank. Middle yellow one? 1t
- 25 Int. The middle yellow one, yes. So if you'd realised that you had to  
26 push the space bar would you have gone for some dictionary  
27 support?
- 28 Hank. Yah. 1t
- 29 Int. Okay then.
- 30 Video: Thomas Schallenberg? Presumably he's going to work with us on the



- 1 corporate side.... Hold on.
- 2 Int. What have I done this time? Stopped it. Can you hear a difference  
3 there between what you're saying and what he's saying. I keep  
4 pushing the wrong button.
- 5 Hank. yes that's correct. 6c
- 6 Int. That's correct. When did you hear it Hank?
- 7 Hank. Um, I compared the, the um, the phrase between the words 3c  
8 and the vowel, and the vower 3c  
9 and so I, I, o  
10 I know him say hold hold on, 19c  
11 hold on, o  
12 this word is um combined 19c
- 13 Int. Linked.
- 14 Hank. like combined but I I forgo, o  
15 I first time I forgot it, 5c  
16 first time hol on, hold on, 7c  
17 but um I, I hear my record, 5c  
18 I, I know there's something wrong. 6c  
19 So I try to, try try again 7c  
20 record it and compare. 6c
- 21 Int. Do you feel pleased with yourself?
- 22 Hank. Yeah 2s
- 23 Int. That's good.
- 24 Hank. Because there's a improvement. 6c
- 25 Int. Yes.
- 26 Video: It's not as simple as that.
- 27 Int. That's interesting. The previous one, you listened and you said, "ah  
28 there's some improvement", and this one, I don't think you listened  
29 did you?
- 30 Hank. Yeah ah "it's not as simple as that" is you mean, o

Hank	Appendix C - 1	200
1	it's like ah, ah Chinese word	15c
2	ah ah mo gam gaan daan,	15c
3	it's similar to Chinese, to Chinese speaking	15c
4	so I try to um learn it.	15c
5	Int. It's not as simple as that.	
6	Hank. Yah. Like a Chinese word. Ni di mo gam gaan daan	o
7	Int. So you're comparing it with Chinese and trying to learn it?	
8	Hank. Yah.	o
9	Int. But you didn't practise saying it, you only said it once.	
10	Hank. Yah, enough I remember.	15c
11	Int. Oh I see, okay. You remember it because you can relate...	
12	Hank. Relate it to Chinese.	15c
13	Video: Sorry Barry can I come in here I completely disagree	
14	Hank. Now I go through the story again.	1c
15	Int. Ah are you, okay then.	
16	Int. So you're going through it unpaused with sub-titles?	
17	Hank. Uh ha.	o
18	Int. Oh I see, with...	
19	Hank. With record	3c
20	Int. How did you feel when you heard your own voice coming through	
21	in the drama, Hank?	
22	Hank. It's interesting.	2s
23	Um, it give, it give me um a, an idea	2s
24	I can do it like Roger.	2s
25	Int. Good, okay, then. So it gives you the feeling that you can in fact,	
26	um perform in that sort of role?	
27	Hank. Yah.	o
28	Int. So you can be the manager too.	
29	Hank. Thank you.	o
30	Video: Thomas Schellenberg, presumably he's going to work on the	
31	corporate side ..	

- 1 Int. Now you're at the end there.
- 2 Hank. Mm. o
- 3 Int. You went through that unpaused with the sub-titles on, so, and you
- 4 were listening to your own voice, checking the story presumably, um
- 5 what are you going to do now?
- 6 Hank. I forgot what I do. 1t
- 7 Int. Okay. Is it still the same drama?
- 8 Hank. Yah, same drama. 1t
- 9 Int. Same drama.
- 10 Hank. Change the selection. 1t
- 11 Int. Change the viewing options. Okay. Again you spend quite a long
- 12 time selecting, don't you?
- 13 Hank. Yah. o
- 14 Video: It's dangerous to join the countries together like that.. Sooner or later
- 15 Europe will be one market..
- 16 Int. So what have you chosen then this time then Hank?
- 17 Int. The same as before?
- 18 Hank. Play role. 1t
- 19 Int. Oh have you? Have you selected a character?
- 20 Hank. Yeh, I select Roger. 1t
- 21 Hank. Try to think what he says. 22c
- 22 And press delete key to remind to remind. 4c
- 23 Int. Ah, word by word?
- 24 Hank. Yeah. o
- 25 Int. Mm okay, did you find that useful?
- 26 Hank. Yah. 3t
- 27 Int. Did you just press word by word or did you try to..
- 28 Hank. Word by word. o
- 29 Int. After you had one or two words did you try to think of what came
- 30 next or did you just keep hitting word by word?
- 31 Hank. Press 1t
- 32 and think, 21c

