APPLICATION OF VISUAL LEARNING TO THE TEACHING OF SPANISH GRAMMAR TO TAIWANESE STUDENTS

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Abstract

In this paper I will present some results of a project entitled Application Research of Schema Theory to Spanish Discourse Teaching, sponsored by the National Science Council of Taiwan and developed from August 2009 to January 2011. The main goal of this project was to check the effectiveness and validity of Schema Theory—a cognitive theory about learning processes especially relevant in the field of Experimental Sciences—in the teaching of writing to Taiwanese students of Spanish as a foreign language.

Firstly, I will establish the theoretical foundations of my investigation. On the one hand, I explain the concept of schema as an abstract structure of knowledge that allows us to explain how prior knowledge affects the understanding process: to understand a message it is necessary to activate or to build on an existing schema into which described objects and events will be inserted. On the other hand, I describe David P. Ausubel theory's of advance organizers, a kind of cognitive schema which provide scaffolding or support for new information. According to several investigations, visual organizers and pictures are one of the best methods to teach thinking skills, to work with ideas, and to present varied information, because they teach students how to clarify their thinking, as well as how to process, organize, prioritize, retain and remember better new data, in order to integrate it meaningfully into their background knowledge.

Next, I will present the results of an innovative Spanish Grammar teaching experience in Taiwan, based on a visual learning method, in order to check the functionality of the cognitive models mentioned above in this particular educational context. This visual method essentially consists of the projection of simple pictures to the students, without any additional text explanation, in order for the students to understand the meaning and usage of past tenses in Spanish.

Keywords: Schema, cognitive, visual, learning, organizer, Spanish, grammar, Taiwanese.

1 INTRODUCTION

According to the most complete study accomplished until now on the learning strategies of Chinese students of Spanish [1], this group of learners has great difficulty in implementing certain metacognitive (learning from errors) and affective (constantly encouraging oneself to learn) strategies, as a consequence of an ingrained general attitude in Chinese culture (not only a learning attitude). Nevertheless, they are very comfortable with the practice of recitation and memorization that is related, mainly, to the automatization of forms, given the enormous interlinguistic distance between Chinese (L1) and Spanish. In contrast, the use of strategies oriented to foment the autonomy of the apprentice, that is to say, to make students conscious of the importance of “learning to learn”, is quite rare.

This situation is probably influenced by special characteristics of general Chinese learning, being evidently a social and cultural factor, corresponding to cognitive processes developed from childhood (alphabetization or, rather, ideogramization), and not so much a series of ideas anchored in the Confucian educational tradition. Indeed, on the one hand, it is not easy or viable to incorporate, in the different Chinese curricula, the exploration and transfer of strategies to a program already defined and very ingrained in every school. On the other hand, students are not used to thinking about their own learning process, and this is the reason why they view as strange or remote all techniques aimed at reaching this goal. In addition, we do not have until now any implicit instruction of learning strategies according, for example, to some of the current proposed models involving knowledge about learning styles and the strategies of Chinese students.

Nevertheless, as Sánchez indicates in his study, the development of strategic competence and the autonomy of our students depends most of all on teaching, even more in the case of Chinese students.
who are not generally used to the explicit treatment of strategies, but, on the contrary, used to being
totally subject to the teacher's control, methodology and evaluation. However, our educational
perspective does not have to be discouraging if we work together in order to canalize the potential
effort of Chinese learners towards a future capacity for learning autonomy.

According to the results of the research mentioned above, visual learning techniques are cognitive
strategies absent or hardly used among Chinese students of Spanish. Thus, the purpose of this
research is to evaluate the possibilities of implementing this kind of teaching and learning method
between Taiwanese who learn Spanish as a foreign language.

Firstly, I will introduce the theoretical foundations of my investigation: (a) the notion of schema as an
abstract structure of knowledge, (b) D.P. Ausubel's theories on meaningful learning and advance
organizers, and (c) the concept of visual learning as a learning style. Secondly, I will present the
methodology used in the teaching experience on which the present research is based. Next, I will
analyze the results of a survey aimed at finding out students' opinions about this teaching experience.
Finally, I will outline the main conclusions of this project.

