

The use of Linkword Language Computer Courses in a classroom situation: a case study at Rugby School

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This paper presents a case study of the implementation of a Linkword Language Course – French to a class of 13-year-old pupils at Rugby School. The class was selected because they were the weakest at French, performed poorly in examinations, and had problems in terms of motivation and enjoyment of French. The result of introducing a computer version of Linkword French as a complementary learning aid to the standard text and classroom work was that after seven months, following the end-of-year examination, a quarter of the class was promoted to the class above, a move that could not have been expected otherwise. The results of a questionnaire revealed that the great majority of pupils found the course easier and faster than conventional methods of learning. Rugby School, as a result of the study, has continued the use of the Linkword courses, partly at the request of the pupils.

INTRODUCTION

In recent years there has been a growing interest in the value of enhancing foreign vocabulary acquisition by means of the keyword or Linkword method. This method involves using mnemonic images to link an English word to another English word which sounds like the corresponding foreign word. An example might be as follows: The Spanish for COW is VACA. The learner is asked to picture a COW with a VACUUM cleaner, cleaning a field. Although the use of such images seems bizarre to those who know the target language, and who therefore cannot experience for themselves the effectiveness of such imagery, at least sixty studies have now been published showing the effectiveness of this technique in enhancing retention, with only a handful of studies failing to find an effect (see e.g. Coady and Huckin, 1997, for a review).

One of the first studies on the keyword method was reported by Raugh and Atkinson (1975), who showed that for a list of 60 Spanish words, retention was 28% for those not using the keyword method and 88% when it was used. Since then the keyword method has been found to be superior to the context method of vocabulary learning, i.e. where the meaning of words is inferred from the context (McDaniel and Pressley, 1984). Other studies, (Pressley *et al.*, 1981; Kasper, 1993) have found the keyword method to be superior to a number of control

conditions such as no learning instruction or repetition.

The keyword method has been shown to facilitate learning of foreign vocabulary in 11-year-old children (Merry, 1980), in the elderly (Gruneberg and Pascoe, 1996) and in the learning disabled (Gruneberg, Sykes and Gillett, 1996).

Recent research has shown that the keyword method may be effective only if it is followed by immediate testing. Thomas and Wang (1996) recently found that where testing of the items learned by the keyword method took place immediately after learning, keyword was superior to rote learning when testing took place two days after learning. If, however, learners using keyword were not tested immediately after learning, then two days later rote learning was shown to be superior to the keyword method. While the findings of Wang and Thomas highlight the importance of immediately consolidating material learned by the keyword method through immediate testing, as Gruneberg (1998) has noted, the findings have almost no ecological validity since almost all learning schemes, including the Linkword courses discussed in the present paper, do consolidate learning with immediate testing.

The extended application of the keyword method, appears to have been somewhat limited in school situations. Gruneberg and Jacobs (1991) report a study of 12 to 13-year-olds in a 'B' stream of pupils learning Spanish in a secondary school in Swansea. Following a term of teaching using the Linkword Spanish course, pupils were given an end-of-term test. This showed that where the Linkword course was used, vocabulary scores averaged 69%, with only 2 children out of 16 getting less than 50%. Where Linkword was not used, the average score was 24%, with only 1 child getting over 50%. Approximately 200 words had been covered after one term.

The question arises as to why the keyword method appears to produce higher levels of retention than other learning strategies. The answer is probably

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that the keyword method is basically a paired associate learning task in which two items are associated together. A number of studies, e.g. Morris and Stevens (1974), have shown that visual imagery strengthens the association between items much more effectively than does rote learning, so that given one of the item pairs, the other is much more likely to be brought to mind. Of course, in the case of the keyword method, there is the extra complication that while the two linked words are both English, one of the words must sound like the foreign word to be remembered, and a number of studies have shown that it is important to have as much overlap between the keyword and the foreign word as possible.

