The Interactive Whiteboard for Language Learning

Sabrina Campregher
Free University of Bolzano (Italy)
sabrina.campregher@gmail.com

Abstract

Within the field of language learning, we have seen many approaches and methodologies. These changes are due to influences dictated by new psychological theories of learning as well as innovative technologies. Nowadays, most linguists and language teachers consider the use of technology essential to improve the teaching and learning process of a new language.

The recent introduction of the Interactive Whiteboard in schools has faced teachers with a new problem: how to use this new tool to enhance teaching and students' learning?

The answer to this question lies at the heart of an experience conducted in a fifth class of a primary school in Trentino. Starting from a socio-constructivist approach, a technology-learning environment was designed, which was based also on Cooperative learning methodology with the aim of making students active and involved.

In order to test the significance of such technology-learning environment, an experimental research was conducted. The variables investigated were the level of learning, as well as motivation, concentration, autonomy and metacognition which can actively influence the acquisition process. Moreover, we wanted to make sure that the contents and skills learned remain over the time, in a Lifelong Learning view.

Data collected through quantitative and qualitative measurements showed that not only the level of learning was improved, but also a greater permanence in time of knowledge. In addition, students raised their level of motivation, concentration, autonomy and positive attitudes towards the school environment.

The results open new perspectives on the use of innovative technologies as integrated tools in the teaching-learning process. The technology-learning environment presented here is one example that, data in hand, proved to be very effective.

1. Introduction

Some changes that occur in the world of education are the result of a reflection on the inevitable development of pedagogical and didactic theories. Others are due to requests by society about new generations' education. In the current landscape, there is an indisputable need for new generations to master different communication channels.

The school, as the main educational institution, cannot be impervious to changes, but should try to work best to adapt to them. Therefore, the school system is called to suggest how to use and integrate new technologies in its daily actions, considering them as potential new strategies and teaching methodologies. Teaching with technology means to support the use of technological equipment to encourage learning.

The new technical tools can be a great way to characterize the learning proposal in an innovative education system as it makes a significant contribution to the effectiveness of the teaching and learning process. They should be introduced through a valid educational mediation, so it becomes necessary that the use of new information technologies is well planned. As Schwartz [1] stated: "A pedagogy that uses multimedia is formed by the combination, scientifically organized, of materials and media, in which the teacher becomes an element of mediation between students, understanding, skills and media".

2. Language Learning with the Interactive Whiteboard

Language learning depends very much on emotion and attention. Therefore, it is important that the mode of communication of contents creates genuine interest, as in the case of multimedia. The adoption of multimedia directly affects cognitive processes and thus also teaching and learning. On a practical level, in a multimedia environment, the language input (words and structure) can be made substantial being contextualized by images and sounds, in order to be recognized and easily understood. The fact that the input is presented in different ways seems to facilitate learning, not only because it helps the inference and the ability to infer meaning using the context, but also due to the memorization of the input language and its reproduction. Mediation input through graphics and sound requires less energy at the level of cognitive linguistic decoding, allowing time to spend those energies on the input elaboration.

With the development of new technologies, there has been a steady increase of possibilities of action and interaction thanks to the transition from a "received" multimedia to an "interacted" multimedia (video games, simulation, virtual reality) up to a "constructed" multimedia (creating environments of personal expression, multimedia desks).

An example of new media technology, recently introduced in the classroom, is the Interactive Whiteboard (IWB). Interactivity is the central pivot of innovation for this board, as the contents that are displayed can be dragged, clicked, edited and processed directly on its surface, as it is normally done on a computer. Every object on the IWB can also be "catches", or photographed using software supplied with the board and every action can be recorded in video format. The IWB is a multimedia tool, because it allows the simultaneous use of different channels. According to Beeland [3] with the IWB it is possible to integrate three different types of access to knowledge: visual, auditory and tactile. Bonaiuti [4] stated that "is the coexistence within the same tool of a plurality of communication channels to make a difference: they are made available, within the same interactive work environment, different contents (text, audio and visual), and also different modes of manipulation and control".

In the international scene for several years, research is under way aimed at identifying its potential and specific characteristics. Here are some of the highlighted potentials discovered so far [2]:

- allows the visualization of concepts through pictures, maps, photos, movies, etc.;
- allows an integrated use of ICT in teaching and different teaching methods;
- the materials produced can be stored, allowing a reflection on the metacognitive process and product carried out;
- leads to a development of digital competences;
- helps students to practice their cognitive skills, promoting learning;
- improves the focus and motivation because it increases the pace of lessons;
- helps teachers to structure and plan their lessons in advance;
- increases student participation.

The IWB provides the opportunity to begin to experience directly in the classroom a continuum of languages and signs. Maragliano [5].states that "the effort of educators and designers of training should be geared to making the school one of the privileged field where is processed an <<interpretation of signs>>".

3. A Case Study in a Primary School

The case study presented was conducted in a fifth class of a primary school in Trentino (Northern Italy). Referring to the socio-constructivist approach was created a technology-learning environment based on cooperative learning, which makes students active participants in their learning process.

All the activities were held on the structural approach by Spencer Kagan [6]. His structures (Tab. 1) are divided into four areas related to the competence that we want to develop or improve in our students. Here

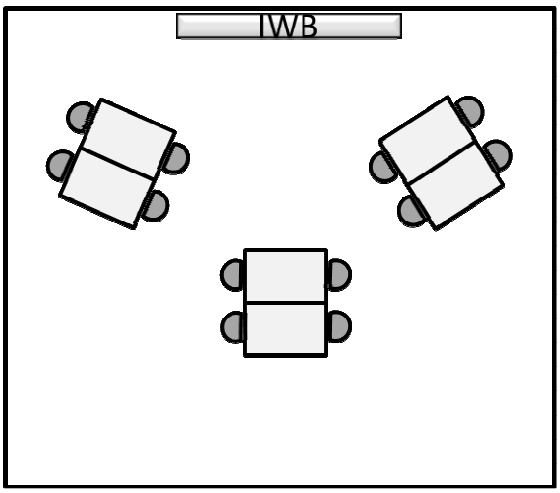
are reported the structures that have been used: mastery knowledge, concept development, communication building and cognitive skills.