- 1 press and think. o
- 2 Int. Press and think. Okay. Were you able to remember the word?
- 3 Hank. Um, not some. 5c
- 4 Int. Mm m. Did you ever record it with the wrong word Hank?
- 5 Hank. Record it wrong? o
- 6 Int. Well when you were trying to think of a word, or even if you didn't
- 7 record, did you ever think of the wrong word but a word that would
- 8 have fitted in the conversation?
- 9 Hank. I speak, 7c
- 10 I speak the ah statement 2c
- 11 and I hear myself 5c
- 12 and think. 6c
- 13 Int. Okay then.
- 14 Hank. And try to guess 6c
- 15 um my think wrong or correct. 6c
- 16 Make perhaps something I I, 5c
- 17 some words I may speak wrong 6c
- 18 but um it's just a minor mistake. 6c
- 19 Int. Okay then.
- 20 Hank. I think. 6c
- 21 Video: If we can
- 22 Int. It's getting near to the finish.
- 23 Hank. On this situation it haven't given me a red dot, 2t
- 24 red dot. o
- 25 Int. A red dot is for the models.
- 26 Hank. Models? o
- 27 Int. Mm.
- 28 Hank. Always means record o
- 29 Int. Oh I see the red one.
- 30 Hank. The red. o
- 31 I haven't seen there's a function given me to record. o
- 32 Int. Didn't you just push the record button?

1	Hank. I haven't.	1t
2	I just look at the signal.	1t
3	Int. Oh I see no you still have to push the record button. We'll turn that	
4	off then Hank. Stop. Okay that was pretty interesting. Well any other	
5	comments you'd like to make about it Hank? Anything else you	
6	want to tell me about it, working on it now that you've watched	
7	yourself?	
8	Hank. Um, have a guide line,	4t
9	a guide line just on the paper	4t
10	correct before me better.	3t
11	Int. To have a guide line?	
12	Hank. About the story, about the story on the paper	4t
13	and I ...	o
14	Int. So you can read it?	
15	Hank. Before the,	o
16	before the meeting I can study it what story,	4t
17	what story I'm interest	4t
18	and I'm going to ...	4t
19	Int. And would you?	
20	Hank. Uh?	o
21	Int. And would you?	
22	Hank. Yeah.	4t

- 1 Int. Can you just tell me if you had a friend who said to you I'd really  
 2 like to improve my English what would you tell them about the  
 3 system that you've just been using?  
 4 They want to improve their English and you've just been working on  
 5 a particular system. What would you tell them about it Dawn?
- 6 Dawn. I just want to improve my English o  
 7 but I don't know through how to.. o  
 8 then I can then what can I tell what can I tell her o
- 9 Int. What about the system you've just used. What could you tell her  
 10 about that? What could you tell her, Ken?
- 11 Ken. I think that the..it is it is very useful 3t  
 12 to follow the pronunciation 3t  
 13 especially on on the difference of North Britain and South Britain 3t  
 14 and also Americans.. 3t  
 15 their sound also the.. 3t  
 16 how to say..the (accompanied by hand movements) o
- 17 Int. intonation is it
- 18 Ken. yes intonation 3t  
 19 intonation and also can be improved.. 3t  
 20 and also the it is very useful 3t  
 21 to help our real life.. 3t  
 22 they say the what they say is very useful in our life o
- 23 Int. oh that's interesting. Why do you think it's very useful in your life,  
 24 Ken?
- 25 Ken. Because we sometimes o  
 26 most people how to say o  
 27 sometimes when I when I and I contact my customer o  
 28 or I think that the customer is most o  
 29 often contact my customer o  
 30 but my English is not good 2s
- 31 Int. So you think those are the situations that would be useful
- 32 Ken. Yes yes o
- 33 Int. Okay. What about you Dawn? Could you think of anything you  
 34 would tell your friend who says, I want to improve my English.