2 THEORETICAL FOUNDATIONS

2.1 The notion of “schema” as an abstract structure of knowledge

Schema theory is a mental model of learning that takes into account questions regarding the cognition
process. Mental theories of learning try to explain how the brain processes and stores new information
[2]. Schema theory was developed by American educative psychologist R.C. Anderson [3]. According
to this learning theory, organized knowledge is viewed as a very complex network of abstract mental
structures that represent the understanding that one has of the world. Schema is defined, then, as an
abstract structure of knowledge that explains how people's previous knowledge affects their
understanding: in order to understand a message it is necessary to activate or to construct previously
a scheme that can explain the objects and events described. Many investigations accomplished by
theoreticians of scheme [4] show that abstract concepts are better understood after establishing a
base for concrete and relevant information: general knowledge provides a frame into which the newly
formed structure is inserted.

According to Anderson [5], some of the characteristics of schemes are: (a) schemes are always
organized meaningfully, can be added to other schemes and, as people acquire experience, can be
developed to include more variables and greater specificity; (b) each scheme is embedded in other
schemes and contains subschemes; (c) schemes change as information is received; (d) they can be
reorganized when new incoming data reveal that it is necessary to reconstruct the concept; (e) mental
representations that are used during the perception and understanding processes are combined to
form a whole that is greater than the sum of its parts. On the other hand, the functions or utility of
schemes are: (a) a scheme provides a scaffolding for ideas; (b) a scheme directs the focusing of
attention; (c) a scheme allows inference processing; (d) a scheme allows one to organize searches of
memory; (e) a scheme facilitates the tasks of editing and summary; (f) a scheme allows inference
reconstruction.

Finally, some of the most outstanding principles of schema theory whose application can contribute to
improving teachers' work are: (a) it is important to teach sufficient general knowledge and generic
concepts; (b) teachers must help students to construct schemes and to establish connections between
ideas [6]; (c) since previous knowledge is essential to understand the new information, teachers must
help students to construct the required knowledge, or to remind them what they already know before
presenting new material to them; (d) schemes grow and change as new information is acquired; (e)
because students feel an internal conflict when they try to assimilate schemes that contradict their
previous suppositions, teachers must understand this feeling and support them; (f) deeply
consolidated schemes are difficult to modify, as an individual will always prefer to live with
contradictions rather than change a deep-seated value or belief.

2.2 Ausubel's theories on meaningful learning and advance organizers

In order to refute the proposals of learning by discovery developed in the 70's by American
psychologist J. Bruner (according to which children had to construct knowledge through discovery of
contents), American psychologist and educator D.P. Ausubel argues that learning by discovery must
not be presented as being opposed to learning by exposure or reception, since the latter can be also
effective if certain characteristics are fulfilled [7]. According to Ausubel, both kinds of learning are valid teaching strategies that can coexist and foster meaningful learning, in the first case, or repetitive and memory-based learning, in the second.

According to Ausubel's theory of meaningful learning [8], new knowledge is incorporated substantively in the mental structure of the student, and is achieved when the student relates new content to previously acquired knowledge. Some of the advantages of this kind of learning are [9]: (a) it produces more lasting retention of information; (b) it facilitates the acquisition of new knowledge related to what has been previously acquired in a meaningful way; (c) new information, since it is related to previous knowledge, is stored in long term memory; (d) it is active, because it depends on the assimilation of learning activities by the student; (e) it is personal, since meaningful learning depends on the mental resources of the student.

Some of the multiple pedagogical applications of this method of teaching and learning are [10]: (a) the teacher must be aware of the previous knowledge of the student, that is to say, he/she has to ensure that the content to be presented can be related to his/her previous ideas; (b) to organize the materials in the classroom in a logical and hierarchical way, considering that what is important is not only the content but also the way in which materials are presented to the students; (c) to consider motivation as a fundamental factor for the student to be interested in learning; (d) the teacher must use examples, including drawings and diagrams or photographs, to teach the concepts.

Thus, the main contribution of Ausubel to Constructivism is his model of teaching by exposition, a method that promotes meaningful learning, instead of one based on memorization, by means of the explanation or exhibition of facts or ideas to the student. But another important contribution of this author is the concept of advance organizers, that is, elements that help the student when dealing with new information, working as a bridge between new material and the present knowledge of the student [11]. These organizers can have three purposes: (a) to direct the student’s attention to the really important part of the material; (b) to emphasize the relations between the ideas that will be presented; and (c) to remind him/her of the relevant information that he/she already has. Advance organizers are divided into two categories: (1) comparative organizers, that activate the existing schemes, and (2) explanatory organizers, which provide the new knowledge that the students will need in order to understand the subsequent information, thus helping them to learn, especially when the subject is very complex, difficult or strange [12].

