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The QTKanji project

An analysis of the relationship between computer assisted language learning (CALL) and the development of autonomous language learners

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Abstract

An analysis of the relationship between computer Assisted Language Learning (CALL) and the development of autonomous language learners

Computer assisted language learning (CALL) software is being introduced into tertiary language programmes for a number of reasons. Research has indicated that CALL is effective for language learning, that it caters for individual learning needs and that it promotes independent learning. By providing structured learning, students can study in their own time without a teacher.

Whilst it is now commonly accepted that CALL material must be carefully integrated into the curriculum for it to be effective, there is a move in CALL research away from just evaluation of software to a greater focus on the learner. It is maintained that understanding different learning styles and learner preferences is essential in the creation of CALL packages, and that packages are sufficiently flexible to cater for learners of different ability to manage their own learning. However, while an attraction of CALL is that it fosters independent learning, it is not clear what learners do when they are in the process of becoming independent learners, what CALL environments will foster the development of independent learning skills, and the type of learner who will benefit.

This thesis examines the in-house development and trialling of kanji software at the Auckland University of Technology, taking into account the direction of current researeh into CALL. It provides an initial evaluation of the software design and use, within the framework of research into second language acquisition, learner differences and independent learning. Findings from this initial study will be used to modify the software where necessary and to provide the basis for further research into CALL and language learning.

Preface and acknowledgements

The purpose of this research is to evaluate the effectiveness of the QTKanji software package for the teaching and learning of Japanese characters, and the extent to which it facilitates the development of autonomous learning. The software is being used on the Japanese programmes at the Auckland University of Technology (AUT), and this research has only been possible because of the student co-operation and willingness to take part in the evaluation process. This process has been based on a longitudinal case study, using both quantitative and qualitative research methods. It has involved computer tracking of student use of the software, questionnaires, interviews, focus groups and student diaries over two semesters. This thesis reports on the analysis of data from the first semester of use of the software.

My thanks to the students in the first and second years of the Bachelor of Arts (Japanese) and Diploma in Japanese at AUT, to Dr Grant Waller, senior lecturer (AUT), co-author and technical expert in the development of the QTKanji software, and to Dr Ron Holt, Head of School of Languages, AUT, for his support and guidance. I also gratefully acknowledge my supervisor, Professor K Ono, East Asian Studies, Massey University, for his encouragement, support, constructive feedback and invaluable guidance during the writing of the thesis, and Mike Corder for looking after me, the dog and the home during this time.

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Approval to carry out the research was granted by the AUT Ethics Committee and confirmed by a representative of the Massey University Ethics Committee.

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1 Introduction

1.1 The QTKanji project

Computer assisted language learning (CALL) software is being introduced into language programmes at all levels of education, from primary to tertiary. The advantages of CALL are many: it provides another dimension to language teaching and learning, can be used to enhance what is taught in the classroom, and students can study without a teacher being present (McCarthy 1995). A strong attraction is that research has indicated that CALL is effective for language learning, that it caters for individual learning needs and that it promotes autonomous learning. However, research has also shown that if the CALL software is going to be effective, it must be carefully integrated into the curriculum. Just like the introduction of a new textbook, the introduction of CALL software should be based on sound pedagogical reasons, have a theoretical framework, and be evaluated accordingly. This evaluation must not just be of the software itself, but must also include the learner and the learning environment (McCarthy 1996, Levy 1999a, 1999c, Hoven 1999).

This thesis examines the work to date of the QTKanji project[1]. The QTKanji project is the in-house development, trialling and evaluation of the QTKanji program (Corder, Komori, Waller 1999), a HyperCard based computer software package for the teaching and learning of Japanese characters (kanji) in the Japanese section at the Auckland University of Technology (AUT).

The departure point for the development of the QTKanji program was to provide an alternative way for students to learn kanji, in an environment where they can study as independent learners through an autonomous learning process. It has a theoretical framework based on second language research into learner differences and independent learning.

