

# Computer-Assisted Language Learning: Learners, Teachers and Tools



Computer-Assisted Language Learning:  
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Edited by

Jeong-Bae Son

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P U B L I S H I N G

Computer-Assisted Language Learning: Learners, Teachers and Tools  
Edited by Jeong-Bae Son

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## PREFACE

This book is an examination of contemporary issues related to learners, teachers and tools in computer-assisted language learning (CALL) environments. It explores the interrelationship among the three components of CALL and presents the findings of recent work in the field of CALL. As the third volume of the Asia-Pacific Association for Computer-Assisted Language Learning (APACALL) Book Series, it is a valuable contribution to CALL communities and offers great opportunities for readers to engage in discussions on CALL research and practice.

The book includes eight chapters peer-reviewed by independent reviewers. Chapter 1 looks into low-achieving language learners' use of self-study multimedia materials. Chapter 2 reports on a study of Japanese university students' use of computers and mobile phones. Chapter 3 deals with English as a second language (ESL) learners' needs for mobile-assisted language learning (MALL) tasks. Chapter 4 focuses on Iranian university students' use of Wikipedia for learning academic English. Chapter 5 examines Malaysian in-service teachers' experiences in developing digital storytelling. Chapter 6 investigates how language teachers apply their knowledge and skills gained from a formal CALL course to their teaching practice and professional development. Chapter 7 discusses connectivist learning in connection with teacher professional development and learning networks. Finally, Chapter 8 explores CALL practitioners' use of online tools and professional development in the field of CALL.

A collaborative effort has been made in publishing this refereed volume. I am grateful to the authors whose work appears in the book. My thanks also go to all reviewers of submitted manuscripts. In addition, I would like to thank my family for their love and support during the production of this book.

Jeong-Bae Son  
May 2014



## CHAPTER ONE

# LOW-ACHIEVING LANGUAGE LEARNERS IN SELF-DIRECTED MULTIMEDIA ENVIRONMENTS: TRANSFORMING UNDERSTANDING

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### **Abstract**

Multimedia materials offer the opportunity for language learners to practice with multiple media, work at their own pace, choose their own route through the materials, and receive feedback. A number of studies have highlighted difficulties faced by learners in coping with multimedia features in particular when used for self-study or remedial purposes although little research has been conducted into the learning processes associated with these problems. This chapter reports on a study of 12 low-achieving language learners working with self-study multimedia materials. Using data from interviews, learning diaries, observation, and questionnaires, the changes in attitudes and learning processes are charted over a period of an academic year, and followed up with interviews 12 months later. Initial benefits from using the multimedia materials give way to learners' disappointment with their rate of progress, and with perceived shortcomings in the materials. The process of dealing with these problems, however, acts as a catalyst for the development of their ideas about what it means to be a learner, and by the end of the study there is evidence of a

transformation in their understanding not only of language learning but also of learning in general.

**Keywords:** Computer-assisted language learning (CALL), multimedia, learning strategies, low-achieving language learner, self-study.

## **Introduction**

Multimedia language learning materials offer the opportunity for users to practice with multiple media, allow learner-control over pace and choice of routes through the material, and provide feedback. This study is concerned with exploring the extent to which the potential benefits of such software are realized for low-achieving learners, the problems they encounter, the ways in which those problems are tackled, and with the longer-term effects of working with such materials on both language learning and learning in general. The participants in the study are learners of English who used a variety of multimedia CD-ROM titles in self-directed study mode over a period of two semesters in a university in Taiwan. Data collection involved interviews, debriefings, focus groups, and teacher observation, with follow-up interviews 12 months after the initial interviews.

## **Literature Review**

### **Low-achieving language learners**

Achievement can be defined in terms of the work students do, or in terms of “self-perception”, “personal knowledge” and “self-determination” (van Lier, 1996, p. 119). The former can be described as the “outer perspective”, in which achievement is assessed mainly by tests or exams conducted by others, and the latter the “inner perspective”, which characterizes individuals in terms of self-knowledge, self-assessment and self-regulation (Ryan, Connell, & Grolnick, 1992, p. 167). Although the inner perspective is not widely accepted as a measure of academic performance, a personal sense of competence or success is evidence of self-determination and self-regulation on the part of learners who are actively assessing their individual achievement or progress.

Studies of successful language learners, as defined by performance in tests or examinations, suggest that in many respects there is a major difference between learners at different proficiency levels in terms of the language learning strategies that “good” (Rubin, 1975; Stern, 1975) or

“unsuccessful” language learners (Vann & Abraham, 1990) use. Success might also be affected by individual differences among learners (Mitchell & Myles, 2004), including cognitive factors (i.e., intelligence, language aptitude and language learning strategies) and affective factors (i.e., language learning attitudes, motivation, language anxiety and willingness to communicate) (Gardener & MacIntyre, 1992, 1993). Larsen-Freeman (2001) refers to these as learner contributions, and categorizes them as learner attributes (i.e., age, aptitude, personality, learning disabilities, and social identities), learner conceptualizations (i.e., motivation, attitude, cognitive style and beliefs) and learning actions (i.e., learning strategies).

