Harnessing the Use of Visual Learning Aids in the English Language Classroom

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Abstract

There has been increasing interest in the use of visual learning aids in education. Such interest is in part due to the role of dual coding theory to make educators aware of the important role of visual as well as verbal tools and technologies – especially with a younger generation of learners familiar with the visual interface of multimedia and internet technologies. Because of the directly verbal nature of language teaching and learning, many language teachers are either often not aware of or underestimate the potentially constructive role visual learning aids can play in enhancing the language learning classroom. This paper will investigate the ways in which visual learning aids might be used by teachers of English as second or foreign language to enhance the learning of their students. It will report on the findings and insights achieved in a postgraduate research project which explored the proposal that visual learning aids can significantly enhance the English language classroom.

Keywords: Visual learning aids, dual coding theory, language education

Introduction

As Benson (1997, p.141) has pointed out, the poet Simonides has described how "words are the images of things" and the great philosopher Aristotle long ago held that "without image, thinking is impossible". Yet the importance and usefulness of using visual learning aids in the classrooms is only once again becoming general understood and commonplace in education. However, few language teachers seem to be either aware or interested in this development. This is perhaps because the written and spoken word is the central focus of the language teaching pedagogy and curriculum. Dual coding theory may be able to assist with changing attitudes of language teachers. This is because it recognizes how the verbal foundations of learning are inextricably linked to and substantially support the visual aspects and tools of learning.

This paper will therefore explore the use of visual learning aids in language learning generally, and in the English as a second language classroom specifically. The discussion will be organized around two parts. The initial section of the first part will discuss how the dual coding theory model has particular implications for language teachers which go beyond those applications for teaching and learning in all areas of education. The second section will build on this by discussing a range of direct ways that language teacher might use visual learning aids. Part B. will then look at more specific ways that visual learning aids might enhance aspects of language learning. It will also discuss the findings achieved in a research project undertaken to explore the larger question of how language teachers might use visual learning aids to enhance the English language classroom.

The Significant Implications of the Dual Coding Theory for Language Education

The educational implications of dual coding theory

Paivio's (1986) dual coding theory basically outlines the idea that the cognitive process of the human brain proceeds in relation to the processing of information derived through interplay of both verbal and visual elements. It is a theory which therefore has had significant implications for education. Its importance has been especially recognized by those interested in the use of multimedia in education (e.g. Mayer, 1994). Early childhood educators have perhaps been more enthusiastic as they more clearly recognize the role of visual learning aids to motivate and assist the learning of younger students.

But as time goes on all educators are realizing that learners of all ages can benefit from teaching where an appropriate and effective use of visual learning aids is demonstrated. Such aids can help to translate complex verbal processes into easy-to-grasp visual/verbal messages. Naturally also visual and verbal abilities change as learners get older and the process of learning gets faster. This informs the understanding needed to better harness visual learning aids in the language classroom.

Verbal codes and non verbal codes interlink. The *verbal code* is a mental code specialized for dealing with verbal language. Verbal language provides a remarkable means for the encoding, communication, and decoding of messages that symbolize our experiences and ideas, both abstract and concrete. On the other hand, *non verbal codes* deal with nonlinguistic knowledge of the world. They are often referred to as the imagery code because the generation of mental images is a chief function. The nonverbal code provides a means for us to retain, manipulate, and transform the world around us mentally or in our imagination. Connections between the two codes vary with both language use and experience. Abstract language evokes little mental imagery but rather more concrete forms of representation. Hence, abstract language is understood primarily in intra-verbal terms of mental

paraphrasing, translation, and other verbal elaboration. Together words and images play a role in knowledge acquisition or knowledge construction. Mayer (2001) defines multimedia instructional messages as presentations involving both words and pictures that are intended to faster learning .Words refer to speech and printed text and images may refer to static and dynamic graphics

Representational, referential and associative are three different levels of processing that can happen within or between the visual and verbal system (Paivio, 1991). One of the particular type of memory codes which has activation belongs to the *representational* mode by the corresponding type of stimulus. For example, the words "cat "initially activates the verbal memory code whereas a picture of a cat activates the visual system. The second level of processing refers to *referential processing* which belongs to the cross – activation of the two types of memory codes .In this case, the word "cat" activates the corresponding images in the visual system and the picture of a cat activates the related logogen in the verbal system. However, Reiber (1994) points out, the relations between the two system are not always one–to-one, since an images has the potential of evoking many different verbal labels. *Associative processing* refers to activation of additional information within each system. As Reiber suggests, there may be a conversion of visual information into a semantic form for storage in long-term memory.