Gruneberg (1984, 1994, 2001) has used the keyword method to develop a number of different language courses called Linkword. These courses teach a vocabulary which is integrated with a basic grammar and sentence examples. The course used in the present study teaches learners a vocabulary of about 750 words and a basic grammar (although it should be noted that further levels have been written up to GCSE standard as far as grammar is concerned). The course used in the present study is divided into 21 sections. Each section consists of about 30-40 words and images are usually presented in batches of 10 words from the same semantic category, such as food words. Following the presentation of words and their images, learners are immediately tested on the English meaning of the foreign words. For those languages where genders need to be learned, such as French, a mnemonic image is used to teach gender, followed by a test requiring translation of the word and its gender into the foreign language. For French gender, the learner is required to picture a masculine word interacting with a boxer, a masculine symbol. For feminine words the learner is asked to imagine the word interacting with perfume, a feminine symbol. Desroches, Gelinas and Wieland (1998) found this method of learning genders significantly enhanced retention of genders.

Following the presentation of vocabulary in each section, the learner is provided with some simple grammar so that after about 45 minutes he/she can translate simple sentences. The sentences are constructed so as to allow the use of all words and grammar points already introduced. The translation of sentences in the course is an integral part of the learning process, since it gives immediate feedback on how well the vocabulary and grammar is learned, allows each word to be processed in a semantic context, allows a further spaced repetition of the words previously learned, and it prevents learners becoming bored with only the activities of vocabulary and grammar acquisition.

Because each word is presented at least 4 times in different contexts in each section, i.e. as an image, when tested from the foreign language to English, when tested from English to the foreign language and in sentence examples, each word is effectively subject to spaced repetition, a strategy which has been shown to have a major effect on enhancing

recall (Rea and Modigliani, 1988). In the following sections more grammar and vocabulary is integrated. The course used in the present study teaches approximately 750 words and the grammar taught includes the use of articles, plurals, personal and possessive pronouns, agreements, present, past and future tense, negatives, formation of questions, conjunctions and prepositions and word order. It should be emphasised that the course is designed to be complementary to existing classroom teaching and is not intended to replace current teaching methods and courses. The critical test of the value of the Linkword course is whether such a complementary course in a school situation enhances performance in a test based on normal GCSE teaching materials. Publication of these courses has taken a number of forms but the course used in the present study was first published on computer in 1984.

THE PRESENT STUDY

The present study was conducted on a class of 12 students, two of whom were not native English speakers. The students were 13 years of age and were in the weakest French class in that year. All pupils in the class had a common entrance examination score in French of less than 50%. The class was perceived by teachers as having potential problems regarding examination performance and motivation in French.

The study at Rugby School sought to take advantage of the fact that each pupil had access to computers. This allows learners to pace their own learning, leading to slower learners not feeling intimidated by the faster pace of rapid learners and allowing rapid learners to proceed without being held up by slower ones. The Linkword aspect of the course was regarded as complementary to the main course and was taught once or twice a week as preparation classes, following an initial two or three sessions under supervision in the classroom. The students used it as a self-teaching course, and were instructed to go at a speed they were comfortable with. They were also instructed not to worry about how fast others were progressing but only to concentrate on their own progress. They were instructed not to worry about words they did not remember but to think of the words they did remember.

The course was run under the direction of an experienced teacher, in consultation with the authors of this paper. An audio tape giving the pronunciation of the words was also provided. The students were tested at intervals of about 6-8 weeks by the authors, and required to fill in a questionnaire about how they perceived the course. It was emphasised that telling the truth was the greatest help they could give to the author, since only by knowing of problems could they be remedied. In the opinion of the first author of this paper, the pupils continually say what they think about every topic and the responses given are a true reflection of their views.

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The questionnaire was designed to be brief and to ask questions about speed, ease and enjoyment of language learning compared to normal language learning methods. It sought to examine attitudes to grammar as well as vocabulary acquisition and the use of a computer in language learning. Pupils were given as long as they wished to fill in the questionnaire and to add any comments they wished. The questionnaire responses presented here were collected 7 months after the start of the study.

