

**Linkword Languages in the classroom – success for children with dyslexia in learning French**

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## SUMMARY OF MAIN RESULTS

1. A TEST OF KNOWLEDGE OF FRENCH VOCABULARY PRIOR TO THE STUDY FOUND THE NON DYSLEXIC GROUP WERE SIGNIFICANTLY BETTER THAN THE DYSLEXIC GROUP
2. AFTER TRAINING WITH LINKWORD THERE WAS NO DIFFERENCE BETWEEN THE TWO GROUPS IN PERFORMANCE. BOTH GROUPS INCREASED THEIR VOCABULARY SIGNIFICANTLY
3. HOWEVER THE DYSLEXIC GROUP IMPROVED ITS PERFORMANCE SIGNIFICANTLY MORE THAN THE NON DYSLEXIC GROUP AS A RESULT OF USING LINKWORD
4. BOTH GROUPS IMPROVED FOR BOTH RECEPTIVE AND PRODUCTIVE LEARNING
5. THE DYSLEXIC GROUP REPORTED SIGNIFICANTLY INCREASED ENJOYMENT AS A RESULT OF USING LINKWORD
6. BOTH GROUPS REPORTED LEARNING VOCABULARY AND GRAMMAR SIGNIFICANTLY EASIER WITH LINKWORD

## **“Linkword Languages” in the classroom – success for children with dyslexia in learning French**

In the United Kingdom today, learning a foreign language is becoming an increasingly important skill as more and more opportunities open up for British job seekers in the European Market (Crombie, 2000). A good grasp of a modern foreign language is now not merely another qualification at GCSE or A level but a key opportunity for career expansion once school has been long forgotten. For example, speaking in the “Times Educational Supplement” (November, 2002) Digby Jones, the director general of the confederation of British Industry, stated that without a foreign languages qualification young people are less able to compete in global organisations or companies. Similarly in the same issue, Ian Mullen, chief executive of the British bankers association declared that, “We need a work force with expanding language skills as eighty percent of regulations governing the UK financial industry originate from Brussels”. Learning a foreign language is therefore not only a compulsory element of the national curriculum at present for children up to the age of sixteen (McColl, 2000), but also an important qualification for life.

Enhanced employability is not the only benefit of learning a foreign language. Atkinson (1992) suggests that the pupil benefits from a whole range of skills and knowledge through these lessons. For example, from a social viewpoint, they learn more about different cultures, have more opportunities for travel and European identity is fostered. Benefits are also seen from a cognitive developmental viewpoint. Cognitive learning is seen to improve, the pupil learns more about his or her own language structure and concentration is thought to increase.

Participation and success at language learning is therefore extremely beneficial to the child on educational, vocational and interpersonal levels. However, pupils are not necessarily meeting these targets. Dobson (1998) highlights concerns revealed in inspection reports by the HMI over pupil’s abilities in languages after five years of teaching. Pupils are also failing to learn languages to a high enough level. For example, Curtis (2002) reported that only 2.85% of all British pupils qualified in A level French in 2000 and an even lower percentage of 1.1% qualified in German. Stables & Wilkeley (1999) also found that when asked to rate subjects on how much they liked them, languages were paced at the bottom of the list by thirteen and fourteen year olds. Compared to children of the same age in European countries, British students are also lagging behind. Speaking more than one language is common there but not in Britain (McColl, 2000). All of this evidence suggests that despite the importance of languages as a skill for life, the majority of pupils are not gaining high enough competence in them to benefit from these opportunities.

The question of how to raise the number of pupils studying languages is central to present modern foreign language debate. The purpose, methodology and curriculum content have all been recently debated by The Nuffield Inquiry report (Moys, 1998), which expressed anxiety over the situation at present. It is now being recognised that older, traditional methods should not necessarily be discarded but complemented with newer ideas and strategies for increasing not only performance but motivation as well (Grenfell 1993).

## Key – Word Method

One suggestion to how performance in foreign languages could be increased is that more learning strategies should be incorporated into teaching, (Nunan, 1995). Away from education, one such group of strategies that have shown to increase and aid encoding and recall of information in general is that of the numerous mnemonic strategies. These strategies, which are often visually based, have been used to increase recall of a number of objects such as faces, lists of items and positions of chess pieces (Eysenck & Keane, 2000). One such strategy that has been widely and practically used and has shown success in increasing recall is based on foreign language learning. Known as the key word method, it involves relating an English word to another English word that sounds like the foreign translation, through the use of imagery (Gruneberg, 1998). For example, the French for Hedgehog is “Herrisson” which sounds like the English phrase “Hairy son”. Therefore the learner visualizes an image that involves a hedgehog and a their “hairy son” interacting, such as a their son playing with a hedgehog. Therefore when the learner next hears the French word “Herrisson” they picture a “hairy son” in their minds eye and retrieve an image of the Hedgehog, as the two have become linked in memory. Similarly when translating the word Hedgehog into French, the learner again imagines this image of the Hedgehog and retrieves the phrase “Hairy son” from memory, which prompts the translated word “Herrisson”. Therefore an acoustic link connects the familiar key word to the unfamiliar word to be learned through the similarity of the sound of the two words. Imagery then links an interactive picture of the unfamiliar word with the familiar word (King – Sears, Mercer & Sindelar, 2002). Associations between the keyword and the translation are therefore strengthened whilst associations between the translations and other English words are reduced (Kaspar, 1993)

