



## NON-VERBAL COMMUNICATION AS A MECHANISM OF COGNITIVE AND EMOTIONAL MEDIATION IN THE LEARNING

ISABEL CUADRADO GORDILLO E INMACULADA FERNÁNDEZ ANTELO

UNIVERSITY OF EXTREMADURA

CUADRADO@UNEX.ES , IFERANT@UNEX.ES

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### ABSTRACT

In the last decades, educational research on didactic discourse has focused primarily on the teacher and students use to make communicative behaviors to promote mutual understanding, build shared meaning and facilitate the acquisition of new knowledge. From this perspective, the focus has been on the analysis of verbal language to downplay the influence of nonverbal behaviors in the comprehension, in the process of negotiation of meaning and their construction.

The present paper analyzes the role of non-verbal communication behaviors as a mechanism of cognitive and emotional mediation in the learning. The methodology used is based on case studies. The selected sample consists of 4 teachers from compulsory secondary education. However, the interactive analytical approach adopted, students who are part of the school classes studied are also considered part of the sample. The results show a high degree of dependence on both teachers and students of non-verbal communicative behaviors that occur in the classroom. These behaviors are used to access the meaning of educational content that explains the teacher or the mental representations constructed by students, and to create and maintain an emotionally positive classroom environment that promotes student involvement in the process of learning, social development and personal welfare.

**Key words:** non-verbal communication; learning mediation, classroom, emotional development

### INTRODUCTION

The study of communication processes and in particular the study of interpersonal communication has been addressed from the 60's from different areas and disciplines: psychology, linguistics, anthropology, sociology, philosophy, ethology, biology, engineering, etc. Despite the years, interest in interpersonal communication has not declined and remains the subject of numerous research studies and scientific publications. At present, the study of this topic is particularly relevant because it depends partly on the success and advancement of the Society of Information and



Communication in which we live. Technological development and inclusion in all spheres of human activity (work, leisure, interpersonal relationships, family organization, etc.) substantially changed the way people relate, communicate, have fun. But this has required and requires a significant and accelerated learning process that never ends, among other reasons, because technological development continues and the emergence of new media and forms of communication.

On the other hand, the classroom is not a cabin full of desks where teachers and students live, but a scenario communicative speaking and listening, which are acquired and practiced strategies of persuasion, negotiation (including blackmail), where we learn what to say to whom, how to speak, when, how to interpret the meaning and content of the messages of others, a laboratory of expression and understanding of own and others' feelings, a place where the discourse of the teacher has to connect to the ways of saying and understanding of pupils. In this scenario, the educational discourse is an instrument capable of articulating the interpersonal and social construction of human knowledge, to unite the cognitive and social and give an explanation of the way that *"knowledge is presented, is received, shared, controlled, discussed, is poorly understood by teachers and children in the class"* (Edwards & Mercer, 1988, p.13).

Therefore, from a constructivist approach, the interest in educational discourse cannot focus on formal or structural properties, but in his ability to negotiate the representations and subjective meanings that have and build each of the participants during the course of interaction.

Speaking, listening, discussing, there is a communicative exchange that allows suggest ideas and actions, to regulate their own behaviors and those of others, knowing the near and distant social environment, share meanings and approach to address different academic disciplines. In short, to activate and implement cooperative strategies that enable communication and exchange within the classroom and the joint construction of shared knowledge.

## **NONVERBAL COMMUNICATIVE BEHAVIORS ORIENTED TO THE COGNITIVE ASPECTS OF LEARNING**

Traditionally, the analysis of the cognitive aspects of learning was based on verbal expressions used by students. To find out what the students knew about specific content enough to listen and analyze his words. However, the explanations they give kids, teenagers or adults do not reflect all that really know. Some knowledge is difficult to express verbally, at other times we do not use the right words and sometimes just the knowledge is inaccessible to record verbal. How many times have we said and heard the expression: I know but I cannot explain with words!