RESULTS

The results from Table 1 (below) indicate that no pupil expressed a negative view of Linkword courses compared to their normal course in terms of speed, ease or enjoyment of language learning, whereas at least 58% expressed positive views on these aspects of learning.

The positive view extends to grammar learning: 17% found grammar learning more difficult whereas 58% reported finding grammar learning easier. The only aspect where the Linkword approach is regarded as not helpful overall is in gender learning, where only 25% found the approach to be helpful.

Finally, and possibly not unexpectedly, 75% of children reported that computer learning increased their enjoyment of learning at least 'Quite a lot'.

The responses found in Table 1 are supported by the free responses that follow. Almost no comments are negative, and enjoyment, ease of learning are highlighted in a number of comments.

As regards filling in the questionnaire, it was emphasised to the pupils that if they gave positive responses this might lead to them having to continue with the course so it was in their interests to tell the truth if they did not like the course.

Table 1. The table below gives all the results of the final questionnaire of the year, administered shortly before the final year examination. N=12.

Q1. HOW MUCH DID YOU LIKE LEARNING FRENCH BY THE METHOD YOU HAVE USED?	VERY MUCH 1	QUITE A LOT 6	NEITHER LIKED NOR DISLIKED 5	DISLIKED 0	VERY MUCH DISLIKED 0
Q2. HOW FAST DID YOU FIND IT LEARNING FRENCH BY THE METHOD YOU HAVE JUST USED?	VERY FAST 1	FAST 9	NEITHER FAST NOR SLOW 2	SLOW 0	VERY SLOW 0
Q3. HOW EASY DID YOU FIND IT TO LEARN FRENCH WORDS BY THE METHOD YOU HAVE JUST USED?	VERY EASY 2	EASY 7	NEITHER EASY NOR DIFFICULT 3	DIFFICULT 0	VERY DIFFICULT 0
Q4. HOW EASY DID YOU FIND IT TO LEARN FRENCH GRAMMAR WITH THE METHOD YOU HAVE JUST USED?	VERY EASY 1	EASY 6	NEITHER EASY NOR DIFFICULT 3	DIFFICULT 2	VERY DIFFICULT 0
Q5. HOW EASY DID YOU FIND IT TO LEARN GENDERS BY THE METHOD YOU HAVE JUST USED?	VERY EASY 0	EASY 3	NEITHER EASY NOR DIFFICULT 5	DIFFICULT 3	VERY DIFFICULT 1
Q6. HOW MUCH DID USING A COMPUTER AFFECT YOUR ENJOYMENT OF LEARNING?	VERY MUCH 2	QUITE A LOT 7	A LITTLE 2	NOT AT ALL 1	MADE IT LESS ENJOYABLE 0

Here are the unedited free response comments of all the pupils.

- S1. IT'S EASY AND FAST. I CAN DO A SECTION IN 10 MINUTES. AT THE END OF THE SECTION, WHEN YOU HAVE TO WRITE IN FRENCH, IT MAKES ME REALLY IMPROVE.
- S2. IT MAKES FRENCH EASIER.
- S3. I THINK IT'S GOOD BUT IT GETS HARDER AND HARDER.
- S4. I THINK IT IS EASIER BECAUSE I FIND IT EASIER TO LEARN AND IT HELPS ME ESPECIALLY ON THE COMPUTER.
- S5. ENJOYABLE.
- S6. THE SENTENCES HELP A LOT.
- S7. I LIKE THE SYSTEM. HOW YOU CAN WRITE OUT THE ANSWERS AND THEN PRESS RETURN AND GET THE ANSWER.
- S8. VERY ENJOYABLE AND NOT BORING
- S9. I STILL THINK IT'S A VERY GOOD METHOD AND MOST IMPORTANTLY IT WORKS! THE GRAMMAR IS HARDER TO LEARN. I FIND IT MORE DIFFICULT. IT HAS HELPED ME QUITE A LOT.
- S10. IT HELPED ME IN CLASS.