Formal evaluation of the software began in semester two 2000, and findings from the initial evaluation will be used to modify the software where necessary. If the findings are

[1] QT stands for 'QuickTime', which is the name of software to create the video clips in QTKanji.

favourable, the information will be used to provide the basis for further research and development of CALL software. In keeping with the current direction of CALL research, the evaluation does not just focus on the software design and use. It also takes into account the learners and their approach to learning Japanese as a whole, including kanji.

The evaluation will seek to identify whether the QTKanji program is effectively providing an environment (see 1.6 Definitions) for students to work autonomously, and which elements of the program work well for particular types of learner. By looking at student approaches to their language study as a whole, it will also seek to identify whether students are showing characteristics of autonomous learning, and whether this relates to their use of the QTKanji program. This thesis covers the development, implementation and evaluation of the QTKanji program, and an analysis of the initial findings.

1.2 Rationale for the QTKanji project

The QTKanji project began in July 1999 and has been the work of a colleague[1] and myself. A number of factors contributed to the conception of the project :

- The difficulty of learning kanji experienced by students of Japanese, especially students from non-kanji backgrounds.
- The desire to meet different learning styles of students.
- The learning agenda of the Auckland University of Technology (formerly the Auckland Institute of Technology) which offers student-centred programmes, values the concept of life-long, self-directed, independent and autonomous learning, and provides a flexible approach to cater for different learning styles (AIT 1998: 16). This agenda is very much a part of AUT's strategic plan developed in 2001.
- Evidence from research that CALL software is effective for language learning and promotes autonomy (McCarthy 1995, 1996, Lèvy 1997).
- Lack of relevant commercial software.

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[1] It was possible to develop the QTKanji program in-house because of the Macintosh platform expertise of a fellow lecturer, Dr Grant Waller. He learnt scripting to produce the software, dealt with the technical aspects, and co-authored the materials with me. My role was to review the literature and to carry out the evaluation.

- The sourcing of a HyperCard database of kanji 'cards', called QTKanji from Saeko Komori from Chubu University.

1.2.1 Difficulty of kanji learning

Character-based languages such as Japanese require an average of 2600 contact hours compared to 960 for Western languages. The current contact hours over three years of a Japanese language programme at most Australian universities is 400-500. (Van Aacken 1996). This is probably the same for most universities in New Zealand. At AUT, the contact time is two to three times more than this but it is still short of the desired number of hours. Other aspects of language learning, such as development of proficiency in reading and writing, oral and listening skills, and mastery of grammar, compete for time. The demands of kanji learning have been identified as one of the major contributing factors to the tendency for a high attrition rate in Japanese in the first year of study (Van Aachen 1996: 2). Added to which is the problem of students entering university programmes with different levels of prior knowledge and experience of a foreign language, who are expected to reach the same levels of proficiency at the end of three years (McCarthy 1996).

Knowledge of kanji is the basis for reading and writing skills in Japanese (Komori and Zimmerman 2001: 43) and learning it is extremely time-consuming especially in a foreign language environment (Van Aacken 1999). Feedback from my own students and class observation, suggests that kanji learning is one of the major hurdles to achieving proficiency in the Japanese language. With over 2000 characters in everyday use and with each character having up to six or seven different readings (21 different readings in one extreme case), the time commitment required to gain a reasonable degree of mastery to read, say, a newspaper can be considerable. It was therefore a priority to explore methods to increase the effectiveness of teaching and learning kanji.

1.2.2 Different learning styles of students

From research in second language acquisition (SLA) there is a recognition for the need to take into account learner differences (Ellis 1994: 524). Learners respond differently to different types of input, and successful learning takes place when learners use the ways

they prefer (Stevick 1989: 149). The Japanese section at AUT uses a range of teaching and learning approaches and methodologies. However, in the case of kanji, it was clear that there was a need to provide students with alternatives to augment the cue cards and other methods being used. Not only did we have students of different ages and different levels of prior learning, there was an increasing number of students from a kanji background in both the bachelor of arts and the diploma programmes. Addressing the needs of students from kanji and non-kanji backgrounds became an issue in terms of both teaching and learning. In line with this, a clear understanding of different learning styles and learner preferences is necessary when developing CALL software. (Hoven1999)

1.2.3 Autonomous learning and self access

According to Sinclair (2000:5), 'It may be said that the development of learner autonomy, at least to some degree and with differing interpretations, appears to be almost universally accepted as an important, general educational goal.' The School of Languages at AUT has always espoused the University's philosophy of preparing students to be life long learners, with independent learning skills to continue learning languages after completing their course of study. The expectation is for students to develop the capacity to behave autonomously and take responsibility for their own learning.