Among those learner contributions anxiety, or feelings of apprehension, may be especially important as learners who experience language anxiety tend to perceive themselves as incompetent in comparison with their peers (Price, 1991), or self-justify themselves as lacking ability or low-achievers. Motivation has also been shown to affect both achievement, and attitudes towards language (Masgoret & Gardner, 2003; van Lier, 1996). Intrinsic motivation (Deci & Ryan, 1985) may be more likely to lead to long-term retention of learning (Arnold & Brown, 1999) as intrinsically motivated learners tend to be more persistent when they encounter academic challenges, volunteer for tasks and demonstrate higher academic performance (Deci & Ryan, 1985; Mitchell, 1992; Walker, Greene, & Mansell., 2006). Extrinsic motivation can undermine intrinsic motivation as adding extrinsic rewards can lead to a reduction of pleasure in an intrinsically interesting task, and of efficiency (Kohn, 1990). Attitudes – cognitive (e.g., what a person knows or believes about the objects of attitudes), affective (e.g., the degree of like or dislike of the class) and behavioural (Wenden, 1991) – are also closely associated with achievement and positive or negative attitudes can affect learning outcomes.

### **Self-directed language learning**

Knowles (1975) refers to self-directed learning as the process of conducting a series of tasks (e.g., needs analysis, goal setting, materials selection, strategy use, and self-assessment), and Candy (1991) identifies self-directed learning in terms of four products: “personal autonomy, self-management, learner-control and autodidaxy” (p. 23). Self-directed learning has the potential to benefit language learners through catering for students’ individual needs, learning styles or preferences (Gardner & Miller, 1999; Sheerin, 1997) by accommodating time or physical

constraints that prevent learners from going to regular classes and providing additional practice.

However, research suggests that self-directed learners are motivated, self-disciplined, self-confident and goal-oriented when meeting challenges (Taylor, 1995) and these are qualities that learners either need to bring to a self-directed learning course, or need to develop in order to benefit from it. Little (1989) refers to the need to “learn how to learn and to apply that skill to the learning of a language” (p. 63). Learners may be disposed towards independence of this kind but lack the required skills, knowledge, or abilities (Sheerin, 1997). Giving students the opportunity to direct their own learning, therefore, does not automatically lead to greater autonomy or result in language learning. It requires explicit “learner training and support mechanisms, appropriate use of technology, the design of access systems to support self-direction, teacher and learner involvement, and the integration of self-access with the curriculum” (Benson, 2001, p. 134).

### **Computer-assisted language learning and interactive multimedia learning materials**

Joiner (1997) identifies five main characteristics of multimedia materials: immediacy, interactivity, control, multisensory input, and the availability of various options for obtaining help. These features allow language learners to explore, discover, ponder, search, question, answer and receive feedback (Brett, 1998). The availability of multiple media (e.g., text, video, music) in a single interactive environment can help learners with different learning needs or preferences by offering a variety of presentation modes (Pusack & Otto, 1997) and this can lead to a more positive impact on students’ learning attitudes and achievements than lessons using only text (Atkinson, 2002; Moreno, Mayer & Lester, 2000). The control feature of multimedia environments can allow learners to choose the pace and sequence of the learning process, learning content and tasks, when to access help functions, and whether to start, stop, and repeat listening material. Interactivity can also play a valuable role in providing access to instant help with the linguistic demands of a task, including synchronized subtitles (Day, 2004) and feedback on their performance.

Control and interactivity have been reported to facilitate deep learning, by actively engaging the learners in the learning process (Evan & Gibbons, 2007). Given opportunities to adjust the amount and difficulty of input, for example, learners can avoid the danger of frustration through “information overload” (Pennington, 1996, p. 9). Nonetheless, this feature may pose challenges for learners whose metacognitive knowledge is not yet

sufficiently developed for them to exercise effective control over the learning process (Wenden, 2001). Learners may, for example, encounter problems when they choose materials which are at an inappropriate level or present cultural problems (Pusack & Otto, 1997). Murday, Ushida and Chenoweth (2008) also report frustration on the part of the learners with feedback from the computer, and with the amount of time they spend learning how to deal with technical problems.

The present study, therefore, addresses the following research questions:

1. How do low-achievers perceive self-directed multimedia learning environments? What language learning problems do they encounter?
2. How do they cope with the problems?
3. How do they perceive the impact of the multimedia language learning experience?

## **Research Design**

### **Participants and sampling**

The major criteria for selecting participants were low achievement in English, defined as those who scored 50-65 out of 100 for English in Taiwanese National Entrance Examination (NEE), and high foreign language anxiety, according to the results of the Foreign Language Classroom Anxiety Scale (FLCAS) test. The FLCAS test was administered to 150 freshmen and a purposive sampling procedure was adopted to identify 20 potential subjects who were then invited to participate in individual pre-interviews, and to complete a demographic questionnaire on their background, education, perceived English proficiency, experience of self-studying English, and of using multimedia materials for learning English. The aims and requirements of the study were explained to the potential subjects. Eight of the potential subjects then decided to withdraw and 12 agreed to participate. Of these, two were males and ten females, majoring in Nursing, Business Management and Information Management.