1	Would you agree with Ken? Or disagree with him or	
2	Dawn. ..agree	o
3	Int. You'd agree and would you add anything else?	
4	Dawn. Nothing, no.	o
5	Int. Okay then. Just tell me, before you started using the program did	
6	you have some plan for what you were going to do with it?	
7	Ken. Some plan?	o
8	Int. When you came along this morning and you knew you were going	
9	to work on interactive video did you have a plan that you wanted to	
10	work on Dawn? When you came along did you think, ah yes from	
11	last week I remember doing this, this week I'll do..	
12	Ken. Yes.	1c
13	I just have little plan	1c
14	Int. Okay what was your little plan Ken?	
15	Ken. We plan to..choose a man and a woman..	1c
16	and she is the	o
17	Dawn. To have a role play	1c
18	Ken. Yes a role play	o
19	Int. A role play then okay. When did you, when did you work out this	
20	plan? Before you came or when you were sitting down in front of	
21	the screen?	
22	Dawn. Pardon?	o
23	Int. When did you work out this little plan. Today or	
24	Ken. Just	o
25	Dawn. Today	1c
26	Ken. Just today	o
27	Int. How did your plan work out? Did you follow your plan	
28	Ken. Yes	6c
29	I think we are follow my plan	o
30	Int. Did you think it was a good plan Dawn?	
31	Dawn. Ah, I think so	6c
32	but I have some suggestions..	4t
33	I think it's the best to have	4t
34	Ken. some directions	4t



1	Dawn. Direction?	o
2	Dialogue.	4t
3	Dialogue on the paper	4t
4	Int. Dialogue on the paper. What would you do if you had dialogue on	
5	paper?	
6	Dawn. Because it's too hard to see the character dot dot dot	3t
7	Int. subtitle?	
8	Dawn. yes I think to have the dialogue on the paper it's best	o
9	Int. What do you think about that Ken, to have dialogue on paper	
10	Ken. I don't think so	3t
11	I think on the video is better because..	3t
12	is more convenient	3t
13	and no need to attention to another dialogue.	3t
14	Just focus on the screen.	3t
15	Int. so you worked with your plan, which drama chapter did you choose?	
16	Did you choose lots of different ones or just one to work on..because	
17	you wanted to role play	
18	Dawn. I just choose one..	2c
19	because it's the time limit..	4c
20	What do you want to add?	o
21	Int. You chose one. How did you choose the drama, then..the	
22	chapter..the chapter that you worked on..	
23	Ken. We played the find, the find,	4c
24	the best is I I I think something..	o
25	if the number of people on the drama can one people two people	
26	three people	4c
27	then we can easy to plan..	4c
28	plan to the program.	4c
29	Int. So how did you .. how many people were in the drama each time	
30	Ken. Just try it	1t
31	Int. Just try it	
32	Ken. Just try.	o
33	I don't know how many people in each drama.	2t
34	Int. Okay, so how do you find out how many people are in each	

- 1 drama..can you find out
- 2 Dawn. There is a Roleplay (unclear) in the 2t
- 3 Int. Did you use it
- 4 Dawn. Yes, yes 1t
- 5 Int. You selected a drama with just two people in it
- 6 Dawn. Always three people 2t
- 7 Ken. Always o
- 8 Int. Okay, so you were working together and you had this little plan,
- 9 were there times when it would have been better if you'd been
- 10 working by yourself..if you'd been doing it all by yourself
- 11 Dawn. Too boring 3s
- 12 Int. Too boring for you
- 13 Dawn. too boring o
- 14 Int. What do you think, Ken
- 15 Ken. I think it is boring..boring o
- 16 but I think sometimes if you want to try more practice.. 3s
- 17 one people is suitable 3s
- 18 Int. So if you had a plan, if you had your own plan, and you were
- 19 working on it by yourself,would that be better, or not as good?
- 20 Ken. ..How about if, if..both o
- 21 and one people o
- 22 is also on the plan o
- 23 Int. Both and..
- 24 Ken. How to say.. o
- 25 Dawn. do you want to say two o
- 26 Ken. If two people and one people is also also on this programme.. 3s
- 27 then I think one people is also has its advantage, 3s
- 28 two people also has its advantage 3s
- 29 Int. what do you think would be the advantages for one person?
- 30 Ken. One person is..we can take more practice 3s
- 31 and no need to..to..brother again about another partner 3s
- 32 Int. What about you, Dawn. Do you think there would be some
- 33 advantages for just one person?
- 34 Dawn. I agree with that, I agree with him.. o