There are various definitions and interpretations of learner autonomy. These will be discussed in the literature review, but the point of departure for the QTKanji project was based on Holec's 1981 model. In this model, students become independent learners through autonomous learning, which is a process whereby they exercise control and assume responsibility for their learning by making decisions or choices, touching on all of its aspects from goal setting to self-assessment. The terms independent learning and autonomous learning will therefore be used interchangeably. The QTKanji project was seen as an opportunity to research the learning approaches of our students as well as how the software featured in their language learning process as a whole.

1.2.4 Effectiveness of CALL software

The decision to introduce CALL software into the Japanese programmes was based on research indications that it is effective for language learning (McCarthy 1995, 1996), including kanji (Van Aacken 1996), and also has potential to cater for individual learning needs and promotes independent learning (Van Aacken 1996, Levy 1997: 199). More recent literature acknowledges the potential of CALL but highlights issues and concerns in the field of CALL that need to be taken into account to ensure effectiveness such as relevance of content to the curriculum, and the need for a theoretical framework. These issues and concerns have influenced both the development and evaluation of the QTKanji software.

1.2.5 Commercial CALL software

Once the decision was made to introduce CALL software into the Japanese programme, the task was to find suitable software. This proved frustrating as there was nothing that could be integrated into our programme. Research strongly indicates that for CALL to be effective, it must be integrated into the curriculum (Van Aacken 1996:2, McCarthy 1995: 30, 1996: 24, Levy 1997: 24, 200). Although there was some very good interactive software, the main problem was that it would have been necessary to rewrite our curriculum to follow the sequence of kanji introduction and for the vocabulary to be relevant.

1.3 Aims of the QTKanji project

The QTKanji project has a point of departure that is both a bottom-up and a top down approach (Levy 1997: 2). Bottom-up approaches centre on a particular class room or language learning problem, and top-down approaches centre on a theory of language or language learning. The project has a number of aims:

1) To facilitate kanji learning while providing learners with the opportunity for autonomous learning.
2) To involve students in the design and development of the software in order to try to find out more about their needs and ways of learning.

3) To evaluate the use and effectiveness of the software, and providing the results are supportive, use the findings to form the basis of further software research and development. As CALL does not operate in isolation, the evaluation must look at the learner and the total learning environment, as well as the software.

In the evaluation of the software, the intention was not to prove that CALL software is better than traditional or non-technological methods of teaching and learning. The intention was to evaluate whether QTKanji can be effective in improving student learning of kanji, its relationship with the students' learning process, whether it provides the environment for autonomous learning, and whether this in turn promotes the development of autonomous learning. Whilst it could be argued that a control group would be necessary to provide a benchmark for the outcome of the research, this was not considered an option because of the ethical issue of one group having an advantage over another group. As Cameron (1999: 5) says 'it is not easy to evaluate any system of language learning, let alone CALL where there are additional significant factors to be considered because of the variables involved. This is not a reason, however, why we should not do so.' That is why the approach adopted for this evaluation has been along the lines advocated by Goodfellow (1999): to try to understand the way the learner is using the technology to learn. This includes such factors as levels of motivation and use of learning strategies, not just test scores.

1.4 Research questions

1) Is the QTKanji program user-friendly?
2) Do students actually use the program, and how are they using it? Are there any trends based on individual differences (background, gender, prior learning)?
3) Is there a correlation between student usage of the software and improved performance in tests and examinations?
4) Does the program provide an environment in which the learner can work autonomously? Allied to this, to what extent are students showing signs of independent learning and how much does QTKanji feature in the total learning environment?