The participants had a similar educational background, having learned English since junior high school when they were about twelve, or even younger, at private language institutes. However, the experience was not always enjoyable, and their aim in studying English was only to pass examinations. They appeared to have a limited awareness of language

learning strategies, rarely had opportunities to practice listening and speaking in class and expressed a deep fear of those two skills. Although they regarded English as very important for their future career, they displayed a strong sense of helplessness and feelings of low self-esteem as a result of their failure to find effective ways of improving their performance or overcoming their fear of learning the subject.

### **Data collection instruments and procedures**

Qualitative inquiry concerns itself with “how the world is understood, interpreted, experienced or constituted” by “seeing through the eyes of the people being studied” (Bryman, 2004, p. 279). The study used participants’ learning diaries and interviews as the major source of data, together with notes from observation by the researcher or self-observation by the students, debriefings, and questionnaires.

The participants took part in a weekly self-directed study session in the university audio-visual centre over a period of two semesters, 28 sessions in all, from October to April. Each weekly session involved eighty minutes of self-study using CD-ROM software, followed by ten minutes of debriefings in groups of three or four at the end of each session. The instructor briefly introduced different software they could choose from (e.g., interactive movies, comedies, magazines, news, dictionaries) encouraged them to try different functions (e.g., recording, role-play, repetition, tests), and offered assistance as necessary to solve technical problems, such as installing software. The participants could choose whatever they liked to work on in each session, and how they wanted to work. They then shared their reflections at the debriefing in either English or Chinese (their first language). Participants also had to submit weekly learning diaries by e-mail, with reflections on various aspects of their learning such as what content they learnt, how they learnt it, what particular software functions they used, problems or insights, self-evaluation of their progress or changes that they noticed compared with previous sessions, important events in the learning process, and inner thoughts. To investigate the longer term effects of the study, follow-up interviews were conducted with the participants one year after the course finished.

### **Data analysis**

The data were explored to identify emerging patterns, categories and theories (Bryman, 2004; Hitchcock & Hughes, 1995; Marshall &

Rossman, 1995) relevant to the research questions. The data were triangulated firstly by using multiple data collection methods, secondly by comparing data from different participants and at different times during the study, and finally by using a “member check” (Lincoln & Guba, 1985, p. 314) technique in which the researcher confirmed the interview transcripts translated from Chinese to English with the participants to make sure the interpretations accurately presented their own views.

## **Results**

### **Initial perceptions**

The initial views the participants expressed were mostly positive. They considered the main features of multimedia environments (i.e., multiple media, control and interactivity) (Pusack & Otto, 1997) engaging, relaxing, fun and effective, and these features had a positive impact on learners’ intrinsic motivation and learning attitude at this stage. The participants, for example, felt motivated to make repeated attempts until they succeeded at a task because, they reported, of the non-threatening nature of the feedback, the intriguing content, and the control which they had over the pace of their learning.

Most were positive about the presence of peers working alongside them during the class in the audio-visual centre, and about reflective activities (e.g., debriefings, learning diaries), as they felt this promoted a sense of community. Some contended that their presence increased their extrinsic motivation or gave them power or provided constraints that helped them persist with their learning, although others felt that the presence of peers or the instructor was a source of pressure, anxiety or even a threat, and this affected their willingness to carry out particular kinds of practice (e.g., speaking).

### **Emerging problems**

#### **Fear of speaking the target language**

All participants experienced pressure and anxiety, and struggled with the speaking activities, mainly in the first few sessions; others had great difficulty with speaking throughout the whole semester, which in turn affected their willingness to do certain tasks involving speaking. Evidence of their attitude could be seen in their body language (e.g., covering their mouths while speaking, or looking round at others in the room) and the

interview data identified this as a “psychological obstacle” that affected their willingness to use the interactive “record” or “role-play” functions in the software.

- S1: *Originally, I would like to use recording, but I was very scared of speaking English. Then I decided to give up. But definitely, I will try it next time...However, I am truly afraid of English. Maybe I still could not overcome my psychological obstacles! When the instructor was near me, I felt very frightened at once. Though I knew the instructor was kind, I still could not overcome this feeling.*
- S6: *I spoke super quietly...how I said was very bad...especially when I saw the shadow (of the instructor behind me) stop on the monitor, I just froze immediately.*

### **Problems with listening**

Difficulties with listening activities mainly concerned the perceived speed of speech in the listening passages, the number of difficult words and problems posed by linked sounds. The participants reported problems caused by “the long chunks of unknown words” and words that “stuck together”, leading to frequent access to, and perhaps over-use of, help functions, and complaints that much time was “wasted” on “time-consuming checking of meanings”, resulting in “limited progress”. These problems were exacerbated by the participants choosing to use software whose content was beyond their level of proficiency. In the first semester some participants chose to try different material in each session, which often led to frustration.