1	if only <u>one</u> person, if only one person..you can practise as what you	
2	like	3s
3	and when you like,	3s
4	but I think it is too boring and just that..	2s
5	when you read.. when you read the sentence	3s
6	or do the pronounce,	3s
7	you pronounce the word..	3s
8	I think the ones beside you can hears clearly	3s
9	and point out the wrong things.	3s
10	It is..I think it is good,	3s
11	more than one people	3s
12	because you involved as this situation you cannot..	3s
13	you cannot knowed what you are wronged,	3s
14	whats you done wrong..	o
15	I preferred to have both	3s
16	or more	3s
17	Int. So did you find you helped each other	
18	Ken. Yes, yes	1s
19	Int. So was it useful for Dawn to be able to help you	
20	Ken. Yes	o
21	Int. and for you to be able to help Dawn	
22	Dawn. Yes	1s
23	Int. Just tell me if you used the program again would you work in the	
24	same way..so in other words would you work with a partner or	
25	would you work by yourself, would you work with a group of	
26	people, would you follow the same plan, or a different plan..If you	
27	came back tomorrow what would you do	
28	Dawn. ..I think the background actress	o
29	and doing what the video do	o
30	Int. so what would you do..more roleplay?	
31	Dawn. Yes	1t
32	Int. You like the roleplay do you, okay..how about for you Ken?	
33	Ken. Also	o
34	Int. Roleplay. Okay then so you would follow basically the same pattern,	

- 1 would you?
- 2 Ken. Same plane 1c
- 3 Int. Same plan, or more roleplay?
- 4 Ken. Maybe.. if ..
- 5 • same sequence 1c
- 6 Int. Okay then. If you think about this system that you've just used, what
- 7 sort of student do you think would get most benefit from a system
- 8 like that?
- 9 Dawn. I think the student if it if..he or she is active..
- 10 the benefits that he or she can get 3s
- 11 Int. Active in what way, Dawn
- 12 Dawn. \*I think..not only on this project in SAC.. o
- 13 sometimes I do not focus on my working and look around.. o
- 14 I find someones do not do not tries..tries his best o
- 15 and find the books and reader.. o
- 16 only brief glance the work book for me..and dot dot dot.. o
- 17 copy it..all copy it. o
- 18 Depends on..I think the whole project that they signed is good.. o
- 19 to let your own times.. o
- 20 to choose your things o
- 21 but if the people not..I don't know how to express this.. o
- 22 Int. is it motivated?
- 23 Dawn. motivated.. o
- 24 Int. to really want to improve their English
- 25 Dawn. ..yes, I think so..this..dim gong (how do you say it) o
- 26 Int. So you think it would it be best for students who really want to
- 27 improve their English but if students are just sitting there
- 28 Dawn. nothing think what they do o
- 29 or which method can be improved o
- 30 I don't think they have this idea o
- 31 (Dawn's reply refers to the English programme in which this
- 32 research project is situated)
- 33 Int. So you don't think they would benefit from this system.
- 34 Int. How about you Ken, do you agree with Dawn or

- 1 Ken. Agree o
- 2 Int. So you said if they don't think about the methods and think about
- 3 the way they're doing things..as you worked with it were you
- 4 thinking about what you were doing..as you worked with the
- 5 program did it give you the opportunity to think about what you
- 6 were doing..
- 7 Dawn. I don't think what we to actually.. o
- 8 I hope..I hope..I hope I can increase my confidence in English, 2s
- 9 ability in speaking, 1t
- 10 reading 1t
- 11 or something else.. o
- 12 I hope I can after this o
- 13 Int. So do you think a system like this would help somebody who
- 14 wanted to increase their confidence and their, their speaking and
- 15 their reading
- 16 Dawn. \*I think not in this program, maybe not, maybe not o
- 17 only in this program, it maybe not o
- 18 but interviewing with you or with some person o
- 19 I think it can increase the confidence.. o
- 20 because they can try to express what they think because.. o
- 21 I'm a Chinese woman.. 2s
- 22 Chinese people..always the idea is from Chinese 2s
- 23 and transfer translate English and Chinese 2s
- 24 and translate what's their idea 2s
- 25 I think it's wrong.. 2s
- 26 but I don't know how to change this.. 2s
- 27 because we always involved in the Chinese situation, 2s
- 28 in Chinese family.. 2s
- 29 if..if..more chance to speak to foreign.. foreign teacher o
- 30 it is the best. o
- 31 Int. Do you think this would be almost the same as talking to foreigners
- 32 Ken. Yes,yes 3t
- 33 Dawn. But it's
- 34 Int. ..not quite