DISCUSSION

As can be seen from the responses above, the great majority of the children found the course fast and easy, with not one pupil describing the course as difficult or slow in terms of vocabulary acquisition. Even as far as grammar learning is concerned, the majority found it easy or very easy with only one pupil finding it difficult. The only area of difficulty was in gender learning, which is perceived as difficult by many learners using conventional courses. It is interesting that in at least two published studies of adult learners, gender differences learned with the keyword method was shown to be highly effective (Gruneberg and Jacobs, 1991; Desroches, Gelinas and Wieland, 1988).

Of course, the favourable attitudes expressed by the children could have been due to a number of factors, such as the desire to please. However, as noted above, this seems unlikely given that the children expressed their views forcefully in the past. Furthermore, it would not account for the children asking to continue with the courses prior to their re-introduction the following term. It also seems unlikely that the favourable attitudes expressed were due to

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a novelty effect, since the responses were recorded about seven months after the Linkword courses were introduced. A follow-up questionnaire administered almost a year after the study commenced to a group of six pupils working on the Linkword level 2 course in the computer room found all still had highly favourable attitudes to the course. Of course, to the extent that the Linkword courses are different from conventional teaching methods, they do offer pupils an alternative approach which might be perceived as being continuously novel. Even if this is the reason for the improvement in motivation, there can be few grounds for objection so long as it is effective.

It might be that simply the computer-based aspect of the course led to a positive attitude. However, a large number of studies reported by e.g. Gruneberg and Jacobs (1991), where computers were not used but highly positive attitudes are reported, strongly suggest that this was not the only factor. However, it has to be admitted that using computer presentation does allow self-pacing by each student. This is consistent with modern language learning techniques in the classroom and is likely to be one factor enhancing its value in a school situation. Far more likely to be of significance in enhancing motivation than any of the possible reasons offered above is the perceived increase in speed and ease of acquisition of vocabulary. This enhancement of vocabulary acquisition has been noted in a large number of studies of the keyword method (see e.g. Coady and Huckin, 1997; Gruneberg, 1992 for reviews).

At a minimum, therefore, the present study adds to the research carried out on adults (Gruneberg and Jacobs, 1991) showing how Linkword courses contribute to increased enjoyment and perceived ease of learning of a foreign language. This is arguably the more impressive since the pupils were of relatively low language ability – just the kind of pupil for whom motivational problems are the greatest. Given recent research findings that put language learning bottom of the league in terms of enjoyment as a school subject (Stables and Wikeley, 1999), and given the findings of Milton and Meara (1998) that the average school pupil in the UK has a passive vocabulary of less than 900 words after four years of schooling and that 25% appear to have learned nothing at all, the present results appear to point to a role for the Linkword approach, at least for less able students. Of course, the present study does not rule out the same motivational effects on more able students within a school context. It should, however, be stressed that the Linkword courses were conducted alongside a more conventional approach as a complement to it rather than as a replacement for it. The Linkword courses were not integrated into the normal teaching as such. The benefits came through the rapid build up of vocabulary and simple grammar which then facilitated normal classroom interaction where lack of vocabulary and grammar for poor learners inhibits both performance and motivation. The evidence in favour of the Linkword

courses is of course the heightened motivation and performance in end-of-term examinations on a test based only on material covered in the normal classroom courses.

ACTUAL PERFORMANCE

Given the nature of the present case study, comparative data are to be treated with caution. However, the average class mark for the end of year exams was 50% for the class taught using Linkword courses compared to 38% for the corresponding class for the previous year, where no Linkword courses were used. An average mark of 50% is considerably above what was expected for a class of this constitution, with three out of the twelve students performing considerably better than some children in the class above, leading to their promotion to that class.