### **Problems with the technology**

The two main activity types in the multimedia software that provided practice in speaking and feedback on their performance were “record” and “role-play”. The participants needed to listen to the model sound track in the text, comprehend the sentence or word, then repeat it, or, in a “role-play” activity, respond to it, and then record themselves. However, the speech-recognition software which provided feedback on the participants’ recordings required a high standard of accuracy in pronunciation, word stress and intonation. This was especially problematic in the role-play activity as they had to record without the benefit of a model to copy. The participants initially had great expectations of the speech-recognition function in the materials, but in practice were frustrated by their constant

failure, despite repeated drilling practice or sentence repetition, to produce speech that the software accepted as correct.

Two main factors seemed to be responsible for this failure, and consequent frustration. One was their poor self-correction strategies. It seemed extremely difficult for them to identify the difference between their output and what was modelled, as they imitated the model provided many times but still had difficulty in adjusting their intonation or pronunciation to match the model. A second factor was the lack of flexibility of the speech-recognition software. A teacher would have noticed their growing frustration and identified when their pronunciation was “good enough”. These participants, however, were faced with the challenge of learning to appreciate the limitations of the software and deciding this for themselves.

*S2: Psychologically I still think there is an obstacle for me with the English intonation which makes it extremely difficult for me to learn...when it is my turn to speak it becomes very unnatural. It is very strange! We don't have that kind of intonation in Chinese.*

The problems the learners encountered echo those reported in other studies (e.g., Sheerin, 1997; Wenden, 1991, 2001). With low self-confidence or lack of pre-requisite linguistic proficiency, the learning process in self-directed multimedia environments can be complex and a struggle.

## **Coping with the difficulties**

### **Overcoming fear**

As the course progressed the participants found ways of tackling their problems. Interviews, self-report and observation data suggested that most of them were more relaxed at the end of the first semester, and less “afraid” of the target language. Their body language had changed and most of them no longer covered their mouths while recording. Occasionally some participants observed others, but not as often as they did earlier in the course.

Several factors seemed to contribute to this change. Firstly, the group dynamic became more friendly and supportive, as most participants were enthusiastic about the debriefing discussion and willing to share their experience of the listening and speaking practice. There also seemed to be less fear of speaking in the presence of peers, and observing those who “dare to speak or sing loudly” encouraged them to speak up themselves.

Finally, familiarity with the target language and the self-confidence generated as a result “practising frequently” helped reduce their fear of speaking since they believed they would progress as long as they “often keep touching English”.

*S3: I don't feel very afraid of speaking English now because I listen to English more often. I guess I can understand it more. I would listen to dialogues or articles in advance. In this way, I can be involved with the situation more easily. Also because of practicing frequently, comparatively I would dare to speak... In the past, I would not even like to touch English at all because I could never learn it, well, no matter how hard I tried. It made me feel annoyed! It's different now. I felt because I'm slowly making progress, I believe I can improve my English to be much better.*

### **Tackling listening and speaking problems**

The participants learned to use multiple strategies, taking advantage of software functions that could help them. The most commonly reported strategy was repetition. Repetition of listening activities provided the opportunity to become immersed in the phonological elements (e.g., accent, intonation, linking sound) that they were unfamiliar with or resistant to, with some reporting that they were “more used to English if they listened to it more often” and felt more self-confident, which reduced their fear that the speech in the audio would be too fast for them to keep up with.

*S2: I think I have improved my listening as I can understand more and I won't be stuck because of one or two unknown words. I won't be worried if I cannot understand something. I can guess... I used to be very scared (of English). I used to feel very unfamiliar with it... Now I don't think so negatively... Perhaps, I have more confidence... In listening, I made much progress. Because I repeat the listening and I practice every week, I have more feeling for it. It helps me guess more easily.*

However, meeting the standards required by the speech-recognition software, was still a challenge. The requirements of speaking tasks such as role-play were so demanding that some participants avoided them, found other ways of practising speaking, or focused on other skills instead.

## Perceptions of the impact on language learning

Participants reported that the experience of learning in a self-directed multimedia environment also had an impact on various aspects of learning in a conventional English class as well as in non-English learning contexts.

### Listening

One aspect that was affected was listening to lectures in their ordinary English classes. The main changes the participants reported were that they became less anxious or worried when they heard the target language in class. The data suggest two reasons, one being their belief in their ability to understand the lecture if they made the effort. For instance, some described themselves as having become “braver at guessing”. Instead of waiting for the teacher to translate the content into their first language, they took an active approach by trying to work out the meaning for themselves. In contrast to what some participants had previously described as an “unknown” or “unidentified humming” sound, which was how they heard English in class, they claimed that they were now more willing to concentrate on lectures and make an effort to learn. Another reason for the reduction in anxiety was the participants’ use of learning strategies. For example, they reported applying a selective attention strategy while listening to the lecture, by focusing on the teacher’s intonation or on keywords, and ignoring some unknown words.

### Speaking

They also reported greater willingness to participate in speaking activities in contrast to the passive attitudes recorded in the first interview (e.g., they never volunteered even when they knew the answers). Some participants reported no longer being afraid that “they may say something stupid” or that “others may not understand them”. They emphasized that their “fear of speaking” seemed to gradually disappear, by slowly adjusting to the conditions in the class (e.g., by imitating how the class teacher spoke in class).