1	Dawn. it's not..it's not living	3t
2	it's not a live creatures	o
3	that can only do what you said	3t
4	Int. okay	
5	Dawn. I think it's okay continues for a while	o
6	Int. Okay. It's quite difficult isn't it. Would you like to use the system	
7	again yourself	
8	Dawn. Yes.	3t
9	Int. Can you tell me why	
10	Dawn. Interesting, interesting	3t
11	Int. What's particularly interesting for you, Dawn?	
12	Dawn. Looking the video	o
13	and looking the just some that you the role be played back	1t
14	I think is interesting,	o
15	interesting to see what I have done at that moment..	o
16	because you have done this	o
17	maybe you have do.. you do not know	o
18	and from this you can improve yourself	o
19	and what you can do do are wrong	o
20	and I will see that I I not sit straight only..	o
21	so many things that you can see	o
22	Int. So many things, okay. What about you Ken? Would you like to use	
23	this system again?	
24	Ken. Yes	3t
25	because I want to improve my English	3t
26	different from Dawn	3t
27	she think it is interesting	3t
28	I think it is although it is not living	3t
29	but actually if I I talk to a real people	2s
30	maybe he or she will angry with me me	2s
31	because my English is quite bad	2s
32	so I think if I can control the people	1t
33	and say again,say again again	1t
34	I can hear clearly	3t

1	and practise many times	1t
2	I think it is very useful to improve my English	3t
3	Int. Okay	
4		
5		
6	Stimulated Recall:	
7		
8	Video: It's more a question of acculturation	
9		
10	Int. Okay you're listening to your voice there, Dawn. And you're	
11	listening to the.. she's the actor, you see, can you hear the	
12	difference?	
13	Dawn. What's you mean the difference, the difference in..	o
14	Int. in what you're saying and what she's saying and what you're saying.	
15	I'm just interested because you said before that it was useful if Ken	
16	was there to help you, and I'm just wondering if Ken is also	
17	listening hard to what you're saying. Let's just see.	
18	Ken. Yes,	1s
19	but, I think practice is very important	4c
20	if we practise more time	4c
21	I think we can say same as the actor	6c
22	Int. Okay then.	
23		
24	Video: Sooner or later Europe will be one market	
25		
26	Dawn. This is a difficult sentence	6c
27	Int. Okay now, I can see that	
28	Dawn. This is a difficult sentence	o
29	we hear	6c
30	Ken. sooner	5c
31	Dawn. sooner or later	5c
32	Ken. sooner or later c (intonation is different)	
33	Dawn. We hear, we hear,	5c
34	we try and tries to hear what's she say	5c



1	because I cannot hear	5c
2	Ken. clearly hear the sooner or	5c
3	Dawn. sooner or later.	5c
4	Cannot hear sooner or later	5c
5	Ken. the linking	5c
6	Int. The linking. Okay then.	
7	Dawn. it's too fast	5c
8	and also that roleplay is her secretary	2t
9	well I cannot hear what when to when she says well	5c
10	I only hear the first word is could	6c
11	Int. So after you listened a few times Dawn, could you hear it then?	
12	Dawn. No I only cannot hear the well	6c
13	Int. Okay I see you lean towards the screen. Why do you lean towards	
14	the screen?	
15	Dawn. No, I I hear the	o
16	Int. So you want to hear better.	
17	Dawn. Yes.	1t
18	Int. So you move closer.	
19	Dawn. Yes.	1t
20	Int. Does it work?	
21	Dawn. Okay.	3t
22		
23	Video: sooner or later (playing throughout next segment)	
24		
25	Int. Okay what are you pointing out there Ken. You're pointing out to	
26	Dawn. What are you pointing at?	
27	Int. What are you actually pointing to when you..	
28	Dawn. sooner or later	o
29	Ken. Oh I point to his her mouth	4c
30	Int. Oh I see. Okay.. You didn't go to the model?	
31	Int. You didn't go to the model?	
32	D. No model.	2t
33	B. No model.	o
34	Int. Was there a model there.	

1	Dawn. Only grammatical support	2t
2	Int. Ah okay. If there had been a model would you have gone to the	
3	model?	
4	D. Yes.	1t
5	Int. Okay now you bend over and you touch the key, Dawn, which one	
6	are you going for	
7	Dawn. Up key..the up arrow key	1t
8	Int. Oh, so you want the	
9	Dawn. playback	1t
10	Int. to playback and to keep the phrase on the screen	
11	Dawn. yes	1t
12	Int. Did you find it more useful to have it kept on the screen	
13	Dawn. yes, yes	1t
14	Int. Which did you prefer, Ken	
15	Ken. yes..	o
16	but I prefer I can playback	3t
17	Int. but you can playback just with the	
18	Ken. number lock key	1t
19	Int. and you can play with the.. play it back and keep the subtitle on the	
20	screen.	
21	Int. Now what are you going to there because I heard you say dictionary.	
22	I wonder what you were going to there. The end of the chapter are	
23	you?	
24	Ken. We just..just interesting on..on dictionary	1t
25	we want..want to see what's dictionary	1t
26	what..is dictionary?	o
27	Int. Okay then. Let's see what you did with it	
28		
29	Video: Europe..assumption (dictionary) (playing throughout the following	
30	segment)	
31		
32	Int. You say no, Dawn, why did you say no?	
33	Ken. No.	o
34	Oh, oh, I see.	o