Recall has been shown to increase using this method of language learning in comparison to methods such as straightforward rote learning by many researchers. For example, Atkinson & Raugh (1975) presented participants with forty Russian words a day for three days. Half the subjects were given information on the key word method to learn the words and the other half acted as a control group and did not received any information. A vocabulary test was then given, with the key word group recalling on average 72% of the words compared to an average score of 46% for the control group. The participants were then told the experiment had finished but six weeks later were called back for another test. This time the key word group recalled 43% of the words compared to 28% correctly answered by the control group. Differences in scores between the key word and control groups were at both times highly significant suggesting that the key word methods played a crucial part in boosting recall for the vocabulary (Atkinson, 1975). Hogben & Lawson (1994) also supported this finding through using the method with students learning Italian. Recall for words learnt using the keyword method was significantly higher than words learnt through rote learning. Importantly, students that use the keyword method to learn vocabulary also report that they enjoy it as a method more than previous methods used and that it is a more interesting method to use which keeps them motivated for longer (Kasper, 1982).

Explanations for the success of the keyword method have been based on Paivio’s dual coding theory (1986). This proposed that in addition to the verbal code of the word, the image provides a second independent code, meaning that retrieval is more likely as the learner now has two independent memory codes for the event, increasing the likelihood of the word being recalled than if just the verbal code was available (Thomas & Wang, 1996).

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Others have suggested that rather than completely dropping the language requirement, dyslexic pupils should be allowed to study less. Downey & Schneider (1999) found that American college students who had dyslexia performed at a similar level to non-dyslexic students when they were allowed to learn reduced content. Whilst not as negative a statement as others, practically this would mean that although dyslexics are succeeding at what they are studying, they are not studying to a high enough level to be of future use.

However, McColl (1997) suggested that for dyslexic children, success at foreign languages depended not only on the child's skills but also on the school and its teaching strategies. She proposed that when suitable strategies were used, these children could benefit and show an improvement in their performance. In line with this idea, several interventions have been tried to help dyslexic children perform at a higher level in languages, some with more successful results than others.

One such strategy that has been highlighted to help dyslexic children is that of highly structured multisensory programmes. Programmes such as the "Hickey approach to language training" encourage learning through simultaneous activity of auditory, visual, tactile and kinaesthetic pathways. This is thought to be particularly beneficial to dyslexic children (Ott, 1997). Another such technique named the "Orton - Gillingham" method also simultaneously combines visual, auditory and kinaesthetic factors. An adaptation of the method for teaching Spanish had shown improved performance for children with dyslexia (Sparks, Ganschow, Pohlman, Artzer & Skinner, 1992).

It has also been suggested by several authors in the literature that dyslexic children may benefit from using mnemonic devices to learn foreign languages. Schneider et al (2000) suggest that non-verbal mnemonic devices, such as colour and shape, could be used to help dyslexic children remember gender or parts of speech. Another similar idea involves kinaesthetic reinforcement whereby the learner associates the meaning of parts of speech, such as suffixes with certain body movement. The authors give the example of associating the prefix "con" which means together with shaking hands. King Sears, Mercer & Sindelar (2002) found that children with learning difficulties benefited from using the key word method to learn science vocabulary. These students also reported higher enjoyment than the control subjects.

One suggestion, which may explain some of this improvement in children with dyslexia when using mnemonic strategies, is based on hemispheric specialisation. Mnemonic strategies have been suggested to be a "right brained skill" which is interesting as West (1997) notes that dyslexic children are often extremely good at activities that are seen as "right brained skills" such as creativity and visual learning. Traditional teaching methods however are focused on skills such as ability to categorise and retain facts, which are predominantly seen to be "left brained skills". Encouraging the use of mnemonic devices in dyslexic children therefore gives them an advantage in an area where they generally fall behind everyone else.

### **Linkword and dyslexia**

Linkword has already shown success in helping individuals who have experienced language learning difficulties in improving their ability (Gruneberg et al, 1994, Gruneberg et al, 1996). In theory, the Linkword programme also displays many possible advantageous points for teaching the child with dyslexia as well, providing solutions to many problems

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One of the main concerns about the method is that the learner will always have to bring these images to mind when wanting to speak the foreign language, which would slow the speaker down. However, it was shown by Kasper (1993) that with practice the learner automatically associates the two words together and the images drop out leaving just the translation in memory. The image is only used during the initial translations and as the link becomes more fluent, the image is no longer needed and is discarded (Kasper, 1993).

### Linkword Languages Programme

If this technique has been shown to improve vocabulary learning to such a successful level, over and above that of traditional rote learning, then surely pupils would benefit from using this method in the classroom to learn essential word lists? One way in that this could be incorporated is through the computer-based programme "Linkword languages" (Gruneberg, 2002). Based on the above key word method, Linkword is a CD ROM programme that guides the learner through both vocabulary and grammar of a foreign language, providing the instructions and images needed for the learner to independently learn a set of vocabulary items for a given language. Each CD ROM covers an extensive set of common and useful vocabulary items, providing firstly the foreign word and its English translation and then the image combining the two as described above in the key word method. Learners are asked to envisage this image in their minds eye for at least ten seconds, before moving on. Sound is also available through speakers or headphones so that the learner can hear the pronunciation of the word, but this is optional and can be switched off if preferred. After running through a series of about ten words, a simple vocabulary test is given asking for both English and foreign language translations of the words just studied. Feedback is then provided through the form of the correct answer alongside the correct translation with another chance for correct pronunciation of the word to be heard if desired through clicking on the correct word. The learner then moves onto the next set of words to be learnt. Simple grammar is also taught on the CDROM, such as the gender of words. For example in French, learners are asked to imagine a bottle of perfume interacting with the word for a feminine word and a boxer for a masculine word.