*S6: I used to have little self-confidence especially when I had to talk in front of the whole class. I did not know what to say or where to put my hands. Now I just feel it is alright if I say something wrong. Even when the teacher calls my name and asks me to answer, I still want to give it a try even if I am not sure about the answer... The multimedia definitely helps me to gain self-confidence, especially after listening and speaking practice.*

## Perceptions of the impact on non-English learning contexts

The participants generally felt that the learning experience in multimedia environments was rewarding, not least because it also affected various aspects of how they studied their major (i.e., nursing, business management and information management), how they managed their university studies and other aspects of their life.

### Impact on studying other subjects

The interview data provided evidence that the learning strategies and problem-solving techniques, positive attitudes and determination they had developed were transferred to learning tasks in their specialized subjects. For instance, when one participant transferred her major in her sophomore year, her inability to understand the English terms which were frequently used in the lectures caused her problems and she was at risk of failing the course. However, she was determined to avoid failure by using the strategy of recording the lectures, playing and re-playing them, taking notes and reading terms out aloud. This method of “keeping on repeating listening” was crucial to her self-confidence, and to eventually gaining more control of the learning situation.

S1: *I made up my mind. Like I learnt in multimedia, I recorded (the lecture) and went back to listen to it. At first, I asked others about the terms all the time, such as flexion, extension...etc. Then I cannot bear with it and decide to record it. I spent three days and kept listening to the recording. And I took notes and read the terms out. I feel more confident afterwards. I am very familiar with the process, keeping on repeating listening. From then, I feel what the teacher says becomes easier for me. It was chaos at first, but I must deal with it.*

While the repetition strategy enhanced this student’s self-confidence and motivation, another asserted that an auditory strategy, the habit of “reading out loudly”, helped her remember specialized terms more effectively. In her view, sensitivity to the target language and motivation were the key factors to helping her cope with her major, and especially the class lectures.

S3: *Now I still have a habit of reading English out loudly, especially the special terms. When I studied Pharmacology, the teacher warned us that the terms of medication were difficult to remember. Then I found the method of reading them out really impressed me and helped me memorize them more easily... The other thing which makes me different from my friends is that I would pay much*

*attention to listen to English if I hear any. I think I have more interest in learning English and more willingness to touch it.*

Another student transferred strategies learned in the multimedia environment by trying her best to guess the meaning of what the teacher said in class in her major, and by using guessing strategies while reading textbooks and handouts rather than depending so much on translated versions.

*S2: I told myself to try to read the original textbook in English, not the Chinese version...I sometimes give myself some challenges. For example, during the test, I will try not to read Chinese first but English, to see whether I can understand those. Or I would try not to translate them when I read the handouts and browse through it. Unless there are some words that are important, I will then check the definition.*

For another student the experience of using the multimedia software and the strategies she developed nurtured positive beliefs in her ability to manage her specialized studies. She believed that she could “gradually cope with” her difficulty in understanding the English in her textbook because of the work she had done in tackling problems with the multimedia software (“I know where to start tackling them”).

*S6: I can understand the textbook better now. .... I feel the statements are not hard so that I can gradually cope with it... To some extent, I have a similar feeling as when I dealt with my subjects. What I mean it is the feeling that I have gone through a similar process before. So when I face the problems now, I know where to start tackling them. Then I can get involved in the situation quickly.*

Another student was also aware of changes in her attitude as she was now interested in learning English rather than being resistant to it. She actively applied language learning strategies she had learnt to studying her major, nursing, saying “Comparatively, I know better about how to catch main points of an article”.

*S5: I learn to apply the structure of English in my study now. The vocabulary is very different as it relates to nursing. But I learnt to use the methods I learnt in the multimedia. In the past, I would immediately say: “Wow! There is no way I can understand it”. Now it’s alright. If I read an article, I may browse it quickly and guess the outline of it. Then I know the direction to check and which words I must check or which ones I simply ignore. Comparatively, I know better about how to catch the main points of an article. I used to check every unknown word I read in the past, which was extremely exhausting!*

One student claimed that “finding methods to solve problems was something she learnt from multimedia”, and that an appropriate attitude towards learning was essential for university study (“that is what a university student should be like”).

S1: *I learn to deal with problems and plan while facing problems. Just like multimedia, I record and listen to it! I will try to guess meaning of some words. At least, when the teacher said a long sentence mixed with Chinese and English, I would guess the meaning of some words. For my study, I have to figure out the answer till I truly understand them if there are problems. I suppose that is what a university student should be like.*

S1: *Finding methods to solve problems for each subject is something I learn from multimedia. I have to think which way is suitable. Then I look for different ways. For example, I did poorly with a test on a subject, ‘Human Development’. Then I interchangeably referred to books from the library in both English and Chinese for a few times. Then I understood it finally. It’s like using different resources in multimedia. If I don’t understand English I can check the Chinese translation. Then I will watch English subtitles and I repeat listening to it again. Then I simply think, ‘Yes. That’s it!’ Through the process, I’ve got it!*

The impact of the multimedia experience on learning methods and on attitudes towards learning was even more rewarding for one student than the actual learning of English. The process of making decisions, finding solutions and setting goals helped her to become more independent and confident, which helped her achieve her personal goal of becoming ‘what a university student’ should be.