2.3 Visual learning and graphic organizers as a learning style

Visual learning is a teaching and learning style where ideas, concepts, data and other kinds of information are associated to images and diverse techniques related to them. It constitutes one of the three basic types of learning styles in N. Fleming's VAK/VARK extended model that also includes auditory learners, kinesthetic or tactile learners and read/write learners. Visual learning is defined as a teaching and learning method that uses an assembly of graphical organizers (visual methods to order the information) with the aim of helping students –by means of working with ideas and concepts– to think and to learn more efficiently, because they allow them to identify erroneous ideas and to visualize models and interrelations between different information, which are necessary factors for the understanding and deep internalization of concepts [13].

Several investigations have shown that graphical organization is one of the best methods to teach thinking skills [14]. Thus, techniques of graphical organization, as graphical forms for working with ideas and for introducing diverse information, teach students not only to clarify their thinking, but also to process, organize, prioritize, retain and remember new data, so that they can meaningfully integrate this information into their background knowledge. These techniques include conceptual maps, mind-maps, diagrams of cause-effect, lines of time, organizational charts, flow charts, etc. Indeed, it has been verified that techniques of graphical organization can help students to see how ideas are connected and to realize the way in which investigation can be organized or grouped, so that the new concepts are deeper and more easily understood. Also, as the organizers are continuously updated during a lesson, they prompt students to build on their previous knowledge and to integrate in it the new information; thus, by reviewing the graphics previously created, students can appreciate how facts and ideas are adjusted at the same time. And finally, whereas a conceptual map or another graphical organizer shows what the students already know, badly directed connections or erroneous connections reveal what they have still not understood.

In sum, graphical organizers constitute, for many reasons, very advantageous learning strategies for any kind of student: because they include not only words but also visual images; because they
emphasize and they relate concepts and vocabulary items; because they favor critical and creative thinking; because they integrate new knowledge with previous knowledge; because they promote cooperative learning; because they motivate conceptual development; because they enrich reading, writing and thinking processes; because they involve criteria of selection and hierarchy (in other words, they help students to learn to think) and favor the elaboration of summaries; because they improve understanding, memory and learning activities; because they can be used as evaluation tools; and because they validate the different learning styles of students.

3 METHODOLOGY
Taking as a basis the application of the theoretical principles explained in the section above, we experimented with a new method for teaching Spanish past tenses to a group of Taiwanese students at Tamkang University (Taiwan), in order to evaluate the possibilities of a visual learning approach in our educational context. This method consisted of a Power Point projection of a series of images with examples and pictures in order for the students to understand the meaning and usage of Spanish past tenses.

To implement this teaching experience, a series of drawings were extracted and adapted for the occasion from a reference book: *Gramática básica del estudiante de español* [15]. This work was chosen because it is a grammar text conceived following communicative and mental principles of creativity and visual aids that are clear and contribute to determine concepts.

The projected images were included few, if any, additional grammar explanations. This allowed the students to concentrate on the drawings shown. The work of the teacher consisted, basically, of commenting on the images and checking the students’ understanding of what they saw, reducing the amount of technical explanation to the minimum. The following seven figures were presented [16]:

- **Fig. 1**
  Spanish *present perfect* indicative uses

- **Fig. 2**
  Spanish *preterit* indicative uses

- **Fig. 3**
  Spanish *present perfect* vs. *preterit* indicative uses
Spanish **imperfect** indicative uses (I)

Spanish **imperfect** indicative uses (II)

Fig. 3

Fig. 4

Fig. 5
4 RESULTS

The following results are based on a survey completed by 52 students just after a visual learning class of Spanish Composition I, a second year compulsory subject in the Department of Spanish bachelor's degree program at Tamkang University (Taiwan), on December 28th, 2010.

The purpose of the two first questions was to find out if our students had had any previous experiences related to visual learning, not only in other Spanish courses but also in other academic subjects not directly linked to Spanish learning. The answers of the students were as shown in Fig. 8 and Fig. 9:
As can be verified, in the answers the “no” option predominates. Thus, the majority of the students, (to be precise 33, representing 63% of the total), indicated that they had never had a similar educational experience throughout their Spanish courses. This number decreases a little (28, 54% of the total) if no Spanish courses are considered. So it can be concluded that the use of visual methods in general, as well as in Spanish learning, is not very widespread in the degree program investigated here.