The success of this simple method for vocabulary learning has been great, with increased recall of items being shown for many different groups and in many different situations. For example, the Linkword Spanish course was used by five Thompson Holiday executives keen to learn the language. After around twelve hours, the executives had knowledge of around 400 words and a basic grammar. It was estimated that to learn this information in a traditional manner it would take about 40 hours rather than the twelve taken. Factors such as motivation were also increased (Gruneberg 1987). This success was not a one off. Students participating in a voluntary weekend course to learn Spanish using the method all covered more than five hundred words in two and a half days, with recall of the words being an average of 84.7 for productive learning translating English words to their Spanish equivalent (Gruneberg, undated).

Attitude towards the programme has also been very positive. Thirteen volunteers from Humberside Polytechnic participated in a two-day course using the programme, learning a variety of languages. Responses to the method were very positive with many finding it a faster method to learn vocabulary and grammar, interesting, and a more positive technique than other methods previously used in school (Gruneberg, 1987). Similarly, Gruneberg & Sykes (1991) presented a first year practical class with level one of the Greek programme to learn. On average the students reported very positive attitudes to the method, describing

the programme as easier, faster and more enjoyable to traditional methods they had experienced in school.

The effect of linkword also appears to have long-term significance. Beaton, Gruneberg & Ellis (1995) described an individual who initially learnt Italian through the linkword method, picking up about 400 words and grammar. Ten years later the individual decided that as he was visiting Italy he would like to see what vocabulary he still knew. On testing, ten years after his initial learning, the individual recalled about 35% of the words. However, after looking over the glossary list of all the words he had previously learnt ten years ago for approximately ten minutes, he was retested and performed at 65%. This improved to a near perfect recall after further study of the words for about one and a half hours. This effect was seen to last for at least one month suggesting that vocabulary learned through linkword is long term (Beaton, Gruneberg & Ellis, 1995).

Linkword has also been shown to have positive results with individuals who may have difficulties with learning foreign languages for a variety of different reasons. For example, Gruneberg, Sykes & Gillett (1994) used images from the linkword programme with a group of learning disabled adults who showed poor language ability. Recall was significantly high for the group using this technique, compared to the control group who were simply told the translations of the words. Gruneberg & Pascoe (1996) also showed that using key word images from the linkword course lead to increased recall for both productive and receptive learning in the elderly, who as a group are often shown to have memory problems.

Although originally developed as a course designed to provide learners with a basic vocabulary to use in situations such as going abroad, Linkword has also already shown to have practical success in classrooms situations with pupils learning languages as part of the national curriculum. Although not many studies have been performed due to the practical and methodological problems of gaining significant access to schools and the problems of organising and sufficiently controlling any experiment in such an environment, those that have been completed have provided encouraging results.

One such success was seen by Gruneberg & Jacobs (1991) who reported significant results in a class of twelve and thirteen year olds in the B stream at Bishop Vaughn, a Swansea comprehensive school. The pupils used linkword in their Spanish class once a week whereas other classes did not use the programme and continued with their normal lessons. End of term vocabulary tests showed that those in the linkword class performed at an average level of 69% compared to an average score of only 24% in the other class, suggesting significant differences in success for the two groups.

Success was also seen in a group of thirteen-year-old children who were in the weakest set for French at Rugby school (Sommer & Gruneberg, 2002). All children had performed at less than 50% in their entrance exam to the school and had been targeted as having not only performance difficulties in French but also difficulties with regards to motivation and enjoyment of foreign languages. After initial instruction in linkword during class time, the pupils used linkword, at their own pace, once or twice a week as preparation for classes. The results yielded positive conclusions on two levels. Firstly, performance was seen to increase. Although no actual vocabulary test of linkword was given, performance in the end of year examinations was compared to the previous year where linkword was not used. The average mark for the class using linkword was 50% compared to 38% the year before.

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There had been no significant difference in common entrance exam marks between the two years suggesting that the class who had used linkword reached a higher level. Secondly, and just as importantly, measures of attitude towards the programme, assessed through questionnaires, showed positive reactions towards the linkword programme and significant increases in motivation and enjoyment of foreign language learning. With regard to speed and ease of learning and enjoyment of the course, not one pupil responded negatively, with 58% responding positively to these factors. The school is still using the programme as part of its foreign language teaching.

These experiments are influential from an educational perspective as they show the practical success of Linkword as a programme out of the controlled environment of the laboratory. They show that Linkword can successfully be used in real life classroom situations to increase recall and enjoyment of foreign languages. As a strategy for learning, this programme has so far suggested that it could be used to help meet these new standards set by the government to improve both performance and motivation in pupils.