S6: *The reflective process helps me realize that the process of learning in multimedia environments actually helped a lot with other school subjects. Unlike high school, we need to make decisions and find solutions. Being a university student means being independent. The experience is really helpful.*

In the final interview one year after the project finished, she described the impact that the multimedia experience on her as a person.

S6: *The influence of the learning experience with multimedia is great for me both in my studies and the growth of personality, and changes my thinking in many ways. Regarding my growth in my freshman year, I felt very happy for myself... I learnt different viewpoints to understand learning English. Also after learning this subject, I may use this method to learn other subjects. For example, during the project, I learnt how to plan my learning while using multimedia. Now I apply the same patterns to other subjects. It really changed my attitudes and learning methods. I did not notice that until I reflected back later on.*

The experience of working in multimedia environments, therefore, had identifiable benefits beyond the immediate context of the study. What the evidence shows is not only the impact of strategy use, self-confidence and motivation on their studies but also on the development of more general, positive qualities, such as responsibility and independence.

### **Beyond the university**

The participants' increased self-confidence and motivation had an effect on the way they saw their future. For these low-achievers, goals that they once considered beyond their reach now seemed possible. Previously, because of their low level of proficiency in English, they would not have considered any path that required a high level of English, such as studying for a higher degree or working abroad, and, while they were still aware of the hard work they would face in reaching their goals, they now had a much more positive attitude and faith in their ability to tackle the challenges.

- S1: *I am still interested in improving my English because I want to join CIEE, working part-time in USA. I used to think my English was rubbish. So I thought that was just a dream. But I think my English is not too bad now as my listening is improved. Joining CIEE is my goal. I really, truly, sincerely want to go to America. My roommate has been there. And she said everything is huge in America. But the food is disgusting! (laugh) It is very hard as my sister failed the interview. Though I am a bit worried, I supposed I still have a chance to pass it.*
- S2: *I struggled a lot when my family encouraged me to go to America. They told me to study graduate school and work there. The salary seems great and I have relatives there as well. I have given it a thought, to start preparing TOEFL, like others do. I know it would be a long way to go but I may try it.*
- S4: *I know I need to improve my reading as I plan to be a nurse in Africa. I started to have this idea since I was freshman but I was not too sure about my English before. But now I know I need to keep improving my English and I have the confidence to achieve it.*
- S5: *I would like to be a nurse abroad. Many of my senior schoolmates also plan to go. But I need to take some action from now on. To achieve that, English is very important. It won't be easy. But I know how to plan for it now.*

## **Discussion**

The overall aim of this study was to provide a contextual understanding of how the self-directed multimedia learning process for self-study purposes is constructed and interpreted by the participants. The

first research question concerns the participants' initial perceptions of their experience, and problems they encountered. They showed a positive attitude towards the multimedia features in the software and their comments on the learning experience suggested that, at that stage, the self-directed multimedia course was meeting their need for a non-threatening environment, interesting learning materials, and scaffolding. This confirms claims in previous research (e.g., Deci & Ryan, 1985, 1991; van Lier, 1996) that learners' intrinsic motivation may respond if basic psychological needs are met. However, problems began to emerge with listening and speaking tasks which were partly due to a lack of the "phonological knowledge" (Flowerdew & Miller, 2005, p. 30) needed to manage self-directed listening and speaking tasks effectively. Nor had they yet developed effective strategies for assessing their language needs in order to choose practice material of an appropriate level. More generally, they had unrealistic expectations about the level at which they should be performing, and the rate at which they should be progressing, and for some the presence of peers and the instructor inhibited them. Their initial, mostly positive reactions were increasingly replaced by resistance to learning the target language, indicative, at the transitional stage, of a lack of readiness (Gardner & Miller, 1999) to accept the new roles and the attendant responsibilities that self-directed learning required.

The second research question addressed the issue of how the participants coped with those emerging difficulties. This involved a combination of cognitive, metacognitive and social strategies (O'Malley & Chamot, 1990) which they developed as a result of growing familiarity with the language learning tasks and the software functions. As their task knowledge grew (Wenden, 2001) and they became more flexible and effective in their choice of strategies, their self-confidence and intrinsic motivation grew as well. An important factor in this change was that the participants had sufficient time to explore the multimedia environments in a supportive atmosphere, with scaffolding available both in the software, and from peers, who played a crucial role in strengthening each others' motivation and confidence in dealing with problems. Those factors which had previously had a negative impact, they now began to see as a source of scaffolded help in solving problems.

The last question explored participants' perceptions of the wider impact of the experience. What they had learned from working in the multimedia environment was transferred in a variety of ways to other contexts, including learning in conventional English classes, tackling their non-English majors, managing university study and planning their future. The problem-solving processes they had learned and the success they

experienced in this study had a positive effect on the way they pursued knowledge, but also on their “inner perspective of achievement” – self-knowledge, self-assessment and self-regulation (van Lier, 1996).