It should be noted that the class test was not in any way composed to take account of the content of the Linkword course. The standard end-of-term exam consisted of three parts:

1. A comprehension test (reading)
2. A comprehension test (writing)
3. A composition.

The test was composed of material based on the standard text used for GCSE, namely *Encore Tricolore* (Honor and Mascie-Taylor, 2000). In other words, although it was a complementary course to the one being examined, the Linkword course appears to have significantly increased performance on the course being used to teach for GCSE. This is done through allowing the students to acquire a further relevant vocabulary and basic grammar in addition to that already acquired from normal lessons and reading. Clearly if this were not the case, performance on the examination would not be enhanced.

It may be somewhat dangerous to draw very strong conclusions from these results as comparisons between different classes can be misleading, although common entrance performance in French for this class was certainly not superior to the previous year. At the very least, examination performance did not appear to suffer as a result of the introduction of the Linkword courses, whereas motivation was clearly perceived to be enhanced by those using the material. There is of course abundant evidence, as noted above, that vocabulary acquisition is greatly assisted by the use of the keyword method, and the present study indicates that using computer presentation allows for its successful use in a classroom setting.

GENERAL DISCUSSION

The present study extends the findings of earlier studies in demonstrating Linkword's motivational effectiveness with pupils who were not thought to be linguistically able. That a quarter of the class were

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promoted to the class above also fits in well with the previous research, which has consistently found an improvement in vocabulary acquisition with the keyword method.

The question arises of why such a well-established method, backed up by a weight of empirical evidence for both its motivational and performance benefits, should not yet be widely adopted in school situations. Paul Meara, one of the UK's leading experts on vocabulary acquisition, in a recent book review (1998), notes the widespread scepticism and indeed hostility towards courses such as Linkword which employ the keyword method. He notes: "The research is extensive, and on the whole it all points in the same direction. Mnemonic systems, such as the keyword method, are extremely effective as a way of acquiring new words in a foreign language... This convincing evidence is strongly supported by a theoretical framework drawn from psychological work on imagery and learning. Surprisingly, however, the keyword method and its relatives have not been welcomed with open arms, notwithstanding this impressive research support. Most teachers that I know have very strong negative reactions to the idea of using mnemonic systems with their own students.... You will be met with a barrage of specious claims, all of which can be countered with clear evidence from the literature, but none of this counter evidence seems to be effective..." The hostility of teachers to the use of the keyword method is not confined to the UK; McDaniel and Pressley (1989) and Kasper (1993) report similar hostility in North America.

Why then, are some teachers so opposed to using such strategies in language teaching? One possibility is that they are concerned that words not learned in context are unlikely to be generalised to other contexts, but McDaniel and Pressley (1989) demonstrated that words learned by the keyword method were better remembered in a new context. In fact the keyword group produced more accurate comprehension of the parts of vocabulary containing new vocabulary, compared to a group taught vocabulary by context learning. Kasper and Glass (1988) conducted a five-day experiment to examine whether keyword taught vocabulary would generalise to novel situations. Compared to a control group who were not given any learning instructions, the keyword group were much better able to translate novel sentences.

Teachers may also oppose mnemonic strategy use in the belief that learners will have to recall the image every time they want to recall a word, thereby making the use of the method impracticable. As Kasper (1993) notes, this simply does not happen, since what the keyword method does is to increase the strength of the association between the English word and the foreign word. The recall of the image rapidly drops out as learning is established, although the image does have a function in those cases where the word is not recalled, since the learner can then utilise the image as a cue. The person using rote learning cannot of course utilise any cues to help.

Once the keyword has been used to establish a strong memory representation, the keyword is no longer necessary. All that remains is a highly distinctive memory representation which allows each foreign word to be easily accessed and recalled, not only immediately but also after a delay (Kasper, 1993). Of course, some forgetting does take place after time and some words are not immediately recalled, but the degree of forgetting is almost always less with the keyword method.