### **Dyslexic Pupils**

At present, the National curriculum is very keen on the idea of "languages for all" (Grenfell, 2000). However, some pupils have been identified who struggle with languages to a far greater extent than the general problems seen by many children. One group of individuals who have been seen to display problems in learning foreign languages are dyslexic pupils. Crombie (1997) described how children with dyslexia show poorer performance, finding the subject difficult. Supporting this, Downey, Snyder & Hill (2000) showed that dyslexic children performed significantly poorer than controls on foreign language aptitude measures, phonological tasks, reading and spelling.

Similar reasons that lead dyslexic children to have problems mastering reading and writing in their own first language are thought to prevent a dyslexic child from successfully mastering a second or third language. Skehan (1986) suggests that a direct relationship between ability to learning of the native language and a second language exists as they are based on the same underlying skills. These skills, which dyslexics are documented to show particular weaknesses in are, amongst others, problems with phonological processing, poor working memory, poor auditory discrimination, faulty auditory sequencing, poor organisational skills, slow speed of information processing and limited attention span. (Crombie, 2000). Poor phonological skills, such as difficulty segmenting words into phonemes or morphemes lead to the child being unable to separate language into meaningful units (Pollock & Walker, 1994). This is especially evident in the two most common languages taught in school, which are French and German. Adams (1990) also notes that dyslexic children can have problems blending and synthesising phonemes into words, leading to problems with pronunciation and automaticity. These difficulties are described in Sparks & Ganschow's (1989) linguistic coding deficit hypothesis, which is based on empirical evidence of Vellutino & Scanlon (1986). The theory links these deficits to language difficulties through proposing that those with reading difficulties have problems with phonological, orthographical and syntactic elements of language – the elements making up the phonological "code" of the language. They do not however experience problems with the semantic aspects of the language.

Other deficits such as poor working memory also mean that the child has problems retaining vocabulary and accessing words, even in their native language (Crombie, 1995).



As the child also processes information at a slower level, this means that they fall behind in lessons as they find it hard to keep up with the pace of the lessons. The child misses half the information as they are still processing the first few words (Miles, 1993).

As emphasis today in schools is placed on the “natural” method of language teaching, with learners expected to learn through verbal exposure of the language. Learning, is predominantly speech based with instructions being given in the foreign language and communication in lessons encouraged to be in this language too. This emphasis is encouraged as the child is thought to learn through modelling speech patterns (Ganschow & Sparks, 2000). For the dyslexic child however, this emphasis only exacerbates their phonological deficits. Children with dyslexia need the emphasis to be of a more multisensory nature (Schneider & Ganschow, 2000). On top of these physical difficulties, students with learning difficulties are often seen to be anxious, unmotivated and lacking in self esteem towards their ability to learn languages which leads to poor enjoyment and poor motivation (Ganschow & Sparks, 2000).

Pressley, Johnson & Symons (1987) also suggest that children with dyslexia meet increased difficulties due to deficiencies in two areas. Firstly, students with learning disabilities are seen to have a poorer knowledge base and secondly they do not appear to use strategies in the same way as average students do. Their ability to encode and store information is therefore reduced. As a result, their knowledge cannot be enhanced in the same way by strategy use as occurs with learners with a larger knowledge base and the use of strategies. Mastropiere, Scruggs & Fulk (1990) note that these children become susceptible to the Matthew effect as the “less students with learning difficulties learn due to encoding and storage deficits, the less they are able to learn as they have an impoverished knowledge base”. Development of methods to help these children improve in language proficiency is therefore important to stop them falling further and further behind attainment targets.

Even though the importance of language learning has been highlighted, and educators are generally keen to raise standards in foreign language learning, many educators in response to this realisation of the difficulties faced by students with learning difficulties such as dyslexia are suggesting that the compulsory element of foreign language learning should be waived for these students, with either a reduced attainment target or the option of not studying a language at all. Ganschow, Myer & Roeger (1989) note that many colleges in the US, who often have a foreign language requirement in the first year, are now allowing students with learning difficulties to drop their language requirement. Miller & Bussman – Gillis (2000) also report that many researchers now think that the child with dyslexia should be allowed to drop foreign language lessons. Levine (1987) agrees, suggesting that forcing those with learning difficulties who have displayed problems trying to learn the language leads to anxiety, is a waste of time and can have adverse effects on other subjects studied. Even the Department for Educational Standards (2002) suggested that we no longer “force” children who find languages difficult to study such subjects at GCSE, providing the option of “disapplication”. Similarly, although a circular by the Scottish education Department (1989) stated that there “should be no automatic assumption that pupils with special needs should be excluded” from foreign language lessons, the circular expressed considerable doubt to the success of teaching children with dyslexia modern foreign languages (Crombie & McColl, 2000)

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faced by dyslexic children in foreign language learning. Evidence has also been presented that dyslexic students may perform at least as well as non-dyslexic students when using the method (Maybury, 2002). The possible benefits of the programme to dyslexic children are plenty. Firstly, it does not purely rely on phonological methods of teaching that are often very common in the classroom – it integrates visual and semantic methods as well. As classroom methods are based upon listening and conversing as ways of learning the dyslexic child who is lacking in phonological skills, finds traditional methods difficult, if not impossible. With linkword, the dyslexic does not have to purely rely on phonological skill to the same extent, but can concentrate on the visual and semantic aspects of the programme. The sound can also be turned off if it is only serving as a distracter, which may be true if the child has severe phonological problems, or can be left on to help the child learn the links between the visual and the phonological aspect of the word.