1	Because we want to find model.	4c
2	But actually there's no	2t
3	Int. Oh it's not a model okay..so you..okay so let's see what you're going	
4	to do next then.	
5	Int. Okay what are you looking for when you're doing this? You're going	
6	through on the dictionary, the words in the dictionary. Here when	
7	you're tapping the key and you're changing the word each time are	
8	you looking for something Ken?	
9	Dawn. We were trying to find the word we were trying to find.	4c
10	Ken. To find the model of sooner or later.	4c
11	Int. I think you're just in the dictionary here though are you?	
12	Ken. Yes but we we just want to find the sentence.	4c
13	Int. Okay, and did you?	
14	Dawn. Try	6c
15	Ken. Yes.	6c
16	Int. Okay	
17	Int. I see you've got the subtitles up. Did you use the subtitles all of the	
18	time? Here you can see the subtitles on the screen.	
19	Ken. Yes.	1t
20	Int. Did you ever watch the drama without the subtitles?	
21	Dawn. No	1t
22	Int. No	
23	Dawn. No I always have subtitles.	1t
24	Int. Can you tell me why?	
25	Dawn. ..I thinks.. do not have enough confidence	2s
26	to listen what she say and..and..	2s
27	the title then you can see what she says	1t
28	and tries to listens hard.	14c
29	Only because what..	o
30	how to pronounce	1t
31	and and the linking.	1t
32	And not to not to..	o
33	no need to.. to listen what she have say.	1t
34	Int. Okay. Then what about you then Ken. How did you feel about the	

1 subtitles all the time?

2 Ken. I think I think we.. we.. o

3 I mean I'm in the in the elementary level.. 2s

4 so so I want a subtitle. 1t

5 If it is in the advanced level 1t

6 I think that if there's no subtitles it's better. 1t

7 Int. So you think later on as you improved then you might use it without

8 the subtitles

9 Ken. Yes. o

10

11 Video: Thomas Schallenberg.. Sorry to interrupt you Kate.

12

13 Int. Now I'm interested that Ken's just reading on, you're directing the

14 keyboard , controlling the key board. Was Ken moving at a speed

15 that suited you Dawn or would you have liked him to have gone

16 faster or slower?

17 Dawn. What o

18 Int. Well Ken's going click click click.

19 Dawn. At that time we are we are finding 1t

20 Ken. We are playing back 1t

21 Dawn. We are playing back to find the o

22 Ken. Find the sentence, sooner or later 1t

23 Int. Ah, so you're still looking for that are you? .

24 Dawn. Only only looking that 2c

25 Int. Okay. Was it the meaning of sooner or later, or was it the linking?

26 Ken. Yes the linking. 3c

27 Int. The linking.

28 Int. You're still looking for..

29 Ken. Yes. o

30 Dawn. But no pause. 4c

31 Int. Sooner or later, and you've just found it again.

32 Ken. Yes. 1t

33 Int. Okay, so let's see what you do now you've found it.

34 Int. Okay so we get 'um'.

1	Dawn. Surprised us he can find it because	1t
2	I I I I think she will..	o
3	after the dictionary it's skips too far away	1t
4	and after he can find the sentence	1t
5	I'm surprised he can find and how they can	1t
6	Ken. How I can find.	1t
7	Int. Okay then so you're both very persistent. You both know that you	
8	want to be able to say this. Sooner or later. Okay. Were you	
9	concerned about linking for other phrases or was it just this one?	
10	Ken. ..Some,	2c
11	not just this one.	2c
12	Dawn. This is interesting.	2c
13	Int. Okay then.	
14	Int. Okay he says try once and you say ummm. Why do you say that?	
15	Dawn. Not enough confidence to say.	2s
16	Int. Okay so what do you want to do.	
17	Dawn. I want to practise, practise more.	7c
18	Int. Okay. Does Ken practice as well. Let's see.	
19	Int. Okay so we've got this great..you want this to be a really good	
20	performance	
21	Ken. Yes.	4c
22	Int. Let's see if it is ..	
23	Int. Okay now Dawn repeated it. You've compared, you haven't recorded	
24	it at all. Are you also interested in this or are you just helping	
25	Dawn, Ken?	
26	Ken. Yes.	o
27	Dawn. What yes, yes for what?	o
28	Ken. Yes for helping Dawn.	1s
29	Int. Yes okay.	
30	(end of tape. question lost)	
31	Ken. I in my mind just follow how to say	7c
32	Int. Okay, so when Dawn's saying it out loud are you saying it in your	
33	mind? Do you think your pronunciation was improving in your mind	
34	Ken. Little.	6c