Visual language is explained as the tight combination of words and visual basics and as having individualities that distinguishes it from natural languages as a separate communication device as well as a distinctive subject of research. It should thus be called *visual–verbal* language instead of *visual* language. The three domains of syntax, semantics,

and pragmatics inform the concept of visual language (Horn, 1998).In the last 50 years, with the coming together of component visual vocabularies from such widely separate domains as engineering, diagramming and technologies developed in medical illustrations. Likewise the world of cartooning involves hundreds of expressive visual conventions resembling a full, robust visual verbal language (Tufte, 1983, 1990).

The relevance of visual learning aids to learning

Paivio's dual coding theory (1986) has been of interest to many teachers as it is a theory with many implications for learning. In general it suggests that an effective use of visual aids and tools should have a positive enhancement of learning. In this way the concept of the visual literacy of learners has emerged as an influential concept (e.g. Galda, 1993). For language teachers, the use of different visual-verbal aids will hopefully help teachers seeking to improve student motivation and interaction in class as well as learning of particular language skills and knowledge (Danan, 1992).The use of different types of visual aids can help teachers to reflect on the educational importance of visual literacy (Horn, 1998a). 'Visual aids' can provide practical solutions to the problems of a language teacher whose equipment, as a rule, consists of nothing more than a verbal textbook.

Although there has been much less research on the visual as distinct from verbal nature of learning, there is an interesting body of research evidence which supports the idea that student learning is positively affected by presenting visual and verbal aids together (Mayer & Sims, 1994). This reminds us of a popular saying: 'a picture is worth a thousand words'. An understanding of visual – verbal language enables better structures and efficiencies of communication. For example, it has been shown that when human use the integrated visual –

verbal "stand- alone" diagrams their performance increase from 23% to 89% (Chandler & Sweller, 1991; Mayer 2001, Horton, 1991). "Stand-alone" diagrams refer to diagrams that have all of the verbal basics and elements necessary for complete understanding without reading text elsewhere in a document.

On interesting research study which reinforces the importance of visual tools of learning involves an experimental study of mathematics learning (Campbell & Stanley, 1993). All subjects participated in both treatments using virtual and physical manipulatives, which allowed each student to serve as his or her own comparison during the analysis. In the first phase of the study, Group One participated in fraction lessons using physical manipulatives, while Group Two participated in fraction lessons using virtual manipulatives. In the second phase, each group received the opposite treatment condition. That is, Group One received algebra instruction using virtual manipulatives, and Group Two received algebra instruction using physical manipulative. Part of the research involves researcher-designed tests contained three sections with a total of 20 items. The first section included dual-coded items which were presented using pictorial and numeric representations. The second section contained single-coded items with numeric representations only. The third section included two word problems which asked students to draw a picture, represent the problem with a number sentence, and explain solution strategies using words. The project found that those participating learners who drew pictures whilst undertaking the renaming process did much better than those who did not.

Types of visual learning aids

There are a range of types of visual learning aids which use different media. Pictures are perhaps the simplest and commonly used. Yet pictures are also very effective. In the language learning of young children pictures are often used as to provide associations for the learning of new words. It goes without saying that we cannot use pictures for every unknown word as some words are abstract and cannot be illustrated easily. The more concrete a word is, the easier it is to find and uses a picture for its illustration (Anderson & Shifrin, 1980).There has been much research on pictures in learning generally, and a little also in the area of second language learning. For example, Underwood (1989), as cited in Chun and Plass (1996), has concluded that "an ordinary principle and opinions for human learning is visual memory'. Likewise, Koren (1999) points out that learning foreign words with associated of words alone can be easier than words without these associations.Indeed many teachers of young children in the English language classrooms use photo dictionaries to increase the vocabulary and speaking skills of learners.

Charts, maps and diagrams are other common visual tools used for learning purposes. Kleinman and Dwyer (1999) examined the effects of specific visual skills in facilitating learning. Their findings indicate that the use of color graphics in instructional modules as opposed to black and white graphics promotes better achievement in the learning of concepts. An earlier study by Myatt and Carter (as cited in Heinich et al., 1999) suggests that most learners prefer color visuals to black and white visuals, but that no significant difference in the amount of learning occurs except when color is related to the content to be learned.

Film is another common form of visual aids in education which can be useful also in language learning. A Film may include that is applied for language teaching in the form of slides, motion picture films and fixed film strips.By using this aid teachers can convey the meaning of words to teach reading text and speaking and writing composition. There are

advantages of using this aid which help to student to focus and attention to the pictures and words on it. Film strips can show not only those condition which the teacher can present in the class but also many of these which he cannot. A situation of film strip can be shown over and over again (Jowett & Linton, 1989).Teachers often use slides and films as well as pictures as these aids can assist students with their long term memory of words and phrases.