Also, as a programme linkword is a multisensory presentation, targeting many aspects of language learning at once which cannot often be organised in a classroom situation. The dyslexic is therefore provided with supporting information in many different forms at once, which may provide extra reinforcement for each word learnt. Sparks et al (1991) note that greatest success is often seen for a dyslexic child when learning targets hearing, saying, seeing and writing especially when these interact simultaneously, which linkword provides the opportunity to do.

Secondly, Linkword is a very visual programme. The learner creates a visual picture in their mind's eye when learning a word and also sees the word on the screen in front of them as they learn it. Although dyslexics have been seen to have poor verbal short-term memory, their visual memory is usually normal (Hulme, 1981) and therefore they should not be at such a disadvantage to other children when using this programme compared to a normal phonologically based lesson. This aptitude for visualisation and pictorial representations is linked to their right-brained style of thinking (Vitale, 1982). Hornsby & Sheer (1982) suggest that visual images should be incorporated into vocabulary teaching whenever possible to act upon this strength. Crombie (2000) also notes that the dyslexic child often benefits from seeing the written word or a picture involving the written word as it serves as a memory hook, when learning a foreign language just as they do in their first language. Linkword of course provides this visual link. In support of these ideas, Mavommati & Miles (2002) found that using a pictographic method with dyslexic children when teaching spelling of Greek words was more successful than traditional spelling methods. The visual nature of the pictures appealed to their visual strengths rather than relying on phonological skills. Also, linkword makes use of semantic learning. Sparks & Ganschow (1993) showed that students with foreign language learning difficulties performed at the same level as students without difficulties for both visual and semantic memory tasks.

Another strength of the programme for teaching dyslexic children is its use of associations. Vitale (1982) noted that due to their superior ability for right-brained activities, dyslexic children often show aptitude for making associations and links between items, a skill that helps them when forming the interactive images required on the programme. Jameson (2000) emphasises this ability suggesting that the keyword method could be used by dyslexic children to link English words to their foreign equivalent. However, no empirical study was performed.

Fourthly, Myer & Ganschow (1998) note that as the dyslexic suffers from problems with speed of information processing, learning should be slowed down to accommodate for this. Dyslexic children may often feel embarrassed about being slower than other children in the class, which leads them feeling pressure to keep up with the speed of the lesson (Riddick, 2000). Also, if they are asked to provide answers out loud in class, they are publicly seen to be poorer at languages than their peers, with many actually reporting bullying due to this lack of ability (Riddick, 1996). Slowing the lesson down for the dyslexic child is often impossible in a classroom situation, but one of the benefits of linkword is that the pupil can go at their own pace allowing them to more fully understand what they are learning. The computer can repeat a word as many times as the child wants unlike a teacher who has time constraints (Bourne, 1996). Also as linkword is usually presented on an individual computer no other child is explicitly aware of the speed at which the child is progressing, therefore removing this potential source of embarrassment for the child.

Answers are also typed instead of written which removes the problem of illegible handwriting often seen in dyslexic children due to poor motor skills. Answers are also provided regularly giving continuous update on the child's progress. Also most children enjoy working on computers, as they are novel compared to normal lessons and often do not seem like proper work, again increasing enjoyment and motivation. Good phonological skills are not needed to work a computer and therefore the dyslexic child may feel on a more equal level with his or her peers when using one. The combination of the above factors may lead to the child feeling more confident in themselves and their ability to learn foreign languages. A method of learning that increases self-esteem is especially important for the dyslexic child as Riddick (1996) showed that children with dyslexia felt embarrassed, frustrated and low in confidence due to their difficulties.

A final interesting point is that of the actual visual presentation of linkword. Some dyslexic children present visual problems with the contrast of words against background, especially with small black text on a white background. Some children with dyslexia perceive a glare from white paper, which leads to problems physically reading the text (Jameson, 2000). Interventions such as tinted lenses or overlays have been introduced to try and remove this problem, with some success being seen. Wilkins (1996) noted that for some dyslexic children, using tinted lenses leads to letters being clearer and easier to read on the page. Although not all dyslexics suffer from this problem and not all of those who suffer from the problem are helped by these lenses, a sub group does exist for whom these lenses are a great help (Wilkins, 1996). The presentation of linkword is of yellow letters on a black background and therefore this problem of glare is removed for the learner who is sensitive to it. Also, Jameson (2000) notes that often in traditional textbooks, the presentation on the pages is very cluttered and overcrowded with the actual information being lost amongst the presentation. It is suggested that the critical information should appear centrally and simply on an uncluttered and clear page. The presentation of linkword adheres to this.

The child with dyslexia often starts to feel very anxious at the thought of language lessons, which has been shown to be very detrimental not just towards attitude but performance as well (Horwitz, Horwitz & Cope, 1986). Horwitz et al (1986) showed that this anxiety can be linked to a poorer self-concept, with Edwards (1994) supporting this idea, noting that children with dyslexia often report being low in confidence and doubt their ability to succeed. Linkword however incorporates many factors that may have the potential to make learning a language not only easier, but also less stressful, which could lead to increased motivation, confidence and enjoyment of languages, which are integral parts of the

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In the United Kingdom today, learning a foreign language is becoming an increasingly important skill as more and more opportunities open up for British job seekers in the European Market (Crombie, 2000). A good grasp of a modern foreign language is now not merely another qualification at GCSE or A level but a key opportunity for career expansion once school has been long forgotten. For example, speaking in the “Times Educational Supplement” (November, 2002) Digby Jones, the director general of the confederation of British Industry, stated that without a foreign languages qualification young people are less able to compete in global organisations or companies. Similarly in the same issue, Ian Mullen, chief executive of the British bankers association declared that, “We need a work force with expanding language skills as eighty percent of regulations governing the UK financial industry originate from Brussels”. Learning a foreign language is therefore not only a compulsory element of the national curriculum at present for children up to the age of sixteen (McColl, 2000), but also an important qualification for life.