In these situations, the non-verbal communicative behaviors are particularly relevant and are intended as a means of transmission of knowledge and not just emotions. Through facial expressions, hand gestures, body movements, travel through space or eye contact, to have access to substantive information on the mental representations of the other person. Very valuable information if we consider that while the words are the product of a deliberate and intentional, in general, gestures occur spontaneously, reflecting faithfully the knowledge we have not altered or manipulated. Only if we know the effects that result in students with our actions and become aware of your event, you can achieve some control over them. However, recent studies have shown that the level of consciousness and that the teacher has control of nonverbal communicative behaviors that manifest in the classroom is minimal and largely confined to the domain of facial expressions (Cuadrado & Fernandez, 2007; Fernández & Cuadrado, 2008a, 2008b).

The existence of non-verbal behavior as support or 'scaffold' to clarify, organize and communicate ideas and to facilitate the decoding of sense and meaning of the message received, showing the work of Kendon (2004), Pozzer-Ardenghi and Roth (2009), among others.



Recent research describes the influence of nonverbal behaviors in the process of cognitive change from two perspectives (Goldin-Meadow, 2009). One of them argued that the gestures could contribute to the modification of knowledge through its communicative effects. If the gestures reflect the state of our knowledge, then they have enough potential to indicate to others the level of understanding that we reached or the difficulties we face. If subjects are sensitive to nonverbal cues that we emit, they can redirect the way to convey concepts or ideas. The second view says that gestures can contribute to knowledge exchange through its cognitive effects. Externalizing our thoughts we can avoid a cognitive effort that could be used in other tasks. In the case of nonverbal behaviors, if we transmit some information by gestures save effort that we can use to develop more complex utterances. But it is not only cognitive effort, but with additional means of information. Gestures allow us to express meanings verbally and supplementing omitted and give meaning to the message we issue.

On the other hand, it is important to note that not all gestures facilitate or hinder the decoding and understanding of verbal, some just act as regulators and facilitators of the talks but add nothing to the process of transmission and understanding of messages. And those which have an influence on verbal discourse, not all have the same effect or do it with the same intensity or in the same way. Therefore, the classification of nonverbal behaviors that interact directly with the verbal task remains unresolved because according to the investigations those delve into this subject any existing today, may be considered standard. One of the most widely used generic classification can be represented graphically as follows:

Figura 1: Clasificación de los gestos



In relation to representational gestures, the deictic gestures, which Roth and Lawless (2002) called 'demonstration' can be defined as behaviors that are kinetic manuals for designating an object, person, location, or abstract references related to temporality (past, present or future).

Iconic gestures are oriented towards the illustration of specific aspects of the object or action reference (size, motion, position, etc.). We could say that they are gestures in the pictographic meaning that they take the form of verbal semantic content of the speech they accompany. Therefore, these gestures act in cooperation with speech providing more information to facilitate access and understanding of the message.

Metaphoric gestures illustrate both real and imaginary abstractions (Roth, 2003). The difficulty of students to communicate verbally abstract phenomena leads them to use metaphorical gestures as an aid to the transmission of such phenomena and the emergence of the abstract language (Roth & Lawless, 2002).

In relation to non-representational gestures, which McNeill (1992) called 'beats' (or markers) and Krauss, Chen and Chawla (1996) 'motor movements', are used to emphasize and highlight some expressions. They tell what part of the message is emphasized and what are the aspects that are



given special importance. In this sense we can say that these gestures are coordinated with and complement the prosodic behavior. In addition to the transmission order of emphasis, not representational gestures contribute to the regulation of the interaction between the callers.

## **NONVERBAL COMMUNICATIVE BEHAVIORS ORIENTED TO THE EMOTIONAL ASPECTS OF LEARNING**

Within the non-verbal communicative behaviors that promote the creation and maintenance of an emotionally positive classroom climate and effective research highlight Cuadrado (1991, 1992, 1996). Similarly, Andersen and Guerrero (1998) state that are non-verbal communicative behaviors that used to define the relationship established between the two sides as cordial and positive or, conversely, distant and disagreeable. For his part, Richmond and McCroskey (1995) highlights the potential of non-verbal communication mechanisms to convey affection and declares that effective use of them revert to a higher quality of learning and the emergence of positive attitudes toward school.

Moreover, Woolfolk and Murphy (2001) indicate that nonverbal behaviors are the single greatest way to communicate feelings, intentions and values of both teachers and students and, thus, promote interaction and relationship between them.