Regarding the long-term effectiveness of the keyword method, a study by Beaton, Gruneberg and Ellis (1995) found that one individual who had learned Italian 10 years earlier remembered about 30% of a 400-word vocabulary without any revision. This rose to about 70% following a 10-minute review of the glossary and virtually 100% following a one-and-a-half-hour revision of the whole course. Of course, the same results may have been obtained with conventional learning, but it does suggest that vocabulary learned through the keyword method is at least capable of very fast relearning even after a considerable time gap. It does not appear to be a case of 'Easy come, easy go'.

Another objection that is often raised to the keyword method is that it leads to poorer pronunciation than standard learning methods. As far as the authors are aware there is no evidence whatsoever that this is the case. In one study of the use of the Linkword courses at Thomson holidays, an independent consultant employed by Berlitz, brought in to assess the learning of the class without knowing of the method of learning, congratulated the class on their pronunciation (Gruneberg and Jacobs, 1991). In the present study no comment was made by the teachers about the quality of pronunciation. This may partly be due to the fact that the correct pronunciation of each word is given for computer versions of the course.

An issue that is frequently raised is that teaching vocabulary does not teach underlying structure. Leaving aside the fact that Linkword courses teach both vocabulary and grammar, a major problem with this objection is that without an adequate vocabulary, there is no point in teaching structure. The evidence of Milton and Meara (1998) is that present methods make the learning of an adequate vocabulary difficult for a very large number of people. Put simply, teaching a large vocabulary rapidly, especially combined with a basic grammar, as on Linkword courses, may help learners to benefit from more in-depth approaches to teaching.

It is also objected that there is more to language learning than vocabulary learning. Indeed there is, although, as noted above, the Linkword courses teach both vocabulary and a basic grammar integrated with the vocabulary. However, proponents of Linkword or other mnemonic strategies always emphasise that such courses should be used to supplement, and not replace, other methods. Linkword computer courses cannot replace the conversational practice, the placing of a language in a cultural context, the feedback on progress that

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comes from normal classroom teaching. What it may well do is make such classroom teaching much more rewarding for both teacher and pupil if motivation is considerably heightened and vocabulary is much more extensive. Where the vocabulary of an example is known, mental effort can be concentrated on the grammatical point being illustrated.

This leads to a final, practical objection. Where in a crowded timetable can such a course be fitted in? The present study has shown that Linkword courses can be effective if used as little as one session a week, although the more intensive the better. The question should not be one of "How can I lose a session?", but "How much will the student gain in terms of enhanced motivation, vocabulary and understanding of grammar if at least one session using the Linkword course is given?" The results of the present study indicate the probable balance of advantage.

SUMMARY

In summary, the present case study appears to add to the evidence that there is a complementary role in foreign language learning for an approach based on the keyword method. It is probably the most extensive study to date on the value of courses which use the keyword method, integrated with basic grammar, in a classroom situation. It particularly illustrates the value of this approach for less linguistically gifted children, but research (see e.g. Gruneberg and Jacobs, 1991; Kasper, 1993) shows that able individuals of all ages can also benefit. However, there is little doubt that the needs of less linguistically able children are often not being met by conventional approaches to language learning. This is true both for performance (Milton and Meara, 1998) and motivation (Stables and Wikeley, 1999). The present findings appear to indicate considerable motivational and performance advantages in complementing standard classroom courses with the Linkword approach.

No one study, of course, can answer all the questions posed about the value of a complementary Linkword approach. Amongst the unanswered questions are the value of such courses for more able students; the value of intensive teaching of such courses, for example over a weekend; and the extent to which dyslexic students may benefit from the Linkword approach. There is some suggestive evidence that dyslexic students may increase their confidence in their ability to learn languages after experience of Linkword courses and may recall vocabulary at least as well as non-dyslexic students using rote learning or the Linkword method (Maybury, 2002).

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