Enhanced employability is not the only benefit of learning a foreign language. Atkinson (1992) suggests that the pupil benefits from a whole range of skills and knowledge through these lessons. For example, from a social viewpoint, they learn more about different cultures, have more opportunities for travel and European identity is fostered. Benefits are also seen from a cognitive developmental viewpoint. Cognitive learning is seen to improve, the pupil learns more about his or her own language structure and concentration is thought to increase.

Participation and success at language learning is therefore extremely beneficial to the child on educational, vocational and interpersonal levels. However, pupils are not necessarily meeting these targets. Dobson (1998) highlights concerns revealed in inspection reports by the HMI over pupil’s abilities in languages after five years of teaching. Pupils are also failing to learn languages to a high enough level. For example, Curtis (2002) reported that only 2.85% of all British pupils qualified in A level French in 2000 and an even lower percentage of 1.1% qualified in German. Stables & Wilkeley (1999) also found that when asked to rate subjects on how much they liked them, languages were paced at the bottom of the list by thirteen and fourteen year olds. Compared to children of the same age in European countries, British students are also lagging behind. Speaking more than one language is common there but not in Britain (McColl, 2000). All of this evidence suggests that despite the importance of languages as a skill for life, the majority of pupils are not gaining high enough competence in them to benefit from these opportunities.

The question of how to raise the number of pupils studying languages is central to present modern foreign language debate. The purpose, methodology and curriculum content have all been recently debated by The Nuffield Inquiry report (Moys, 1998), which expressed anxiety over the situation at present. It is now being recognised that older, traditional methods should not necessarily be discarded but complemented with newer ideas and strategies for increasing not only performance but motivation as well (Grenfell 1993).

## Key – Word Method

One suggestion to how performance in foreign languages could be increased is that more learning strategies should be incorporated into teaching, (Nunan, 1995). Away from education, one such group of strategies that have shown to increase and aid encoding and recall of information in general is that of the numerous mnemonic strategies. These strategies, which are often visually based, have been used to increase recall of a number of objects such as faces, lists of items and positions of chess pieces (Eysenck & Keane, 2000). One such strategy that has been widely and practically used and has shown success in increasing recall is based on foreign language learning. Known as the key word method, it involves relating an English word to another English word that sounds like the foreign translation, through the use of imagery (Gruneberg, 1998). For example, the French for Hedgehog is "Herrisson" which sounds like the English phrase "Hairy son". Therefore the learner visualizes an image that involves a hedgehog and a their "hairy son" interacting, such as a their son playing with a hedgehog. Therefore when the learner next hears the French word "Herrisson" they picture a "hairy son" in their minds eye and retrieve an image of the Hedgehog, as the two have become linked in memory. Similarly when translating the word Hedgehog into French, the learner again imagines this image of the Hedgehog and retrieves the phrase "Hairy son" from memory, which prompts the translated word "Herrisson". Therefore an acoustic link connects the familiar key word to the unfamiliar word to be learned through the similarity of the sound of the two words. Imagery then links an interactive picture of the unfamiliar word with the familiar word (King – Sears, Mercer & Sindelar, 2002). Associations between the keyword and the translation are therefore strengthened whilst associations between the translations and other English words are reduced (Kaspar, 1993)

Recall has been shown to increase using this method of language learning in comparison to methods such as straightforward rote learning by many researchers. For example, Atkinson & Raugh (1975) presented participants with forty Russian words a day for three days. Half the subjects were given information on the key word method to learn the words and the other half acted as a control group and did not received any information. A vocabulary test was then given, with the key word group recalling on average 72% of the words compared to an average score of 46% for the control group. The participants were then told the experiment had finished but six weeks later were called back for another test. This time the key word group recalled 43% of the words compared to 28% correctly answered by the control group. Differences in scores between the key word and control groups were at both times highly significant suggesting that the key word methods played a crucial part in boosting recall for the vocabulary (Atkinson, 1975). Hogben & Lawson (1994) also supported this finding through using the method with students learning Italian. Recall for words learnt using the keyword method was significantly higher than words learnt through rote learning. Importantly, students that use the keyword method to learn vocabulary also report that they enjoy it as a method more than previous methods used and that it is a more interesting method to use which keeps them motivated for longer (Kasper, 1982).

Explanations for the success of the keyword method have been based on Paivio's dual coding theory (1986). This proposed that in addition to the verbal code of the word, the image provides a second independent code, meaning that retrieval is more likely as the learner now has two independent memory codes for the event, increasing the likelihood of the word being recalled than if just the verbal code was available (Thomas & Wang, 1996).

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Others have suggested that rather than completely dropping the language requirement, dyslexic pupils should be allowed to study less. Downey & Schneider (1999) found that American college students who had dyslexia performed at a similar level to non-dyslexic students when they were allowed to learn reduced content. Whilst not as negative a statement as others, practically this would mean that although dyslexics are succeeding at what they are studying, they are not studying to a high enough level to be of future use.