The non-verbal communicative behaviors aimed at the promotion and emphasis of the emotional aspects of learning can be many and varied. For this reason and in order to facilitate analysis of these can be grouped into five major areas: proxemics, kinetics, oculusic, haptic and facial.

### **PROXEMICS AREA**

With regard to the area proxemics, Cuadrado (1992) highlights the importance of physical proximity between teachers and students. This approach implicitly conveys the need to establish an emotional relationship, communicating interest and concern for the interlocutor and to illustrate an attitude of listening and availability (Andersen, 1999).

### **KINESICS AREA**

Andersen (1999) highlights the significance of proximity and approval can purchase behaviors such as movements of hands, arms and head. Miller (2005) endorses the meaning of intimacy and closeness associated with some of these movements and describes how they are manifested in the teacher and in a very specific context as it's the classroom. These descriptions include references to the degree of tension or relaxation muscle and explain how to relax the body sends a message of availability, reliability, quiet and affectionate (Burgoon & Hoobler, 2002).

### **OCULESIC AREA**

Eye contact between two people can be considered the first indicator of the existence of communication between them. In the classroom, the eyes of teachers and students have multiple roles. One of them is related to classroom management and discipline. In terms of Kleinke (1986) the functions that may have visual contact in the interactions can be: a) provide information, b) regulate the interaction between speakers, c) expression of intimacy, d) control and e) understanding of goals or objectives.

The look of a teacher can show the students different attitudes and feelings that they know to decode. The eyes are regarded as the decisive factor in deciphering the truth of what is spoken.



Thus, a teacher who never looks into the eyes of their students passed a lack of trust in others or in oneself and generates in students a sense of insecurity that is affecting the teaching and learning process, by making it less credible content that are transmitted orally.

Within the field of learning, known studies that have focused their interest in perception and interpretation that students make the teacher's eyes, revealing that when the teacher makes eye contact with students, they tend to direct their motivation and concentration to the content to be working class. This visual attention to students makes them feel important members of the classroom and as such feel compelled to engage in learning.

With regard to the intensity and duration of eye contact, Richmond and McCroskey (1995) indicate that as the intensity increases, its meaning is associated with messages of disapproval and inquisitive attitudes through which the teacher tries to control the behavior of students and prevent discipline problems. When the intensity decreases, the interpretation made of these looks is related to the transmission of affection and intimacy.

## HAPTIC AREA

The influence that physical contact between teacher and students can have on learning, in terms of guidance and support, has often not been properly understood. This lack of attention, interest and understanding of the potential presenting haptic behavior for the enrichment of classroom interactions from a large extent, remained taboo to the analysis of physical contact of an adult to a child or between children by the sexual connotations that can be attributed to this type of behavior (Pillow, 2003). However, researchers such as Jones (2003), in an attempt to overcome these limitations in the U.S. where some school policies prohibit any physical contact between teenagers aged 16 to 19 years indicates that 'touch' to children is a behavior that is part of the practice of the contemporary teacher and well managed to avoid possible misunderstandings in their interpretation, supports the relationship between teacher-student and transmitted to the student welfare and safety.

## FACIAL AREA

Theorists in this area indicate that the face is the body part that best reflects the subjects' emotional state (Ekman, 2003, Ekman & Rosenberg, 2005). However, these and other authors such as Burgoon and Hoobler (2002) also warn that the face is the best body part is controlled and, therefore, facial expressions are easier to mask or substitute other emotions that illustrate different and even contradictory.

Within the area include all those facial expressions that are involved parts of the face and mouth, nose, cheeks, chin, eyes, eyelids, eyebrows or forehead. Of these, perhaps the most studied within the educational context is particularly mouth and smile. The manifestation of this behavior in the interactions between teacher and student, as long as they occur in a transparent and disingenuous, denotes the existence of a closeness and affection between partners (Andersen, 1999), on the other hand, influences a bias towards more effective and positive communication (Cuadrado, 1992, 1996b).