In a different types of study involving subtitling in films, Danan (1992) investigated that a grouping of video input and bilingual verbal input (subtitles in the second language only with audio in the learners' first language) aided vocabulary acquisition and reading comprehension. Danan (1992) has explained her result in terms of dual coding theory. This is because the theory emphasizes the importance of providing input for both the verbal and the visual representational system because visual traces are remembered better than are verbal components and also have an additional effect when items are encoded dually.

Integrating visual learning aids in language education

This part of the paper will involve two sections. The first section provides an overview of samples of learning activities designed to both look at (a) the different kinds and uses of visual aids in language learning classrooms; and (b) kinds of learning design required to effectively use visual aids for language learning. The second section will more directly discuss the use of these samples as part of a project investigating the perceptions of language teachers. In the project a number of language teachers with little or no experience in using visual learning aids with their learners were interviewed before and after be exposed to a series of demonstrations of not only different types of visual learning aids but different ways in which these might be integrated into language learning lessons and classes.

Different visual aids for different aspects of learning

Types of Visual aids	Examples	age of students	Objectives	Duration	Role of Teacher	Role of Students
Flash card	Double sided cards with picture and spelling	8-12	Building up new vocabularies	15 min	Organizing and providing the correct pronunciation	Recognizing the right words and pronunciation
Movies&Animation	Educational movies	9 -12	Developing speaking and listening skills	20 min	Persuading and triggering the discussion	Core participants in following the discussion
Authentic role plays	Restaurant exchange	9-12	Introducing authentic situation	25 min	Simulating the conversation in different contexts	Communicating in different situations
Computer-based or multimedia interface	Educational sites	9-12	Surfing and getting info	30min	Familiarize the students with useful websites	Exploring new information

Models	Bodily organs: e.g. the human heart	9-12	Getting familiar with the function and location of organs	10min	Presenting and simplifying the concepts	Exploring new concepts

Table 1 below has a dual purpose. It provided an overview of a range of types of visual learning aids which might be adapted to a language learning context. It also provides an overview of a series of example language learning lessons which were developed and demonstrated as part of a research project to familiarize some participating language teachers. The learning outlines themselves are included in the appendix.

Table I. The use of different visual aids for teaching different modes of language learning

The initial visual learning example here involves the use of flash cards which especially lend themselves to teaching and learning new words in vocabulary exercises. The second example focuses on the use of movie excerpts or other kinds of animation to provide either a background to or specific examples which might provide a focus for learning activities. The visual-verbal learning link is initially activated in terms of listening skills but this activity can also then provide a focus for a range of communication activities lead by the teacher. Going beyond this the third example is the use of authentic role plays where students interact performatively using non-verbal actions and gestures to supplement the verbal aspects of communication and interaction.

The next example focuses on how different kinds of visual literacy and learning are made possible by the multimedia and related functions of the computer interface. This can range from providing students with activities of searching for authentic and interesting resources on the internet to providing students with particular software or programs which can directly or indirectly assist learners. The last example involves a hybrid mixture of different visual media to assist with language learning class focusing on naming and explaining the bodily organs. This can be assisted by the use of special multimedia programs or through different kinds of physical models which represent the human body – including diagrams and pictures or even a replica model in some classrooms. From these examples we can see that various visual learning aids can be harnessed by language teachers as well as by teachers in other subject areas.

These different examples of visual aids in language learning were incorporated into a study of participating language teachers who participated in some demonstration classes or activities involving a wide range of visual aids and different activity designs for integrating these into the language classroom. Before and after interviews were conducted with these participants. This study focused on several distinct areas of investigation. The first was to identify the use of different visual aids in language learning classrooms that might teachers find helpful. Secondly the project focused on how different kinds of visual aids might be integrated to assist with different kinds or aspects of language teaching and learning.

Generally speaking most of the participating teachers were not very receptive initially to the idea that visual learning aids can have a significant role in the language classroom. However the 'after' interview indicated that access to useful demonstrations in practice and also to new design ideas for using visual aids in the language classroom can lead to a changed mindset in

teachers. The key benefit noted by participants is that visual aids can strongly assist with more effectively motivating learners in various ways.

Conclusion

Language teachers are so focused on the verbal nature of the language learning classroom that many seem to underestimate or ignore the potentially useful role visual learning aids can play in the language classroom. This paper has explore how visual learning aids are becoming more widely used in education, and suggested that this might be extended to include the language classroom. In particular it has explored how dual coding theory might assist with changing the attitudes of language teachers in particular to the use of visual learning aids in the language classroom. On this basis the paper has gone on to provide an overview of the most common kinds of visual aids and their potential teaching and learning applications. It has linked this also to a research project which investigated the extent to which language teachers might be more inclined to use visual aids if they could be provided with some useful and typical examples. Good examples will indeed encourage language teachers to be more experimental harnessing visual aids for their language learning classroom.

* An earlier version of this paper was presented to the My_CASELT conference in Kuala Lumpur, December 15th 2010.

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