However, McColl (1997) suggested that for dyslexic children, success at foreign languages depended not only on the child's skills but also on the school and its teaching strategies. She proposed that when suitable strategies were used, these children could benefit and show an improvement in their performance. In line with this idea, several interventions have been tried to help dyslexic children perform at a higher level in languages, some with more successful results than others.

One such strategy that has been highlighted to help dyslexic children is that of highly structured multisensory programmes. Programmes such as the "Hickey approach to language training" encourage learning through simultaneous activity of auditory, visual, tactile and kinaesthetic pathways. This is thought to be particularly beneficial to dyslexic children (Ott, 1997). Another such technique named the "Orton – Gillingham" method also simultaneously combines visual, auditory and kinaesthetic factors. An adaptation of the method for teaching Spanish had shown improved performance for children with dyslexia (Sparks, Ganschow, Pohlman, Artzer & Skinner, 1992).

It has also been suggested by several authors in the literature that dyslexic children may benefit from using mnemonic devices to learn foreign languages. Schneider et al (2000) suggest that non-verbal mnemonic devices, such as colour and shape, could be used to help dyslexic children remember gender or parts of speech. Another similar idea involves kinaesthetic reinforcement whereby the learner associates the meaning of parts of speech, such as suffixes with certain body movement. The authors give the example of associating the prefix "con" which means together with shaking hands. King Sears, Mercer & Sindelar (2002) found that children with learning difficulties benefited from using the key word method to learn science vocabulary. These students also reported higher enjoyment than the control subjects.

One suggestion, which may explain some of this improvement in children with dyslexia when using mnemonic strategies, is based on hemispheric specialisation. Mnemonic strategies have been suggested to be a "right brained skill" which is interesting as West (1997) notes that dyslexic children are often extremely good at activities that are seen as "right brained skills" such as creativity and visual learning. Traditional teaching methods however are focused on skills such as ability to categorise and retain facts, which are predominantly seen to be "left brained skills". Encouraging the use of mnemonic devices in dyslexic children therefore gives them an advantage in an area where they generally fall behind everyone else.

### **Linkword and dyslexia**

Linkword has already shown success in helping individuals who have experienced language learning difficulties in improving their ability (Gruneberg et al, 1994, Gruneberg et al, 1996). In theory, the Linkword programme also displays many possible advantageous points for teaching the child with dyslexia as well, providing solutions to many problems



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One of the main concerns about the method is that the learner will always have to bring these images to mind when wanting to speak the foreign language, which would slow the speaker down. However, it was shown by Kasper (1993) that with practice the learner automatically associates the two words together and the images drop out leaving just the translation in memory. The image is only used during the initial translations and as the link becomes more fluent, the image is no longer needed and is discarded (Kasper, 1993).

### Linkword Languages Programme

If this technique has been shown to improve vocabulary learning to such a successful level, over and above that of traditional rote learning, then surely pupils would benefit from using this method in the classroom to learn essential word lists? One way in that this could be incorporated is through the computer-based programme "Linkword languages" (Gruneberg, 2002). Based on the above key word method, Linkword is a CD ROM programme that guides the learner through both vocabulary and grammar of a foreign language, providing the instructions and images needed for the learner to independently learn a set of vocabulary items for a given language. Each CD ROM covers an extensive set of common and useful vocabulary items, providing firstly the foreign word and its English translation and then the image combining the two as described above in the key word method. Learners are asked to envisage this image in their minds eye for at least ten seconds, before moving on. Sound is also available through speakers or headphones so that the learner can hear the pronunciation of the word, but this is optional and can be switched off if preferred. After running through a series of about ten words, a simple vocabulary test is given asking for both English and foreign language translations of the words just studied. Feedback is then provided through the form of the correct answer alongside the correct translation with another chance for correct pronunciation of the word to be heard if desired through clicking on the correct word. The learner then moves onto the next set of words to be learnt. Simple grammar is also taught on the CDROM, such as the gender of words. For example in French, learners are asked to imagine a bottle of perfume interacting with the word for a feminine word and a boxer for a masculine word.

The success of this simple method for vocabulary learning has been great, with increased recall of items being shown for many different groups and in many different situations. For example, the Linkword Spanish course was used by five Thompson Holiday executives keen to learn the language. After around twelve hours, the executives had knowledge of around 400 words and a basic grammar. It was estimated that to learn this information in a traditional manner it would take about 40 hours rather than the twelve taken. Factors such as motivation were also increased (Gruneberg 1987). This success was not a one off. Students participating in a voluntary weekend course to learn Spanish using the method all covered more than five hundred words in two and a half days, with recall of the words being an average of 84.7 for productive learning translating English words to their Spanish equivalent (Gruneberg, undated).

Attitude towards the programme has also been very positive. Thirteen volunteers from Humberside Polytechnic participated in a two-day course using the programme, learning a variety of languages. Responses to the method were very positive with many finding it a faster method to learn vocabulary and grammar, interesting, and a more positive technique than other methods previously used in school (Gruneberg, 1987). Similarly, Gruneberg & Sykes (1991) presented a first year practical class with level one of the Greek programme to learn. On average the students reported very positive attitudes to the method, describing

the programme as easier, faster and more enjoyable to traditional methods they had experienced in school.