## Conclusion

The value of conducting this study over a longer term is confirmed by the fluid nature of the changes that were identified over time in the participants’ attitudes, in the problems they faced, and in the problem solving strategies they developed. Teachers and institutions who recommend the use of multimedia materials for self-study purposes therefore need to be aware of the complex task that students are likely to face if they are to use these resources effectively, and of the time and support needed to help develop the skills and knowledge required to benefit from them.

The study adopted a structured approach to self-study, with the discipline of a timetable and reflective activities, and interaction with peers and a teacher, which was effective in helping participants deal with their fluctuating reactions as the study progressed. Without this structure, many would probably have given up. With this structure, their understanding of how to learn developed to the point where the structure was no longer necessary. The main lesson to draw from this study is therefore that it is essential to consider the needs of both the students who use these materials, and of teachers who work with those students, to ensure that learners have a framework within which they can work that provides structured linguistic, technical and emotional support as these needs arise and evolve, and that teachers have the understanding, training and support they need to help learners cope with those evolving needs.

## References

- Arnold, J., & Brown, H. D. (1999). A map of the terrain. In J. Arnold (Ed.), *Affect in language learning* (pp. 1-25). Cambridge: Cambridge University Press.
- Atkinson, R. (2002). Optimizing learning from examples using animated pedagogical agents. *Journal of Educational Psychology*, 94, 416–427.
- Brett, P. (1998). *Is multimedia effective for language learning? An intuitive, theoretical and empirical perspective*. Retrieved from <http://home.wlv.ac.uk/~le1969/art4.htm>.
- Benson, P. (2001). *Teaching and researching autonomy in language learning*. London: Pearson Education.

- Bryman, A. (2004). *Social research methods* (2nd ed.). New York: Oxford.
- Candy, P.C. (1991). *Self-direction for lifelong learning*. San Francisco, CA: Jossey-Bass.
- Day, R. R. (2004). A critical look at authentic materials. *The Journal of ASIA TEFL*, 1, 101-114.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: integration in personality. In R. A. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Perspectives on motivation*, Vol. 38 (pp. 237-288). Lincoln, NE: University of Nebraska Press.
- Evans, C., & Gibbons, N. J. (2007). The interactivity effect in multimedia learning. *Computers & Education*, 49, 1147-1160.
- Flowerdew, J., & Miller L. (2005). *Second language listening*. USA: CUP.
- Gardner, D., & Miller, L. (1999). *Establishing self-Access: From theory to practice*. Cambridge: Cambridge University Press.
- Gardner, R. C., & MacIntyre, P. D. (1992). A student's contributions to second language learning: Part I: cognitive variables. *Language Teaching*, 25, 211-220.
- Gardner, R. C., & MacIntyre, P. D. (1993). A student's contributions to second language learning: Part II: affective factors. *Language Teaching*, 26, 1-11.
- Gardner, D., & Miller, L. (1999). *Establishing self-Access: From theory to practice*. Cambridge: Cambridge University Press.
- Hitchcock, G., & Hughes, D. (1995). *Research and the teacher: A qualitative introduction to school-based research* (2nd ed.). London: Routledge.
- Joiner, E., G. (1997). Teaching listening: how technology can help. In M. D. Bush & R. M. Terry (Eds.), *Technology-enhanced language learning* (pp. 77-120). Lincolnwood IL: National Textbook.
- Kohn, A. (1990). Rewards hamper creativity. *San Francisco Chronicle* (June 21), B3-B4.
- Knowles, M. (1975). *Self-directed Learning: A guide for learners and teachers*. New York, Cambridge: The Adult Education.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Little, D. (Ed.), (1989). *Self-access systems for language learning: A practical guide*. Dublin: Authentik.
- Larsen-Freeman, D. (2001). Individual cognitive /affective learner contributions and differential success in second language acquisition.

- In M. P. Breen (Ed.), *Learner contributions to language learning: new directions in research* (pp. 12-24). London: Pearson Education.
- Marshall, C., & Rossman, G. B. (1995). *Designing qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.
- Moreno, R., Mayer R. E., & Lester, J. C. (2000). Life-like pedagogical agents in constructivist multimedia environments: Cognitive consequences of their interaction. In J. Bourdeau, & R. Heller (Eds.), *Proceedings of the world conference on educational multimedia, hypermedia, and telecommunication* (pp. 741-746). ED-MEDIA 2000.
- Masgoret, A. M., & Gardner, R. C. (2003). Attitudes, motivation, and second language learning: a meta-analysis of studies conducted by Gardner and associates. *Language Learning*, 53, 123-163.
- Mitchell, J. V. (1992). Interrelationships and predictive efficacy for indices of intrinsic, extrinsic, and self-assessed motivation for learning. *Journal of Research and Development in Education*, 25, 149-155.
- Mitchell, R., & Myles, F. (2004). *Second language learning theories* (2nd ed.). London: Arnold.
- Murday, K., Ushida, E., & Chenoweth, N. A. (2008). Learners' and teachers' perspectives on language online. *Computer assisted language learning*, 21(2), 123-142.
- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. New York: Cambridge University Press.
- Pennington, M. (1996). The power of computer in language education. In M. Pennington (Ed.), *The power of CALL* (pp. 1-14). Houston: Athelstan.
- Price, M. L. (1991). The subjective experience of foreign language anxiety: Interviews with highly anxious students. In E. K. Horwitz & D. J. Young (Eds.), *Language anxiety: From theory and research to classroom implications* (pp. 101-108). Englewood Cliffs, NJ: Prentice-Hall.
- Pusack, J. P., & Otto, S. K. (1997). Taking control of multimedia. In M. D. Bush & M.T. Robert (Eds.), *Technology-enhanced language learning* (pp. 1-46). Illinois, USA: National Textbook.
- Rubin, J. (1975). What the "good language learner" can teach us. *TESOL Quarterly*, 9, 41-51.
- Ryan R. M., Connell, J. P., & Grolnick, W. S. (1992). When achievement is not intrinsically motivated: A theory of internalization and self-regulation in school. In A. K. Boggiano, & T. S. Pittman (Eds.), *Achievement and motivation: A social-developmental perspective* (pp. 167-188). Cambridge: Cambridge University Press.