5) Does the evidence collected for 1 – 4 above, indicate that the QTKanji program is meeting the aims of the project and warrant further research and development of the program?

The software was trialled in semester one 2000, and formal evaluation began from semester two 2000. To date four groups, a total of 82 students, have taken part in the evaluation. The focus of this thesis will be on the two first year groups, totalling 33 students. These students started using QTKanji at the beginning of their Japanese course (see Section 4 Methodology).

1.5 Structure of the thesis

Developing CALL software is a complex process and requires on the one hand, the development of the software program using computer technology, and on the other, addressing traditional questions in language teaching and learning (Levy 1997: 227). This complexity is reflected in the literature in the field of CALL research and development, discussed in the literature review in the next chapter. The literature review includes a range of research findings and issues of current debate both in CALL research and second language acquisition research, that shaped the development and evaluation of the QTKanji project, including the choice of theoretical framework. Chapter three explains the design of the QTKanji program, discusses technological and pedagogical issues that shaped the design, and includes a description of the program. It also describes the implementation process including strategy awareness workshops that were held as a result of observation of student use of the software, and information from the tracking data. Chapter four explains the rationale for the evaluation methodology, and describes the evaluation methods. The findings are reported in chapter five, discussed and analysed in chapter six, and chapter seven contains the conclusions and further research.

1.6 Definition of terms

Environment: In the context of the learning environment provided by the computer, the term environment is based on what Cameron (1999: 5) describes as an effective learning environment. This is one in which programs are designed in a way that maximises the

computer's capabilities and allows them to be integrated into other non-computer activities, that they cater for user-learner differences, and that they incorporate proven cognitive theories.

Terms used to discuss software. Discussing software has been complicated by the many ways that practitioners have conceptualised it (Levy 1997: 142). Software is made up of types of activities for particular skills development, the actual tasks that the learner is required to carry out, and the interaction required between the learner and the computer in order to carry out the task. For the purpose of this thesis, the following terms will be used:

Category of software: the term 'category' and 'activity' will be interchangeable. They include software with a particular language focus or skills development (such as reading, writing, listening, vocabulary; grammar, kanji); and software with a particular approach (such as exploratory learning); software for a precise activity (such as gap filling).

Tasks and exercises: while there is some overlap with 'activity', these will refer specifically to what the student is required to do to complete the activities, for example, replacing words, completing sentences, and reordering sentences or words.

Movement: the action taken by the student to communicate with the computer software, such as typing in answers, and using the mouse for pointing and clicking, and clicking and dragging.

'Program' and 'software'. These terms are used interchangeably to mean the same thing in relation to CALL. 'Programme' will be used to refer to the course of study as a whole, and not specifically to CALL.

'Computer Tool' and 'Computer Tutor'. CALL software is used either as a tool or as a tutor. When used as a tool, it provides the means for the learner to carry out learning tasks, for example using email, Internet, on-line dictionaries. The tasks can include problem

solving or language analysis. When used as a tutor, the software acts like a teacher, providing structured activities, feedback and direction.

Second language acquisition: A distinction between foreign and second language learning/acquisition is often made. Foreign language learning refers to the learning of a language outside the country of the target language (eg learning Japanese in New Zealand). Second language learning refers to the learning of a language within the country of the target language (eg learning English in New Zealand). It is maintained that there could be differences in *what* is learnt and *how* it is learnt, and involves sociolinguistic theories and the differences between learning a language in a 'natural' as distinct to an 'educational' setting (Ellis, 1994: 228).

According to some researchers such as Krashen (1981) acquisition is the gradual, natural, subconscious development of language, and learning is the more conscious and formal development through study. However this is problematic as it is often difficult to determine what has been acquired and what has been learnt, and at what stage in the learning process it can be considered to be 'acquired' (Ellis 1994: 14).

For the purpose of this paper, 'foreign' and 'second' language 'learning' and 'foreign' and 'second' language 'acquisition' will be used interchangeably except when it is necessary to be specific.