The effect of linkword also appears to have long-term significance. Beaton, Gruneberg & Ellis (1995) described an individual who initially learnt Italian through the linkword method, picking up about 400 words and grammar. Ten years later the individual decided that as he was visiting Italy he would like to see what vocabulary he still knew. On testing, ten years after his initial learning, the individual recalled about 35% of the words. However, after looking over the glossary list of all the words he had previously learnt ten years ago for approximately ten minutes, he was retested and preformed at 65%. This improved to a near perfect recall after further study of the words for about one and a half hours. This effect was seen to last for at least one month suggesting that vocabulary learned through linkword is long term (Beaton, Gruneberg & Ellis, 1995).

Linkword has also been shown to have positive results with individuals who may have difficulties with learning foreign languages for a variety of different reasons. For example, Gruneberg, Sykes & Gillett (1994) used images from the linkword programme with a group of learning disabled adults who showed poor language ability. Recall was significantly high for the group using this technique, compared to the control group who were simply told the translations of the words. Gruneberg & Pascoe (1996) also showed that using key word images from the linkword course lead to increased recall for both productive and receptive learning in the elderly, who as a group are often shown to have memory problems.

Although originally developed as a course designed to provide learners with a basic vocabulary to use in situations such as going abroad, Linkword has also already shown to have practical success in classrooms situations with pupils learning languages as part of the national curriculum. Although not many studies have been performed due to the practical and methodological problems of gaining significant access to schools and the problems of organising and sufficiently controlling any experiment in such an environment, those that have been completed have provided encouraging results.

One such success was seen by Gruneberg & Jacobs (1991) who reported significant results in a class of twelve and thirteen year olds in the B stream at Bishop Vaughn, a Swansea comprehensive school. The pupils used linkword in their Spanish class once a week whereas other classes did not use the programme and continued with their normal lessons. End of term vocabulary tests showed that those in the linkword class performed at an average level of 69% compared to an average score of only 24% in the other class, suggesting significant differences in success for the two groups.

Success was also seen in a group of thirteen-year-old children who were in the weakest set for French at Rugby school (Sommer & Gruneberg, 2002). All children had performed at less than 50% in their entrance exam to the school and had been targeted as having not only performance difficulties in French but also difficulties with regards to motivation and enjoyment of foreign languages. After initial instruction in linkword during class time, the pupils used linkword, at their own pace, once or twice a week as preparation for classes. The results yielded positive conclusions on two levels. Firstly, performance was seen to increase. Although no actual vocabulary test of linkword was given, performance in the end of year examinations was compared to the previous year where linkword was not used. The average mark for the class using linkword was 50% compared to 38% the year before.

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There had been no significant difference in common entrance exam marks between the two years suggesting that the class who had used linkword reached a higher level. Secondly, and just as importantly, measures of attitude towards the programme, assessed through questionnaires, showed positive reactions towards the linkword programme and significant increases in motivation and enjoyment of foreign language learning. With regard to speed and ease of learning and enjoyment of the course, not one pupil responded negatively, with 58% responding positively to these factors. The school is still using the programme as part of its foreign language teaching.

These experiments are influential from an educational perspective as they show the practical success of Linkword as a programme out of the controlled environment of the laboratory. They show that Linkword can successfully be used in real life classroom situations to increase recall and enjoyment of foreign languages. As a strategy for learning, this programme has so far suggested that it could be used to help meet these new standards set by the government to improve both performance and motivation in pupils.

### **Dyslexic Pupils**

At present, the National curriculum is very keen on the idea of “languages for all” (Grenfell, 2000). However, some pupils have been identified who struggle with languages to a far greater extent than the general problems seen by many children. One group of individuals who have been seen to display problems in learning foreign languages are dyslexic pupils. Crombie (1997) described how children with dyslexia show poorer performance, finding the subject difficult. Supporting this, Downey, Snyder & Hill (2000) showed that dyslexic children performed significantly poorer than controls on foreign language aptitude measures, phonological tasks, reading and spelling.

Similar reasons that lead dyslexic children to have problems mastering reading and writing in their own first language are thought to prevent a dyslexic child from successfully mastering a second or third language. Skehan (1986) suggests that a direct relationship between ability to learning of the native language and a second language exists as they are based on the same underlying skills. These skills, which dyslexics are documented to show particular weaknesses in are, amongst others, problems with phonological processing, poor working memory, poor auditory discrimination, faulty auditory sequencing, poor organisational skills, slow speed of information processing and limited attention span (Crombie, 2000). Poor phonological skills, such as difficulty segmenting words into phonemes or morphemes lead to the child being unable to separate language into meaningful units (Pollock & Walker, 1994). This is especially evident in the two most common languages taught in school, which are French and German. Adams (1990) also notes that dyslexic children can have problems blending and synthesising phonemes into words, leading to problems with pronunciation and automaticity. These difficulties are described in Sparks & Ganschow’s (1989) linguistic coding deficit hypothesis, which is based on empirical evidence of Vellutino & Scanlon (1986). The theory links these deficits to language difficulties through proposing that those with reading difficulties have problems with phonological, orthographical and syntactic elements of language – the elements making up the phonological “code” of the language. They do not however experience problems with the semantic aspects of the language.

Other deficits such as poor working memory also mean that the child has problems retaining vocabulary and accessing words, even in their native language (Crombie, 1995).