## METHOD

The approach taken in this study is based on an interpretive methodology based on case studies, allowing us to know in depth what happens in a specific context which involved a specific subject. Within the case studies we opted for a detail oriented type descriptive detail everything that hap-





pens in the classroom at all times and responding to all types of behavior such questions as 'what', 'how', 'who', 'when' and 'where'.

The sample selected for this study consists of four teachers who teach Spanish language and literature at the stage of secondary education. The instruments used for data collection are observation via video recording, interview and questionnaire. Thus it is possible to carry out the triangulation of data. Procedure followed in the collection of data is an interactive model of analysis of communication between teacher and students. The methodological approach follows the following phases:

*Filming classes.* It recorded five class sessions of 50 minutes of each teacher. Of these we selected one that would encompass the development of a complete task.

*Transcription of verbal, nonverbal and prosodic communicative behaviors.* The verbatim transcript was literally writing all the utterances of both the teacher and pupils. The transcription of non-verbal behavior was used categorization system Cuadrado (1992). This system allows to describe non-verbal communication mechanisms that appear and ascribe meaning and intentionality in terms of when they occur, the reactions they provoke in the party and the following actions are carried out.

*Categorization of communicative behaviors manifested by both the teacher and by students.* The adopted categorical system arises from the work focused on the analysis of verbal communication strategies aimed at enhancing student learning, both in its cognitive and emotional (Cuadrado & Fernandez, 2008a, 2008b; Fernández & Cuadrado, 2008a, 2008b) and studies focused on the analysis of nonverbal behaviors that complete, illustrate, reinforce or replace verbal messages (Cuadrado, 1992; McNeill, 1992, 2000; Feyereisen & Havard, 1999).

*Interviews with teachers.* Its objective was to deepen the meaning and intent of communicative behaviors that show teachers and in teacher knowledge and understanding of the mechanisms of communication that students use in their interactions with peers and with the teacher.

*Questionnaire.* Questions included in questionnaires concern communicative behaviors observed in the classroom, on the comments made in the interview about the meaning attributed to such behavior and interpretations of teachers do communication behaviors manifested by the students.

## RESULTS

Following the analysis categories included in this study, the presentation of results is divided into two sections. On one hand, show those related to communication behaviors designed to facilitate student learning and on the other hand, those focused on creating an emotionally positive classroom climate.

### ***Nonverbal communicative behaviors oriented to the cognitive aspects of learning***

In relation to the manifestation of illustrative gestures, the analysis of the data shows that there are important differences among teachers. Two teachers incorporate them in their speeches almost permanently, and its use is growing and diversifying when students manifest signs of misunderstanding or surprise. In contrast the other two teachers are almost anecdotal use of them.

With regard to iconic gestures, two teachers were used primarily to represent the figures or objects described in their verbal statements. The other teachers also use them to represent actions as 'drag', 'move', 'flip', 'build', 'cover', etc. The richness of the gestures of these teachers complements and strengthens their verbal and sometimes supplement to them.

As metaphoric gestures are practically nonexistent in two teachers. In contrast, other teachers used them to illustrate situations of ignorance, surprise, indifference, equality, etc.

Moreover, these teachers use non-representational gestures (hand movements forward and backward, etc.) to emphasize their verbal expressions and guide students' attention to the contents or terms that is given more importance or relevance.



### ***Nonverbal communicative behaviors oriented to the emotional aspects of learning***

Paragraphs in which subdivide the presentation of these results are consistent with the categories of analysis used based on Cuadrado (1992).

#### Accept contributions from students

Nonverbal behaviors used by teachers to show acceptance happen more often and take different forms in two of the teachers studied, who seem to have greater complicity with the students. These events can draw nods, arm extensions sideways, movements of fingers and smiles. In contrast, the other two teachers have a more serious and distant behavior resulting in fewer approvals sample verbal and non-verbal. Generally, they use terms like 'good' or 'worth' and repetitions of the contributions of students.

In terms of time and frequency displayed these behaviors of acceptance, there is a greater use in the initial moments of the classroom session and a greater prevalence of non-verbal compared to verbal. During the exploration of the background teachers tend to adopt all the answers, although incomplete, to advance in the presentation of the topic and define a first level of intersubjectivity. However, during the presentation and explanation of the topic, the samples are reduced to accepting contributions that occur right after repeatedly failed interventions or responses that are not participatory or shy students who have a slower learning pace. Finally, in the final moments of the class session once again shows a decrease of approval samples limited to those cases where you get a very elaborate answer that reflects a good understanding of the content worked.