- 1 Int. A little. Okay.
- 2 Dawn. Try 5c
- 3 Int. So there you're pointing, pointing, pointing. What are you
- 4 pointing..what are you telling her there Ken. Okay, what are you
- 5 telling her do you know?
- 6 Ken. Oh ah just..just tell her how to 1s
- 7 Int. Let's just go back a wee bit and have a look.
- 8 Ken. Oh I just point to sooner r o r o (sooner or)just point to the word. 1s
- 9 Int. I see.
- 10
- 11 Video:( Ken.) Narrow, narrow, narrow, narrow.
- 12 Int: What do you mean..are you saying "narrow, narrow, narrow,
- 13 narrow"?
- 14 Ken. because I we think we are understand it is linking, 1s
- 15 we can't say because.. 1s
- 16 I think we are not experienced.. 1s
- 17 not very experienced 1s
- 18 Int. Okay that's good. What do you actually mean by narrow, narrow,
- 19 narrow?
- 20 Ken. Narrow? o
- 21 Int. Is that what you're saying narrow, narrow, narrow
- 22 Ken. Yes sooner or sooner (out of context and exaggerated the listener
- 23 hears narrow) o
- 24 Int. I see you're practising how to say it. Okay then.
- 25 Int. How did you feel about that when you heard it back, Dawn?
- 26 Dawn. Not satisfied. 6c
- 27 Int. Not satisfied. Okay, can you tell me why you weren't satisfied?
- 28 Dawn. Ah sorry. o
- 29 Int. Why weren't you satisfied?
- 30 Dawn. Why do you unsatisfied? o
- 31 Int. You said, not satisfied, why, why were you not satisfied?
- 32 Dawn; Why? o
- 33 Int. Is it...
- 34 Dawn. Only is the feeling only is the feeling that I I I. 1s

1	Ken.	I think she cannot for 100%.	1s
2	Int.	In your mind can you follow 100% Ken?	
3	Ken.	In my mind I think I can follow 90%.	6c
4	Int.	Okay. Let's see.	
5	Ken.	But actually just 50%.	6c
6	Int.	Okay, so you can follow in your mind and then you have to	
7		physically do it. But you can hear it your mind can you?	
8	Ken.	Yes.	14c
9	Int.	I'm interested we've got Ken controlling the keyboard and Dawn	
10		with the microphone. If you were sitting in different seats ..	
11	Ken.	No,	1t
12		because the actor is a girl.	1t
13	Int.	Oh I see so it's Dawn's turn. Oh I see, right	
14	Ken.	Just change.	1t
15	Int.	Okay so you only practise saying the	
16	Ken.	Yes division of labour.	1s
17	Int.	Does that make it efficient?	
18	Ken.	Yes.	1s
19			
20	Video:	Can I just interrupt you, Kate	
21			
22	Int.	I notice Dawn there you went (nods) with your head. What was	
23		that?	
24	Dawn.	I pronounced..I pronounced..I pronounced	1s
25		what's Kates to him	1s
26	Int.	Oh I see. Was he not getting it quite correct?	
27	Dawn.	Quite accurate.	o
28	Int.	Was he not saying it properly.	
29	Dawn.	Yes.	1s
30	Int.	Okay so did you take notice of Dawn.	
31	Ken.	Yes.	1s
32	Int.	Okay.	
33			
34	Video (Ken):	Can I just interrupt you Kate? (x3)	