The objective of the two next questions was to find out the students’ opinions, on a scale from one to five, about the utility and suitableness of visual methods in the field of foreign languages learning. The answers of the students can be observed in Fig. 10 and Fig. 11:

That is to say, on the one hand, the vast majority of the students (43, or 83%), consider that visual learning is a quite or very useful method (values 4 and 5 on the scale) when learning about grammar. It is also noticeable –and at the same time comforting for the teacher– that none of the surveyed students marked the negative options on the scale (1 and 2). On the other hand, 67% of students (35)
thought that the method that teacher had just implemented in the classroom was quite or very appropriate (values 4 and 5 on the scale). Surprisingly, the percentage of “neutral” answers, located in the middle of the scale (option 3), increases significantly for the question about the “suitableness” (number 4), with respect to the question on the “usefulness” (number 3): 27% as against 17%. It seems, therefore, that even while recognizing the utility of the method, a considerable percentage of the students was not very convinced of the suitableness of this kind of visual learning in that context. Perhaps this apparent contradiction can be explained because the method to some extent goes against the traditional teaching style of the Taiwanese educative system.

The aim of the following question (number 5) was to discover the opinion of students, again on a scale from 1 to 5, of the attractiveness and interest of Spanish grammar classes based on the projection of images, as compared to the methods that they were used to. The answers to this question are shown in Fig. 12:

![Fig. 12.- Attractiveness and interest of visual learning for Spanish Grammar classes](image)

As can be observed, the great majority of the surveyed students, 83% of the total, thought that Spanish grammar classes based on the projection of meaningful images are quite or very attractive and interesting. This result is consistent with the majority's answers to questions 3 and 4, and it reinforces the positive opinion of the students not only about the visual learning method in general but also about an image-based Spanish grammar class.

In the following question students were asked if they thought that what they had just seen and heard in class about the uses of Spanish past tenses could help them in the study of this grammar point. The result to this question is offered in Fig. 13:

![Fig. 13.- Visual learning as a general helping method to learn Spanish](image)

In this case, the majority opinion of the students was quite favorable again. Nevertheless, the percentage of students who answered with a value 5 was lower than in the three previous questions, which could mean that, in spite of agreeing in the usefulness, suitableness, attractiveness and interest of the method, at the same time they thought that the study of Spanish grammar continues to be a complex task.
Finally, students were asked if in the future they would choose again, or would recommend to other
students, a Spanish course based on visual learning and the use of images similar to the one
presented that day in class. Their answers are shown in Fig. 14:

![Fig. 14 - Future interest in choosing courses based on visual learning method](image)

That is, a large majority of the students (81%) answered that they would like to have more courses in
the future based on the method used by the teacher, and they would recommend their fellow students
to take this kind of courses. Thus it can again be concluded that our students consider in a very
favorable way the visual learning method that was presented in class.

5 CONCLUSIONS
From what has been explained in the theoretical section of this communication, it can be concluded
that, on the one hand, Anderson's schema theory, as a mental model of learning, and, on the other
hand, Ausubel's theories on significant leaning and advance organizers, provide a basis and
justification for the use of styles and methodologies of foreign language teaching and learning, no
matter what the educational context, based on visual learning and the use of graphic organizers.

The teaching experience presented here, the objective of which was the student's understanding of
different uses of Spanish indicative past tenses, demonstrated that, from the point of view of the
learners, this kind of method is also valid and useful in the field of teaching Spanish as a foreign
language to Taiwanese students. Indeed, the majority of the students involved in this investigation
evaluated in a very positive way the use of images with interrelated drawings, as a way to learn and to
assimilate better the meaning of the grammar uses and examples projected on the screen.

On the other hand, we can conclude, nevertheless, that this methodology is not very widespread in the
university context analyzed here. Given the multiple advantages offered by these teaching techniques,
as explained above and as can be deduced from the students' opinions showed here, we strongly
recommend teachers of Spanish in Taiwan to implement visual learning in the classroom, as well as to
promote it as a general learning strategy, independent of what the academic subjects or contents are.

REFERENCES


[6] Some of the techniques that can be used to reinforce the connections are: discussion, songs, representation of situations, illustrations, visual aids and explanations of how a knowledge piece is applied.


[16] All figures were extracted from Alonso, R. et al., op. cit. Fig. 1: 111-113; Fig. 2: 115-117; Fig. 3: 119-122; Fig. 4: 123; Fig. 5: 125-127; Fig. 6: 128-133; Fig. 7: 136-138.