Table 1 Structural approach structures

MASTERY KNOWLEDGE	Numbered heads together
	Think pair check
	Roundtable
	Rallytable
CONCEPT DEVELOPMENT	Roundrobin
	Three-step interview
	Blackboard share
	Think pair share
COMUNICATION BUILDING	Talking chips
	Color what I say
	Same or different
COGNITIVE SKILLS	Teammates consult
	Puzzle one dimension

The use of cooperative methodology needed the reorganization of the normal arrangement of desks in the classroom. The traditional classroom setting was changed and tables were put together and situated in a semicircle in order to facilitate students' communication (Fig. 1). Around each table there were sitting four students. As pointed out by Kagan [6], we preferred to work in groups of four children because, not only it gives the opportunity to students to work in pairs, avoiding one student remains alone, but also allows a greater number of combinations of couples. Within the group, to each component has been assigned a cooperative role (controller of the voice, time, materials and tasks) that changes in rotation to each lesson, so that at the end of the task every student had covered all roles.

Figure 1 Classroom setting



Each teaching unit lasted for six lessons, which took place with reference to the following sequencing lesson components:

1. *Brainstorming*: this step is intended to recall the knowledge that the students have learned in previous lessons;
2. *Activation*: the purpose of this stage is to attach new knowledge to those previous to create knowledge networks. Also through this phase, it is possible to trigger the curiosity and interest of the pupils;
3. *Input*: in this stage is given the new learning material: 80% of the input must be already known by the student to enable him to easily acquire the new 20%;
4. *Focus*: in this stage the focus is on function and grammatical structure of the input data;
5. *Consolidation*: in this stage are performed activities and exercises that use the newly learned knowledge;
6. *Transfer*: in this stage, new knowledge is applied to different activities than the original in order to facilitate the cognitive transfer of knowledge;
7. *Feedback*: in this stage feedback is given on the success or absence of learning.

At the end of the each unit, tests were allocated to check the development of the four skills related to the language learning: reading, writing, listening and speaking. Each part of the test was subject to an evaluation of their own. The four points taken together led to the final evaluation.

4. Validity of the Technology-Learning Environment

In order to investigate the validity of the technology-learning environment designed, an experimental research was conducted. The experimental group organized its activities in cooperative learning using the IWB. The control group carried out its activities in cooperative learning without the use of the IWB, in a manner customarily used by the teacher.

The variables investigated were not only learning and its retention, but also motivation, involvement, autonomy, attribution, metacognition and attitude toward school.

The results obtained (Fig. 2) from the data show that the use of the IWB has led to a trend which increases the level of pupils' learning of the class where the IWB was used. The evidence came from a comparison between the two sample groups before and after the research. The experimental group before the research had a lower level than the control group. After the study the experimental group has significantly improved its level, overtaking the control group. In addition, they had a greater permanence in time of knowledge than the control group. This finding is also confirmed by an increased level of motivation, concentration and autonomy of the students, who enthusiastically got involved and engaged in the activities designed within their learning process. The data are also corroborated by teachers' observations, who stated that this change engaged the whole class.

Figure 2 Results

AREA INVESTIGATED	EXPERIMENTAL GROUP
Learning	• Increase in learning level • More retention in learning
Cognitive style and elaboration towards input	• Increase in autonomy • Cognitive style verbal/visual
Learning strategies	• Increase in study motivation
Metacognition and learning	• Increase in concentration
Attitudes towards school environment	• Increase in positive attitudes towards school • Increase in attributes

5. Conclusions

On one hand schools must be able to keep up to date with technological innovations and with the inevitable changes in society, trying to adapt its methodologies, and on the second hand keep coherence of action with its functions and its mode of operation and changing gradually. During these stages of change, the school system should see it necessary to stop and think over the value of innovation and the potential of the technological tools.

In language teaching, technologies should not be included in order to play a predominant role, but with an instrumental function, that help pupils with their training and education. In this way, technologies such as the IWB become a valuable tool to promote teaching as individualized as possible and give teachers the opportunity to diversify their teaching enabling students to learn in different ways.

This work wanted to represent a moment of reflection with regard to the integration of the new Interactive Whiteboard in teaching, demonstrating that including it within a socio-constructivist framework turns out to be very effective.

References

1. Schwarz, B. (1985*). L'informatica e l'educazione. Rapporto della CEE*. Roma: Armando Editore.
2. Gage, G. (2006). *How to use an interactive whiteboard really effectively in your secondary classroom*. London: David Fulton Publishers.
3. Beeland, W.D. (2002). Student Engagement, visual learning and technology: can interactive whiteboards help*?, Annual conference of the association of Information Technology for teaching education*. Dublino: Trinity College. http://chiron.valdosta.edu/are/Artmanscrpt/vol1no1/beeland_am.pdf.
4. Bonaiuti, G. (2009). *Didattica attiva con la LIM. Metodologie, strumenti e materiali per la Lavagna Interattiva Multimediale*. Trento: Erickson.
5. Maragliano, R. (2008). *Parlare le immagini. Punti di vista*. Milano: Apogeo.
6. Kagan, S. (2000). *L'apprendimento cooperativo: l'approccio strutturale*. Roma: Edizioni Lavoro Roma.