#### Praising the contributions of students

The presence of praise in the discourse of these teachers is scarce. The way they acquire in the case of two teachers' demands are concrete expressions of repeating students through positive verbal expressions are accompanied by head nodding and arm extensions to the sides or pointing to a particular student. These teachers used these behaviors during the pivotal moment of the class session, after getting a very structured and elaborate answer, or gives a student shows signs of insecurity or have a slower learning pace. In contrast, expressions of praise from the other two teachers are more diversified and include non-verbal behaviors such as eyebrow arching, head nodding and arm extensions.

#### Show interest in students' contributions

Teachers expressed attitudes of listening and attention to students through non-verbal behavior. Some teachers use the student staring speaking, extension of fingers up, the arching of eyebrows or nod while the student involved. In contrast, other teachers are limited to looking at teens who talk and look away to those who pay attention when the content of their statements is not expected, or when other kids ask to intervene.

The analysis of the video recording indicates that these behaviors that show interest intensified when the task at hand is more complex than expected and students are slow to respond, or when the teenager involved is a shy person with low participation. In both cases, the behaviors of interest are located in the central moments and the end of the class session. At the beginning of it, to the overlap of interventions of students, teachers look intermittently without having time to focus eyes on any of them.

#### Enable and promote interaction with students

The actions that these teachers have done to promote positive interaction with students are speaking in first person plural, put your hand on your head or arm to transmit student involvement, class walk, joke, show a face relaxed, smile or relax the ownership structure. In the cases of two of the teachers found that these behaviors tend to be more personalized at the time of blockade in learning. To play down these barriers and encourage the student to overcome the teacher approaches him, leans his chest over his desk and shows some markers to help you organize your resume and learning. Other times, approaches and jokes, touching his shoulder or continuing to walk in the classroom.



### Capturing the attention of students

On a non-verbal communicative behaviors that these teachers used to capture the attention of teenagers are putting your hand on the shoulder of the pupil, eyebrow arching, finger lifts, extensions and hand and arm movements and proximity physics to students.

As for the temporary location and frequency of occurrence of these behaviors, the analysis of results showed a greater use of voice lifts at the beginning of the class session. At present, interventions for students occur quickly and teacher attention is taken as a reference to a particular contribution and thus set the direction that should follow. In contrast, during the explanation of the topic dominated by non-verbal behavior described above and the formulation of rhetorical questions. It is at this moment where we see that the students lose attention more often, and where teachers diversify their resources to hoarding. Finally, use of physical proximity and again the voice rises at the end of the session to try to get kids to focus their attention on the synthesis of the contents covered.

## CONCLUSIONS

The most striking finding of this study is the evidence of complementary and interdependence of cognitive and affective variables that influence motivational school learning. Our results show how a classroom environment characterized by an atmosphere of trust, security and mutual acceptance leads to increased class participation, greater student involvement in the development of school work and, presumably, positive attitudes towards the subject and the teacher. This bias toward the student class participation is a key element in the learning of academic content (Borzone & Rosenberg, 2004; Pekrun et al., 2002, Rojas-Drummond, 2000) and in turn reflects the quality of interpersonal relationships between teacher and student (O'Connor & Michaels, 1993; Cros, 2003). Specifically, our work reveals that the classroom atmosphere is encouraged passing interest in the contributions, responding to errors with ease and without penalty, providing markers and modes of inquiry that help students to detect the error and fix it, trying to get messages of disagreement are as subtle as possible and do not ridicule the teenager, showing people access and proximity, etc.. In this sense, results oriented Rosenberg and Borzone (2001), among others, but without establishing a partnership relationship with cognitive factors or variables.

However, the question remains unresolved and that we respond in this work is how teachers and students co-created and co-construct a positive emotional climate that encourages classroom relationships and enables improved student learning or, from the perspective of discourse analysis, what communication resources used to achieve these objectives.

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