- Stern, H. H. (1975). What can we learn from the good language learner? *Canadian Modern Language Review*, 34, 304-318.
- Sheerin, S. (1997). An exploration of the relationship between self-access and independent learning in P. Benson & P. Voller (Eds.), *Autonomy and independence in language learning* (pp. 54-65). London: Longman.
- Taylor, B. (1995). *Self-directed learning: Revisiting an idea most appropriate for middle school students*. Paper presented at the Combined Meeting of the Great Lakes and Southeast International Reading Association, Nashville, TN, Nov 11-15. (ED 395287).
- van Lier, L. (1996). *Interaction in the language curriculum: Awareness, autonomy & authenticity*. London: Longman.
- Vann, R. J., & Abraham, R. G. (1990). Strategies of unsuccessful language learners. *TESOL Quarterly*, 24(2), 177-198.
- Walker, C. O., Greene, B. A., & Mansell, R. A. (2006). Identification with academics, intrinsic/extrinsic motivation, and self-efficacy as predictors of cognitive engagement. *Learning and Individual Differences*, 16, 1-12.
- Wenden, A. (1991). *Learner strategies for learner autonomy*. Cambridge: Prentice Hall.
- . (2001). Metacognitive knowledge in SLA: the neglected variable. In M. P. Breen (Ed.), *Learner contributions to language learning: New directions in research* (pp. 44-64). London: Pearson Education.

## CHAPTER TWO

# MOBILE NATIVES: JAPANESE UNIVERSITY STUDENTS' USE OF DIGITAL TECHNOLOGY

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### **Abstract**

“Digital native” is a term popularized by Prensky (2001a) for people born in the digital era (after 1980). The term has been used to raise awareness of differences in learning styles of this group compared with previous generations of students and their teachers, leading to important implications for education. This chapter deals with the present generation of students and their relationship to technology, providing empirical data obtained in a Japanese context. Using a survey questionnaire, the study reported in this chapter examines 337 Japanese university students’ use of digital technology (primarily computer and mobile phone use) in academic and non-academic settings, as well as student preferences for digital or paper-based learning materials. The results of the study show that students have a wide access to digital media and information and communication technologies (ICTs), but are limited in their use of certain kinds of media and technology. The chapter concludes with a discussion of the implications of the survey results for classrooms and teachers, as well as what this means for the role of computers in self-study contexts and new methodologies in Japanese higher education.

**Keywords:** Digital native, learning style, culture, ICT use, Japanese university.

## **Introduction**

Recently, particularly in the US and Europe, educators are arguing that a new generation of learners has entered higher education, one which has grown up with digital media and technology as an integral part of their everyday lives. It is claimed that this group's use of information and communication technology (ICT) differentiates them from previous generations of students and, in particular, from their teachers. It is argued that the importance of new technologies within the lives of these young people is so significant, that how and what we teach must fundamentally change to adapt to the new skills and cognitive and social features of these digital natives (Gibbons, 2007; Prensky, 2001a; Underwood, 2007). At the same time, many institutions are rapidly moving towards more digital-based learning, with computer-assisted language learning (CALL) curricula and content management system (CMS) and learning management system (LMS) courseware becoming more and more common. Although the push for more digital-based learning and the use of digital technology can be seen in many parts of the world, it should be argued that major changes in teaching and the educational environment need to be carefully balanced with the results of empirical research.

This chapter reviews recent educational research and analyzes the current situation regarding the digital natives debate, and how it relates to Japanese higher education. We begin by briefly defining the digital native debate, and then review the assumptions underlying these claims. Following this, we explore the debate in terms of Japanese higher education, providing data to support an argument that the debate itself may not be applicable to the Japanese educational system. Third, we consider the results of a survey of Japanese university students, and suggest how the survey results can be of help to both educators and administrators in higher education.

## **Review of the Literature**

### **Digital native definition**

At the center of the original definition of the digital native is the fact that people born in the last two decades have always been surrounded by, and interacted with, digital technologies. Prensky (2001a) calls this younger generation “digital natives”, as they are all, “native speakers of the digital language of computers, video games and the Internet” (p. 1). In contrast are those born before 1980, whom Prensky refers to as “digital