- 1 Int. When you practise it Ken, have you got it on the screen?
- 2 Ken. Pardon? o
- 3 Int. When you practise it have you got it written on the screen, have you
- 4 got the words on the screen.
- 5 Ken. Yes..yes 1t
- 6 Int. Okay then. Did you want to practise this as well Dawn? "Can I just
- 7 interrupt you Ken?"
- 8 Dawn. This is her her play. 1s
- 9 Int. That's his role is it? Okay so you're not going to step in
- 10 Dawn. I will only practise in my mind. 7c
- 11 Int. Practise in your mind? Can you do it in your mind?
- 12 Dawn. Yes. 7c
- 13 Int. 100%, 90%, 50%.
- 14 Dawn. 30% 6c
- 15 Int. 30% More practice.
- 16 Int. Okay, you sort of pull a bit of a face. What does that indicate Ken?
- 17 Dawn. I think you are despondent. 1s
- 18 Ken; Ah not satisfied, I think 6c
- 19 Int. Why were you not satisfied?
- 20 Ken. Why?... o
- 21 Because we cannot follow 100%.. follow. 6c
- 22 Int; Okay, you've got this sort of model in your mind have you? You can
- 23 hear it in your mind?
- 24 Ken. Yes. 14c
- 25 Int. And when you say it in your mind it sounds good?
- 26 Ken. Yes. 6c
- 27 Dawn. I think always..we are not satisfied is 1s
- 28 we know we should know how to say 1s
- 29 but we can not do..what's..what's..what's 1s
- 30 Ken. I think the reason is that because the is the Cantonese there is very
- 31 little practice on linking. 9c
- 32 We..because I..we we say one word and one word and one word 9c
- 33 that is is very little practice. o
- 34 Int. Whereabouts have you learned about linking from?

- 1 Ken. I..I have not learned linking. o
- 2 Int. You've not learned linking.
- 3 Ken. Just learned..last night. 11c
- 4 Int. But I'm surprised that ...
- 5 Ken. Last night. o
- 6 Int. Oh. Just last night. Okay because I'm surprised. Not many students
- 7 actually know about linking, or can talk about linking so I'm
- 8 surprised that you're talking about linking. Some new knowledge that
- 9 you have, is it?
- 10 Ken. Yes. 11c
- 11 Int. Okay, that's good, does it help?
- 12 Ken. Yes 6c
- 13 Int. That's good.
- 14
- 15 Video: Can I just interrupt you Kate
- 16
- 17 Int. Did you have any problems anywhere with the meaning? Did you
- 18 have any problems with understanding words or phrases.
- 19 Ken. Sometimes. 5c
- 20 Int. Okay. If you had problems what did you actually do.
- 21 Ken. .. Asked my partner or..or 1s
- 22 go to grammatical 1t
- 23 Int. And was Dawn able to help you?
- 24 Ken. Yes sure. 1s
- 25 Dawn. Thank you. o
- 26 Int. And what about for you Dawn, if you didn't understand what did
- 27 you do?
- 28 Dawn. I just also asked. 1s
- 29 Int. Okay
- 30 Int. We'll just take it onto fast forward
- 31 Int. Okay it's a bit late shall we just take it on to fast forward, if we see
- 32 anything that looks particularly interesting then we'll stop.
- 33
- 34 Video: I think it's dangerous to make any assumptions

- 1 Int. So here we've got Ken now with the keyboard and the microphone
- 2 Dawn.
- 3 Int. You say, good, okay.
- 4 Dawn. I say fine..his..his..his. 1s
- 5 Int. His pronunciation
- 6 Ken. What I am saying 1s
- 7 Int. How did that make you feel, when Dawn said, good. Did you
- 8 believe her
- 9 Ken. I think she encourage me. 1s
- 10 Int. How about the meaning of that? Any problems with the meaning?
- 11 Dawn. Do you want to know the meaning o
- 12 Int. Did you, did you understand the meaning?
- 13 Dawn. Ah ah o
- 14 Ken. 80% 6c
- 15 Int. 80%
- 16 Int. And how did you get your 80% meaning Ken?
- 17 Ken. How to get? o
- 18 Int. Did you understand it from the drama or from constantly repeating it
- 19 or did you know that before you came?
- 20 Ken; No I didn't know that before I came. 20c
- 21 I just.. o
- 22 Int. Now it's interesting because Dawn's actually saying research. Are
- 23 you listening to Dawn as well?
- 24 Ken. Yes. 1s
- 25 Int. So you're listening to two
- 26 Ken. So I play this again. 1t
- 27 Int. Okay then, so when you hear Dawn say research ...
- 28 Ken. And then I I try to match with that 1s
- 29 Int. With the recording. Okay then.
- 30 Int. How did you feel about that Dawn? (refers to her performance)
- 31 Dawn. Good. 1s
- 32 Int. Yes you look very enthusiastic. Lots of support.
- 33 Int. Okay we'd better stop there for you. It's a bit long.
- 34 Is there anything else you want to say about it after watching

1           yourself?

2   Ken.   It is my first time to look at me on the screen.

o

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